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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

<u>Course outcomes for M.Tech – Power System Automation and</u> <u>Control (45) for the year 2015-16</u>

Course	i ear/Semester		L: 3 T: 0 P: 0 C:		
Outcome	I/I Sem	Advanced Power System Analysis (A953101)	3		
After the completio	n of this course, the student	n of this course, the students should be able to			
1	Identify the methods and assumptions in modeling of machines.				
2	Recognize the different frames for modeling of AC machines.				
3	Illustrate the volta	ge and torque equations in state space form for d	ifferent machines		
4	Develop the math	Develop the mathematical models of various machines like, induction motor and			
	Synchronous mac	hines using modeling equations.			
5	Analyze the devel	oped models in various reference frames			
6	Assess the machin	e dynamics in various operating conditions			
Course	Year / semester	Subject Name (Subject Code)	L: 3 T: 0 P: 0 C:		
Outcome	I/I Sem	Advanced Power System Protection	3		
		(A953102)			
After the completio	I Indepetend the he	s should be able to	vit brookens and		
	rolovo	sic function of a circuit breaker, all kinds of circ	un oreakers and		
2	Differentiate fuse	and circuit breakers under fault condition			
2	Learn construction	and circuit breakers under fault condition	ity of comparators		
5	in them	an details of static relays and importance of duar	ity of comparators		
	Study the operation	n of static relay applied for over aurrent protecti	22		
4	A hla ta annivatati	a relevation for the set of the s			
5	Able to apply stati	c relay for transformer and transmission line pro	Direction		
0	Basic principle of	operation and application of microprocessor bas	ed relaying.		
Course	Year / semester	Modern Control Theory (A953103)	L: 4 T: 0 P: 0 C:		
Outcome	1/1 Sem		4		
After the completio	Various terms of	basic and modern control system for the real	time analysis and		
1	design of control	systems	t this analysis and		
2	To perform state	variables analysis for any real time system			
3	Apply the concern	t of optimal control to any system			
3	Able to examine a	a system for its stability controllability and obser	wahility		
5	Implement basic t	rinciples and techniques in designing linear con	trol systems		
6	Formulate and so	lya deterministic optimal control problems in tea	rms of performance		
0	indices	ive deterministic optimal control problems in ter	this of performance		
Course	Voor / somostor	Subject Name (Subject Code)	I. 4 T. 0 D. 0 C.		
Outcomo	I cal / semester	EHV AC Transmission (A953104)			
After the completion	I/I SCIII	s should be able to	4		
1	Identify the differe	ent aspects of Extra High Voltage A C and D C T	Fransmission		
2	Demonstrate EHV	AC transmission system components, protection	n and insulation		
_	level for over volt	ages	and monution		
3	Estimate the Static	tical procedures for line designs, scientific and e	ngineering		
	Principles in powe	er systems	ing incoming		
4	Power Frequency	Voltage control and over-voltages in FHV lines			
1 2 3 4 5 6 Course Outcome After the completion 1 2 3 4 5 6 Course Outcome After the completion 1 2 3 4 3 4	relays Differentiate fuse Learn construction in them. Study the operatio Able to apply stati Basic principle of Year / semester I/I Sem of this course, the student Various terms of design of control To perform state Apply the concep Able to examine a Implement basic p Formulate and so indices. Year / semester I/I Sem of this course, the student Identify the differed Demonstrate EHV level for over volt Estimate the Statis Principles in powe Power Frequency	and circuit breakers under fault condition hal details of static relays and importance of dual n of static relay applied for over current protection c relay for transformer and transmission line pro- operation and application of microprocessor base Subject Name (Subject Code) Modern Control Theory (A953103) s should be able to basic and modern control system for the real systems. variables analysis for any real time system. t of optimal control to any system. a system for its stability, controllability and obser principles and techniques in designing linear con lve deterministic optimal control problems in ter Subject Name (Subject Code) EHV AC Transmission (A953104) s should be able to ent aspects of Extra High Voltage A.C and D.C T AC transmission system components, protection ages stical procedures for line designs, scientific and e er systems. Voltage control and over-voltages in EHV lines	ity of comparator on otection ed relaying. L: 4 T: 0 P: 0 C 4 time analysis at rvability. trol systems. rms of performan L: 4 T: 0 P: 0 C 4 Transmission n and insulation		



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5	Study the concept of Corona in E.H.V. lines and impact of RI in EHV lines				
6	Design the EHV cables and study their charcteristics				
Course	Year / semester	Subject Name (Subject Code)	L: 3 T: 0 P: 0		
Outcome	I/I Sem	High Voltage Engineering (A953105)	C:3		
After the completio	n of this course, the student	s should be able to			
Course	Year / semester	Subject Name (Subject Code)	L: 3 T: 0 P: 0 C:		
Outcome	I/I Sem	Advanced Digital Signal Processing	3		
		(A953106)			
After the completio	tion of this course, the students should be able to				
1	Comprehensive understanding of using advanced controllers in measurement and				
	control instrumentation.				
2	Illustrate about da	ata acquisition - process of collecting information	n from field		
	instruments.				
3	Analyze Program	nable Logic Controller (PLC), IO Modules and i	nternal features.		
4	Comprehend Prog	ramming in Ladder Logic, addressing of I/O.			
5	Apply PID and its	s Tuning.			
6	Development of la	adder logic programming for simple process	•		
Course	Year / semester	Subject Name (Subject Code)	L: 4 T: 0 P: 0 C:		
Outcome	I/I Sem	Power Quality (A953107)	4		
After the completio	n of this course, the student	s should be able to	. 11		
<u> </u>	To relate the basic	architecture and addressing modes of a microco	ontroller.		
2	Distinguish types of computers & microcontrollers and explain the principles of top				
	down design to microcontroller software development				
3	demonstrate assembly language programs for the 8-bit, 16-bit and 32-bit				
	Microcontroller, assembly language code for high-level language structures such as				
	IF-THENELSE and DO-WHILE				
4	analyze a typical I/O interface and to discuss timing issues				
5	Develop Real time	e Applications of Microcontrollers & Demonstra	te RTOS for		
	Microcontrollers.				
6	Translate Hardwar	re applications using Microcontrollers.			
Course	Year / semester	Subject Name (Subject Code)	L: 3 T: 0 P: 0 C:		
Outcome	I/I Sem	Microcontrollers and applications (A953108)	3		
After the completio	n of this course, the student	s should be able to			
1	To relate the basic	architecture and addressing modes of a microco	ontroller.		
2	Distinguish types	of computers & microcontrollers and explain the	e principles of top		
	down design to mi	icrocontroller software development			
3	demonstrate assen	nbly language programs for the 8-bit, 16-bit and	32-bit		
	Microcontroller, a	assembly language code for high-level language	structures such as		
	IF-THENELSE ar	nd DO-WHILE			
4	analyze a typical I	/O interface and to discuss timing issues			
5	Develop Real time	e Applications of Microcontrollers & Demonstra	te RTOS for		
	Microcontrollers.				
6	Translate Hardwar	re applications using Microcontrollers.			
Course	Year / semester	Subject Name (Subject Code)	L: 3 T: 0 P: 0 C:		
Outcome	I/I Sem	Distribution Automation (A953109)	3		
After the completio	n of this course, the student	s should be able to			
1	Learn the need of	structure of power system automation and its evo	olution.		



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2	Classify various power system automation schemes				
3	Learn to implement power system automation and protection using SCADA.				
4	Learn the importance of EMS in power system operation.				
5	Learn the architecture of PLC and its application in power system automation				
6	Know the control schemes of distribution automation and substation automation				
Course	Year / semester	Subject Name (Subject Code)	L: 4 T: 0 P: 0 C:		
Outcome	I/I Sem	Optimization Techniques (A953110)	4		
After the completio	n of this course, the students should be able to				
1	Study the need of optimisation in electrical engineering problems				
2	Learn the convent	ional or classical optimisation techniques			
3	Learn to formulate	e the problem with constrained and unconstrained	1 cases		
4	Explore various m	odern intelligent optimisation techniques			
5	Apply these techn	iques to real world problems such as transportati	on problem,		
	travelling salesma	n problem	1 /		
6	Study various limit	tations in these techniques			
Course	Year / semester	Subject Name (Subject Code)	L: 3 T: 0 P: 0 C:		
Outcome	I/I Sem	Digital control systems (A953111)	3		
After the completio	n of this course, the student	s should be able to	<u> </u>		
1	Deduce the control	l system to block diagram for various analysis			
2	Acquire a strong f	oundation in sampling and reconstruction Z-tran	sforms.		
3	Apply knowledge	of mathematics, Z-plane analysis to discrete tim	e control systems.		
4	Know sampling an	nd reconstruction, Z -transforms.			
5	Replace the conventional control system with Digital control system.				
6	Evaluate to Apply	Z-plane analysis of discrete time control system	S		
Course	Vear / semester Subject Name (Subject Code) L: 3 T: 0 P: 0 C:				
Outcome	I/I Sem	Renewable energy systems (A953112)	3		
After the completio	n of this course, the student	s should be able to			
1	Explore various re	enewable energy sources to produce electrical energy	ergy		
2	Study the characte	pristics of PV cell- photo voltaic modules and its	applications		
3	Learn the basics o	f wind energy conversion systems and bio-mass	energy generation		
4	Explore various W	Vave energy conversion machines - Ocean Thern	nal Energy		
	conversion schem	es			
5	Know the need of	hybrid energy systems such as geothermal and f	uel cells		
6	Study the impact of	of various renewable energy sources on environn	nent.		
Course	Year / semester	Subject Name (Subject Code)	L: 3 T: 0 P: 0 C:		
Outcome	I/I Sem	HVDC Transmission (A953113)	3		
After the completio	n of this course, the student	s should be able to			
1	Study the basic po	ower handling capabilities of HVDC lines			
2	Explore various c	onfigurations and conversion principles of stat	ic power converters		
3	Learn the rectifier	and inverter operations, commutation process a	t converter stations.		
4	Apply AC/DC filt	ers for harmonic elimination in HVDC link			
5	Explore various c	ontrols adapted in HVDC converters			
6	Identify various in	nstability problems in HV AC and DC system			
Course	Year / semester	Subject Name (Subject Code)	L: 3 T: 0 P: 0 C:		
Outcome	I/I Sem	Analysis of power Electronic converters (A953114)	3		



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After the completio	n of this course, the student	s should be able to		
1	Understand the	characteristics and principle of operation	of modern power	
	semiconductor de	vices.		
2	Comprehend the concepts of different power converters and their applications			
3	Analyze and design switched mode regulators for various industrial applications			
4	Knowledge on various converter topologies			
5	Choose appropriat	e device for a particular converter topology.		
6	Use power electronic simulation packages for analyzing and designing power			
	converters.			
Course	Year / semester	Subject Name (Subject Code)	L: 3 T: 0 P: 0 C:	
Outcome	I/I Sem	Embedded Systems (A953115)	3	
After the completio	n of this course, the student	s should be able to		
1	Understand the ba	sics of an embedded system		
2	Learn the method	of designing an embedded system for any type o	f applications	
3	Understand the op	erating systems concepts, types and choosing RT	TOS	
4	Design, implemen	t and test an embedded system		
5	Understand types	of memory and interacting to external world		
6	Learn embedded f	ïrmware design approaches		
Course	Year / semester	Subject Name (Subject Code)	L: 0 T: 0 P: 4 C:	
Outcome	I/I Sem	Power Systems Lab-1 (A953116)	2	
After the completio	n of this course, the student	s should be able to		
1	Able to demonstrate the symmetrical and unsymmetrical fault in the generator.			
2	Realise the Ferranti effect in the transmission line and implement feeder protection			
	under over current	t operation by constructing the circuits		
3	Study the operation various static relays for over current and over voltage condition			
4	Visualise the diffe	rential protection of transformer for external and	internal faults	
Course	Year/Semester	Subject Name (Subject Code)	L: 3 T: 0 P: 0 C:	
Outcome	I/II Sem	Power System Dynamics (A955201)	3	
After the completio	fter the completion of this course, the students should be able to			
1	Learn the basics o	i system dynamics and able to analyse steady sta	te stability and	
2	A la la da una a la la servicio de la la servicio de la la da una a la la da una da da	-1	· 1	
Δ	Able to model syn	tion	ion analyse its	
2	dynamics of opera	uion.		
5	Model the excitati	on system analyse the dynamics of the synchron	ous machine	
	Connected to infin	Ite bus. $\mathbf{D} = \mathbf{D} + \mathbf{D} $		
4	Examine the small	I signal stability of the system using Routh's Hur	witz criterion	
5	Know the need of	PSS in control signals	• 1 1	
6	Dynamic compens	sator analysis of single machine infinite bus syste	em with and	
	without PSS.	Cubicat Name (Cubicat Code)		
Course	Year / semester	Flexible AC Transmission Systems (FACTS)	L: 4 T: 0 P: 0 C:	
Outcome	1/11 Sem	(A953202)	4	
After the completio	n of this course. the student	s should be able to		
1	Know the concept	s and types of FACTS controllers		
2	Learn various con	verters employed for FACTS controllers		
3	Study the impact of	of FACTS devices in the power flow in the AC s	vstem	
	study the impact of FACTS devices in the power now in the AC system			



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4	Learn various shunt compensation using SVC and STATCOM		
5	Learn various series compensators such as TCSC, TSSC		
6	Explore the concept of UPFC and its application.		
Course	Year / semester	Subject Name (Subject Code)	L: 4 T: 0 P: 0 C:
Outcome	I/II Sem	Power System Operation and Deregulation	4
		(A953203)	
After the completio	n of this course, the student	s should be able to	antrat madala
	Acquire basic knowledge on restructuring of power industry and market models.		
2	Impart knowledge	on fundamental concepts of congestion manager	ment
3	Knowledge on var	ious anciliary service providers	
4	Illustrate various 1	nternational Transmission pricing paradigms	
5	Idea on frameworl	c of Indian power sector and its initiatives	
6	The reforms in Inc	lian power sector	
Course	Year / semester	Gas Insulated Systems(GIS) (A953204)	L: 4 T: 0 P: 0 C:
Outcome	I/II Sem		4
Course	Voar / somostor	Subject Name (Subject Code)	I • 4 T• 0 P• 0
Outcome	I cal / semester	Programmable Logic Controllers and their	$C\cdot 4$
Outcome		Applications (A953205)	0.4
After the completio	n of this course, the student	s should be able to	
1	Gain Comprehens	ive knowledge of using advanced controllers in r	neasurement and
	control instrument	ation.	
2	Illustrate about da	ta acquisition - process of collecting information	n from field
	instruments.		
3	Analyze Programmable Logic Controller (PLC), IO Modules and internal features.		
4	Comprehend Programming in Ladder Logic, addressing of I/O.		
5	Apply PID and its	s Tuning.	
6	Develop ladder log	gic programming for simple process	
Course	Year / semester	Subject Name (Subject Code)	L: 3 T: 0 P: 0 C:
Outcome	I/II Sem	High frequency magnetic components	3
After the completio	n of this course, the student	(A953200)	
1	Learn the fundame	entals of magnetic devices	
2	Explore the proper	rties of magnetic core materials	
3	Study the various	effects that exists the round conductor carrying A	AC currents
4	Evaluate the energy	encers that exists the round conductor carrying r	
5	Design of transfor	mers for fly-back converters in CCM	
6	Design the integra	ted inductors and self canacitance for high freque	ency applications
Course	Vear / semester	Subject Name (Subject Code)	
Outcome	I/II Sem	Reactive Power Compensation and	
Guttome		Management (A953207)	•
After the completio	n of this course, the student	s should be able to	
1	Identify the necess	sity of reactive power compensation	
2	Describe load com	pensation	
3	Select various type	es of reactive power compensation in transmission	on systems
4	Characterize distri	bution side and utility side reactive power.	
5	Understand issues related to power system stability and control.		



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6	Detect reactive power compensation techniques & their practical importance			
Course	Year / semester Subject Name (Subject Code) L: 3 T: 0 P: 0 C:			
Outcome	I/II Sem	Power System Reliability (A953208)	3	
After the completio	n of this course, the student	s should be able to		
1	To identify the get	neration system model and recursive relation for	capacitive model	
	building			
2	calculate the equiv	valent transitional rates, cumulative probability a	nd cumulative	
	frequency			
3	Evaluate cumulat	ive probability and cumulative frequency of non-	-identical	
	generating units an	nd merging generation and load		
4	Distinguish variou	is approaches to evaluate operating reserves and	bulk power	
	generation reserve			
5	Analyse the reliab	ility indices on radial and weakly meshed distrib	ution networks	
6	Study the effect of	f short circuits in substation and switching station	ns.	
Course	Year / semester	Subject Name (Subject Code)	L: 3 T: 0 P: 0 C:	
Outcome	I/II Sem	Voltage Stability (A953209)	3	
After the completio	n of this course, the student	s should be able to		
1	Identify the necess	sity of reactive power compensation		
2	Describe load con	npensation		
3	Select various type	es of reactive power compensation in transmission	on systems	
4	Characterize distri	ibution side and utility side reactive power.		
5	Understand issues	related to power system stability and control.		
6	Detect reactive power compensation techniques & their practical importance			
	-	1 1 1	L	
Course	Year / semester	Subject Name (Subject Code)	L: 4 T: 0 P: 0 C:	
Course Outcome	Year / semester I/II Sem	Subject Name (Subject Code) Instrumentation & Control (A953210)	L: 4 T: 0 P: 0 C: 4	
Course Outcome After the completio	Year / semester I/II Sem n of this course, the student	Subject Name (Subject Code) Instrumentation & Control (A953210) s should be able to	L: 4 T: 0 P: 0 C: 4	
Course Outcome After the completio	Year / semester I/II Sem n of this course, the student Survey various me	Subject Name (Subject Code) Instrumentation & Control (A953210) s should be able to ethods of power generation	L: 4 T: 0 P: 0 C: 4	
Course Outcome After the completio	Year / semester I/II Sem n of this course, the student Survey various me Understand the im	Subject Name (Subject Code) Instrumentation & Control (A953210) s should be able to ethods of power generation aportance of instrumentation in power generation	L: 4 T: 0 P: 0 C: 4	
Course Outcome After the completio 1 2 3	Year / semester I/II Sem n of this course, the student Survey various me Understand the im Explore various m	Subject Name (Subject Code) Instrumentation & Control (A953210) s should be able to ethods of power generation aportance of instrumentation in power generation heasuring and supervising systems involved in the	L: 4 T: 0 P: 0 C: 4 ermal power plant	
Course Outcome After the completio 1 2 3	Year / semester I/II Sem n of this course, the student Survey various me Understand the im Explore various m processes such as	Subject Name (Subject Code) Instrumentation & Control (A953210) s should be able to ethods of power generation portance of instrumentation in power generation heasuring and supervising systems involved in the boiler and turbine units	L: 4 T: 0 P: 0 C: 4 ermal power plant	
Course Outcome After the completio 1 2 3 4	Year / semester I/II Sem n of this course, the student Survey various ma Understand the im Explore various m processes such as Understand variou	Subject Name (Subject Code) Instrumentation & Control (A953210) s should be able to ethods of power generation aportance of instrumentation in power generation heasuring and supervising systems involved in the boiler and turbine units as controls employed in boiler	L: 4 T: 0 P: 0 C: 4 ermal power plant	
Course Outcome After the completio 1 2 3 4 5	Year / semester I/II Sem n of this course, the student Survey various me Understand the im Explore various m processes such as Understand variou Explore the tempe	Subject Name (Subject Code) Instrumentation & Control (A953210) s should be able to ethods of power generation portance of instrumentation in power generation heasuring and supervising systems involved in the boiler and turbine units is controls employed in boiler erature and pressure controls in turbine	L: 4 T: 0 P: 0 C: 4 ermal power plant	
Course Outcome After the completio 1 2 3 4 5 6	Year / semester I/II Sem n of this course, the student Survey various me Understand the im Explore various m processes such as Understand variou Explore the tempe Study the nuclear	Subject Name (Subject Code) Instrumentation & Control (A953210) s should be able to ethods of power generation aportance of instrumentation in power generation beasuring and supervising systems involved in the boiler and turbine units is controls employed in boiler erature and pressure controls in turbine power plant instrumentation	L: 4 T: 0 P: 0 C: 4 ermal power plant	
Course Outcome After the completio 1 2 3 4 5 6 Course	Year / semester I/II Sem n of this course, the student Survey various ma Understand the im Explore various m processes such as Understand variou Explore the tempe Study the nuclear Year / semester	Subject Name (Subject Code) Instrumentation & Control (A953210) s should be able to ethods of power generation aportance of instrumentation in power generation heasuring and supervising systems involved in the boiler and turbine units is controls employed in boiler brature and pressure controls in turbine power plant instrumentation Subject Name (Subject Code) bratellicent Control (A052211)	L: 4 T: 0 P: 0 C: 4 ermal power plant L: 3 T: 0 P: 0 C:	
Course Outcome After the completio 1 2 3 4 5 6 Course Outcome	Year / semester I/II Sem n of this course, the student Survey various me Understand the im Explore various m processes such as Understand variou Explore the tempe Study the nuclear Year / semester I/II Sem	Subject Name (Subject Code) Instrumentation & Control (A953210) s should be able to ethods of power generation portance of instrumentation in power generation leasuring and supervising systems involved in the boiler and turbine units is controls employed in boiler erature and pressure controls in turbine power plant instrumentation Subject Name (Subject Code) Intelligent Control (A953211)	L: 3 T: 0 P: 0 C: 4 L: 3 T: 0 P: 0 C: 3	
Course Outcome After the completio 1 2 3 4 5 6 Course Outcome After the completio	Year / semester I/II Sem n of this course, the student Survey various me Understand the im Explore various m processes such as Understand variou Explore the tempe Study the nuclear Year / semester I/II Sem n of this course, the student	Subject Name (Subject Code) Instrumentation & Control (A953210) s should be able to ethods of power generation aportance of instrumentation in power generation beasuring and supervising systems involved in the boiler and turbine units is controls employed in boiler erature and pressure controls in turbine power plant instrumentation Subject Name (Subject Code) Intelligent Control (A953211) s should be able to	L: 3 T: 0 P: 0 C: 4 L: 3 T: 0 P: 0 C: 3	
Course Outcome After the completio 1 2 3 3 4 5 6 Course Outcome After the completio 1	Year / semester I/II Sem n of this course, the student Survey various may Understand the im Explore various may processes such as Understand variou Explore the tempe Study the nuclear Year / semester I/II Sem n of this course, the student Learn the architec	Subject Name (Subject Code) Instrumentation & Control (A953210) s should be able to ethods of power generation aportance of instrumentation in power generation beasuring and supervising systems involved in the boiler and turbine units as controls employed in boiler erature and pressure controls in turbine power plant instrumentation Subject Name (Subject Code) Intelligent Control (A953211) s should be able to ture of Intelligent control	L: 3 T: 0 P: 0 C: 4 L: 3 T: 0 P: 0 C: 3	
Course Outcome After the completio 1 2 3 4 5 6 Course Outcome After the completio 1 2	Year / semester I/II Sem n of this course, the student Survey various me Understand the im Explore various m processes such as Understand variou Explore the tempe Study the nuclear Year / semester I/II Sem n of this course, the student Learn the architec Learn the basic art	Subject Name (Subject Code) Instrumentation & Control (A953210) s should be able to ethods of power generation aportance of instrumentation in power generation beasuring and supervising systems involved in the boiler and turbine units as controls employed in boiler erature and pressure controls in turbine power plant instrumentation Subject Name (Subject Code) Intelligent Control (A953211) s should be able to ture of Intelligent control tificial neural network and its mathematical mode	L: 3 T: 0 P: 0 C: 4 L: 3 T: 0 P: 0 C: 3	
Course OutcomeAfter the completio123456Course OutcomeAfter the completio123	Year / semester I/II Sem n of this course, the student Survey various may Understand the im Explore various m processes such as Understand variou Explore the tempe Study the nuclear Year / semester I/II Sem n of this course, the student Learn the architec Learn the basic art Train and test the	Subject Name (Subject Code) Instrumentation & Control (A953210) s should be able to ethods of power generation aportance of instrumentation in power generation beasuring and supervising systems involved in the boiler and turbine units is controls employed in boiler erature and pressure controls in turbine power plant instrumentation Subject Name (Subject Code) Intelligent Control (A953211) s should be able to ture of Intelligent control tificial neural network and its mathematical mode neural network with various configurations.	L: 3 T: 0 P: 0 C: 4 L: 3 T: 0 P: 0 C: 3	
Course Outcome After the completio 1 2 3 4 5 6 Course Outcome After the completio 1 2 3 4	Year / semester I/II Sem n of this course, the student Survey various ma Understand the im Explore various m processes such as Understand variou Explore the tempe Study the nuclear Year / semester I/II Sem n of this course, the student Learn the architec Learn the basic art Train and test the Apply genetic algo	Subject Name (Subject Code) Instrumentation & Control (A953210) s should be able to ethods of power generation aportance of instrumentation in power generation heasuring and supervising systems involved in the boiler and turbine units as controls employed in boiler erature and pressure controls in turbine power plant instrumentation Subject Name (Subject Code) Intelligent Control (A953211) s should be able to ture of Intelligent control tificial neural network and its mathematical mode neural network with various configurations. porthm for various optimisation problems	L: 3 T: 0 P: 0 C: 4 L: 3 T: 0 P: 0 C: 3	
Course OutcomeAfter the completio123456Course OutcomeAfter the completio12345	Year / semester I/II Sem n of this course, the student Survey various me Understand the im Explore various m processes such as Understand variou Explore the tempe Study the nuclear Year / semester I/II Sem n of this course, the student Learn the architec Learn the basic art Train and test the Apply genetic alge	Subject Name (Subject Code) Instrumentation & Control (A953210) s should be able to ethods of power generation aportance of instrumentation in power generation beasuring and supervising systems involved in the boiler and turbine units as controls employed in boiler erature and pressure controls in turbine power plant instrumentation Subject Name (Subject Code) Intelligent Control (A953211) s should be able to ture of Intelligent control tificial neural network and its mathematical mode neural network with various configurations. Drithm for various optimisation problems I different system with fuzzy logic controller	L: 4 T: 0 P: 0 C: 4 ermal power plant L: 3 T: 0 P: 0 C: 3 el	
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	conditions.			
2	Understand the a	advantages of DC distribution and developing	ng technologies in	
	distribution		0 0	
3	Discriminate the	trade-off between economics and reliability of	f an electric power	
	system.		······	
4	Differentiate vari	ous investment options (e.g. generation capacity)	cities transmission	
•	renewable deman	d-side resources etc) in electricity markets	intes, transmission,	
5	Analyze the development of smart and intelligent domestic systems			
6	Recite the structure	re of an electricity market in either regulated or	deregulated market	
0	conditions	te of an electricity market in entier regulated of	deregulated market	
Course	Voor / comostor	Subject Name (Subject Code)		
Outcome	I ear / semester	AI Techniques in Electrical Engineering		
Outcome	I/II Sem	(A953213)	3	
After the completio	n of this course, the student	s should be able to		
1	Gain knowledge o	n soft computing techniques such as artificial ne	ural networks,	
1	Fuzzy logic and ge	enetic Algorithms.		
2	Learn the concept	s of feed forward neural networks and feedback	neural networks.	
2	Get the concept of	fuzziness involved in various systems and comp	orehensive	
5	knowledge of fuzz	zy logic control and to design the fuzzy rules		
4	Acquire complete	knowledge on genetic algorithm including thre	e genetic operators	
5	Explore various po	ower system problems which can utilize these Al	I techniques	
6	Assess system stal	bility using AI techniques		
Course	Year / semester	Subject Name (Subject Code)	L: 3 T: 0 P: 0 C:	
Outcome	I/II Sem	Reliability Engineering (A953214)	3	
After the completio	n of this course, the student	s should be able to		
1	To identify the generation system model and recursive relation for capacitive model			
	building			
2	calculate the equiv	valent transitional rates, cumulative probability a	nd cumulative	
	frequency			
3	Evaluate cumulat	ive probability and cumulative frequency of non	-identical	
	generating units an	nd merging generation and load		
4	Distinguish variou	s approaches to evaluate operating reserves and	bulk power	
	generation reserve			
5	Analyse the reliab	ility indices on radial and weakly meshed distrib	oution networks	
6	Study the effect of	f short circuits in substation and switching station	ns.	
Course	Year / semester	Subject Name (Subject Code)	L: 3 T: 0 P: 0 C:	
Outcome	I/II Sem	Energy Auditing, Conservation &	3	
		Management (A953215)		
After the completio	Know the necessit	x of conservation of energy		
2	Generalize the ma	thods of energy management		
3	Illustrate the facto	rs to increase the efficiency of electrical equipme	ent	
<u> </u>	Detect the benefit	s of carrying out energy audits		
5	A nalyze the now	r factor and to design a good illumination system	1	
5	Determine nov by	the periods for energy saying equipment	1	
Course	Voor / somester	Subject Name (Subject Code)	I.OT.OD.4C.	
Course	i ear / semester	Power Systems Lab-II (A953216)		



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Outcome	I/II Sem		2			
After the completion of this course, the students should be able to						
1	Study the characteristics of microprocessor based relays					
2	Able to protect the feeder from faulty condition using over current relay operation					
3	Study the Characteristics of IDMT Electromagnetic Over Current Relay					
4	Study the phase failure and phase reversal protection with static negative sequence					
4	relay					
Course	Year / semester	ear / semester Subject Name (Subject Code) L: 0 T: 0 P: 4				
Outcome	I/II Sem	Seminar-II (A953217)	C:2			

Vaagdevi College of Engineering-Autonomous Bollikunta, Warangal-506005 Department Of MBA MBA R18 COURSE OUTCOMES

I/I SEM					
Course out	Year/ semester:	Subject name code:	No. of Hours	Credits:	
come	I/I Sem.	Business Environment	L:4 T:0 P:0	4	
		(M18MB01)			
On successfu	ul completion of this	s course, student should be able to:			
1	Explains the concept	pt of BE and different techniques of en	vironmental scann	ing process.	
2	Describes economi	Describes economic systems, GATT, WTO, Fiscal and monitory policies			
3	Emphasizes on Ind	ustrial Policy and regulatory structure			
4	Explains socio poli	tical environment.			
5	Interprets India trac	le policy, EXIM Policies and FEMA.			
Course out	Year/ Semester:	Subject name code:	No. of Hours	Credits: 4	
come	I/I Sem	Managerial Economics	L:4 T:0 P:0		
		(M18 MB02)			
On successfu	ul completion of this	s course, student should be able to:			
1	solve problems face	ed by the business organization			
2	apply the tools and	techniques in real business situations.			
3	determine the product	uction factors and returns			
4	analyse the differen	nt costs			
5	formulate different	pricing strategies and profit policies	1	1	
Course out	Year/ semester:	Subject name code:	No. of Hours	Credits: 4	
come	I/I Sem.	Management and Organization	L:4 T:0 P:0		
		Behaviour (M18MB03)			
On successfu	ul completion of this	s course, student should be able to:			
1	Show the significar	nce of fundamentals of Management a	nd its contributions	•	
2	Outline the plannin	g process and types of plans in dynam	ic environment, de	velop the	
	decision making st	yles in various situations in organization	on.		
3	Demonstrate the or	ganization structures with its merits an	d demerits, Contra	st between	
	authority, power an	d influence, Asses the significance of	controlling in an or	rganization.	
4	Examine individua	Il and group behavior in an organizatio	n using personality	theories	
5	Identify how manage	gers apply different leadership styles a	nd motivation theo	ries in an	
~	organization.	~		~	
Course out	Year/ semester:	Subject name code:	No. of Hours	Credits:4	
come	1/1 Sem.	Accounting for Management	L:4 1:0 P:0		
Un successfu	Li completion of this	s course, student should be able to:			
	Explain the importa	ance of Accounting.	to of the course		
2	Explain Accounting	g cycle in preparing financial statemen	is of the company.		
5	Plan the process of issue of shares and debentures for raising capital by the company.				

Make use of funds flow statements in the company.				
Hours Credits: 4				
01.0				
ment decision making				
and choose appropriate measures of central tendency and dispersion				
between variables and				
ables using regression				
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amine goodness of th				
Hours Credits:4				
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te for business				
situations.				
Demonstrate the student effectively deliver on oral presentations.				
e writing skills.				
U				
Minimize the student negative attitudes towards the verbal and nonverbal				
nverbal				
nverbal				
nverbal Hours Credits:3				
Hours P:3				
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nverbal Hours 0 P:3 rge. through power point Hours Credits:4				
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nverbal Hours 0 P:3 rge. through power point Hours 0 P:0				
nverbal Hours 0 P:3 rge. through power point Hours 0 P:0				

4	Make use of PLC fe	or framing marketing strategies and ap	praise the importa	nce of	
	promotion mix.				
5	Utilize the different pricing strategies for profit maximization.				
Course out	Year/ semester:	Subject name code:	No. of Hours	Credits: 4	
come	I/II Sem.	Human Resource Management	L:4 T:0 P:0		
		(M18MB09)			
On successfu	ul completion of this	s course, student should be able to:			
1	Define the basic concepts of HRM, Its model.				
2	Demonstrate HRP	process and Job Analysis.			
3	Illustrate the techni	ques and tools for training and Develo	pment, performance	ce appraisal.	
4	Infer Industrial Rela settlements.	ations System Grievance redressal me	chanism and dispu	te	
5	Recommend and ap	praise the contemporary issues related	l to HR practices in	n Global	
	perspective.				
Course out	Year/ semester:	Subject name code:	No. of Hours	Credits:4	
come	I/II sem	Financial Management	L:4 T:0 P:0		
		(18MBA10)			
On successfu	ul completion of this	s course, student should be able to:			
1	Identify the importa	ance of profit maximization and wealth	h maximization		
2	Apply different tech	hniques for investment decision proces	ss and measuring	the cost of	
	capital				
3	Analyze the capital	structure theories			
4	Examine the factor	s determining dividend and its valuation	on		
5	Assess the needs ar	d planning of working capital	1	1	
Course out	Year/ semester:	Subject name code:	No. of Hours	Credits:4	
come	I/II sem	Business Research Methods	L:4 T:0 P:0		
		(M18MB11)			
	On successful co	mpletion of this course, student sho	uld be able to:		
1	What is research m	ethodology and why it is useful.			
2	Explain the researc	h problem and research design			
3	Make use of question	onnaire and methods of data collection	l		
4	Importance of resea	arch structure			
5	Influence of researc	ch reference	NT 6 TT		
Course out	Year/ semester:	Subject name code:	No. of Hours	Credits:4	
come	I/II Sem.	Quantitative Analysis for	L:4 T:0 P:0		
		Business Decisions (M18MB12)			
On successfu	ul completion of this	s course, student should be able to:			
1	Define OR and OR	Model.			
2	Construct the struct	ture of LPP.			
3	Compare Two-phas	se method and Big-M method.			
4	Build the mathemat	ical model of transportation problem.			
5	How to solve the A	ssignment problem.	NT 0.77		
Course out	Year/ semester:	Subject name code:	No. of Hours	Credits:4	
come	I/II sem	Cost & Management Accounting (M18MB13)	L:4 T:0 P:0		

On successful completion of this course, student should be able to:				
1	Distinguish Financial Accounting, Cost accounting & Management Accounting			
2	Analyze Costing fo	r specific industries.		
3	Apply Break Even	analysis for various business problems	5	
4	Classify and evalua	te budgets.		
5	Compare and contra	ast standard cost ,estimated cost & ma	rginal cost	
Course out	Year/ semester:	Subject name code:	No. of Hours	Credits:3
come	I/II sem	Soft Skills Lab (M18MB14)	L:0 T:0 P:4	
On successfu	ul completion of this	s course, student should be able to:		
1	show how to overce	ome fear of facing interviews		
2	Improve communic	ation skills and able to convince their	view point to the s	uperior,
	peers and subordinates.			
3	Adopt Time management skills to efficiently manage time in meeting deadlines.			
4	Compare Traits of p	positive thinking and high achievers		
5	Improve General kr	nowledge and current information.		

II/I Sem				
Course out	Year/ semester:	Subject name code: Strategic	No. of Hours	Credits: 4
come	II/I Sem.	Management (M18MB15)	L:4 T:0 P:0	
On successfu	ul completion of this	s course, student should be able to:		
1	Formulate organiza	tional objectives, policies, vision and	mission and outline	e the
	concepts in strategi	c management.		
2	Define the role of s	trategist in an organization.		
3	Evaluate the perfor	mance by using qualitative and quantit	tative benchmarkin	g technique.
4	Identify diversifyin	g strategies and define why firms dive	rsify?	
5	Propose strategies f	or competing in global markets.		
Course out	Year/ semester:	Subject name code:	No. of Hours	Credits:4
come	II/I sem	Entrepreneurship (M18MB16)	L:4 T:0 P:0	
On successfu	ul completion of this	s course, student should be able to:		
1	Explains characteri	stics, Qualities, Skill and Functions of	Entrepreneur.	
2	Infers financial Inst	itutions assistance to promote Entrepr	eneurship.	
3	Relates Technologi	cal competitiveness, legal regulatory s	systems, patents, tra	ademarks
	and intellectual pro	perty rights to Entrepreneurship.		
4	Summarizes necess	ity for business ethics and ethical guid	lelines in business.	
5	Recalls corporate g	overnance and its History and theoreti	cal basis of corpora	ate
	Governance.			
Course out	Year/ semester:	Subject name code:	No. of Hours	Credits: 3
come	II/I sem	Intellectual Property Rights	L:4 T:0 P:0	
		(M18MB17A)		
On successfu	ul completion of this	s course, student should be able to:		
1	Outline the increase	ng importance of intellectual property	rights	
2	Utilize post registr	ation procedures and trade mark regist	ration process	

3	Explain the copyrig	Explain the copyright principles and rights			
4	Prioritize the law of patents and patent ownership.				
5	Develop the trade s	ecret and maintenance.			
Course out	Year/ semester:	Subject name code: Stress	No. of Hours	Credits:3	
come	II/I sem	Management (M18MB17B)	L:4 T:0 P:0		
On successfu	al completion of this	s course, student should be able to:	•		
1	Define the stress an	d Symptoms of stress			
2	Identify various issued	ues in crisis management			
3	Develop the relation	nship between the teams			
4	Improve the organized	zation personality of employee			
5	Discuss the skills re	equired for personality development			
Course out	Year/ semester:	Subject name code:	No. of Hours	Credits:3	
come	II/I sem	Agri-Business Management	L:4 T:0 P:0		
		(M18MB17C)			
On successfu	al completion of this	s course, student should be able to:			
1	Define the role of a	griculture in economic development			
2	Make use of market	ting of agriculture produce and agenci	es through which a	agriculture	
	produce is marketed	1			
3	Identify and elimination	ate the defects of agricultural marketing	ıg		
4	Inspect the agricult	ural prices and price policy			
5	Plan the duties and	responsibilities of marketing function	aries.	•	
Course out	Year/ semester:	Subject name code: Tourism and	No. of Hours	Credits: 3	
come	II/I com				
come	II/I Selli	Hospitality Management	L:4 T:0 P:0		
	II/I Selli	(M18MB17D)	L:4 1:0 P:0		
On successfu	11/1 sem	(M18MB17D) s course, student should be able to:	L:4 T:0 P:0		
On successfu	11 completion of this List out the differen	(M18MB17D) s course, student should be able to: at concepts of Tourism management	L:4 T:0 P:0		
On successfu 1 2	I completion of this List out the different Identify the factors	(M18MB17D) s course, student should be able to: at concepts of Tourism management affecting hospitality and tourism indu	L:4 T:0 P:0		
On successfu 1 2 3	Il completion of this List out the different Identify the factors Improve the employ	(M18MB17D) s course, student should be able to: at concepts of Tourism management affecting hospitality and tourism indu yment opportunities in Hospitality	stry		
On successful 1 2 3 4	I completion of this List out the different Identify the factors Improve the employ Develop the eco system	(M18MB17D) s course, student should be able to: at concepts of Tourism management affecting hospitality and tourism indu yment opportunities in Hospitality stem and ecotourism activities	stry		
On successful 1 2 3 4 5	If a semi al completion of this List out the different Identify the factors Improve the employ Develop the eco system Solve the various pro-	(M18MB17D) s course, student should be able to: at concepts of Tourism management affecting hospitality and tourism indu yment opportunities in Hospitality stem and ecotourism activities roblems in tourism and Hospitality ma	stry		
On successful12345Course out	If results the sentence of the	Hospitality Management (M18MB17D) s course, student should be able to: at concepts of Tourism management affecting hospitality and tourism indu yment opportunities in Hospitality stem and ecotourism activities roblems in tourism and Hospitality ma Subject name code: Indian	stry nagement No. of Hours	Credits:	
On successfu 1 2 3 4 5 Course out come	Il completion of this List out the different Identify the factors Improve the employ Develop the eco syst Solve the various proversion Year/ semester: II/I sem	Hospitality Management (M18MB17D) s course, student should be able to: at concepts of Tourism management affecting hospitality and tourism indu yment opportunities in Hospitality stem and ecotourism activities roblems in tourism and Hospitality man Subject name code: Indian Constitution (M18MB17E)	stry No. of Hours L:4 T:0 P:0	Credits: 03	
On successful12345Course out comeOn successful	II completion of this List out the different Identify the factors Improve the employ Develop the eco syst Solve the various proversion Year/ semester: II/I sem	Hospitality Management (M18MB17D) s course, student should be able to: at concepts of Tourism management affecting hospitality and tourism indu yment opportunities in Hospitality stem and ecotourism activities roblems in tourism and Hospitality ma Subject name code: Indian Constitution (M18MB17E) s course, student should be able to:	stry nagement No. of Hours L:4 T:0 P:0	Credits: 03	
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5	Improve the spiritua	ality at workplace				
Course out	Year/ semester:	Subject name code: Consumer	No. of Hours	Credits:		
come	II/I Sem	Behavior (M18MB18M1)	L:4 T:0 P:0	03		
On successfu	ll completion of this	s course, student should be able to:				
1	Understand consum	her behaviour research process and rur	al consumer behavi	or.		
2	Understand the environmental influences on consumer behavior and able to appreciate the importance of cultural adaptation of consumer behavior.					
3	Analyze Individua attitudes of consum	Analyze Individual personality and self-concept, consumer perception, changing attitudes of consumers, consumer learning and information processing.				
4	Establish the releva	nce of consumer behaviour models in	decision making.			
5	Makeup role of co place.	nsumerism, consumer safety, and co	onsumer informatio	n at market		
Course out	Year/ semester:	Subject name code: Sales and	No. of Hours	Credits:		
come	II/I Sem	Distribution Management	L:4 T:0 P:0	03		
		(M18MB19M2)				
On successfu	al completion of this	s course, student should be able to:				
1	Explain the fundam	entals of sales management.				
2	Define and formula	te the strategies to effectively manage	company's sales o	perations		
	and identify the role	es and responsibilities of the sales mar	nager.			
3	Develop the sales for	pree productivity and control.				
4	Analyze and impler	nent distribution channel strategy.				
5	Examine the channe	els efficiency and effectiveness in who	plesaling and retaili	ng.		
Course out	Year/ semester: Subject name code: Product and No. of Hours Credits:					
		Subject nume couer i roudet una	i tot of mould			
come	II/I Sem	Brand Management	L:4 T:0 P:0	03		
come	II/I Sem	Brand Management (M18MB20M3)	L:4 T:0 P:0	03		
come	II/I Sem On successful co	Brand Management (M18MB20M3) mpletion of this course, student sho	L:4 T:0 P:0	03		
come	II/I Sem On successful co Discuss the role of	Brand Management (M18MB20M3) mpletion of this course, student sho products in product management.	L:4 T:0 P:0	03		
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come	II/I Sem On successful co Discuss the role of Evaluate the role of Explain the product	Brand Management (M18MB20M3) mpletion of this course, student sho products in product management. product manager in modern marketin portfolios to compare the competitive	L:4 T:0 P:0 uld be able to: g e strategies for prod	03		
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1	Define the financial Institutions markets and services, Explain the financial Reforms				
	after 1991, Regulations and promotional Institutions.				
2	Outline the Banking and non-Banking Institutions.				
3	Distinguish the structure and functioning of money market & capital market.				
4	Evaluate of lease fi	Evaluate of lease finance and Hire Purchase.			
5	Elaborate functions	Elaborate functions and activities of Investment bankers.			
Course out	Year/ semester:	Subject name code: International	No. of Hours	Credits:	
come	II/I Sem	Financial Management	L:4 T:0 P:0	03	
		(M18MB20F3)			
On successfu	sful completion of this course, student should be able to:				
1	To determine differ	ent international Business Methods			
2	To evaluate Balanc	e of payments and International Mone	tary system		
3	To Make use of for	eign exchange market movements.			
4	To make experiment	nt with exchange rate movements			
5	To find the opportu	nities in International financial marke	ts		
Course out	Year/ semester:	Subject name code: Leadership	No. of Hours	Credits:	
come	II/I Sem	and Change Management	L:4 T:0 P:0	03	
		(M18MB18H1)			
On successfu	al completion of this	s course, student should be able to:			
1	Define leadership r	oles and functions.			
2	How to become an	effective leader and his/her leadership	styles.		
3	Explains leadership	styles in organizational work settings			
4	Solve the various p	roblems while inviting change in orga	nization.		
5	Distinguish the rela	tionship between power, politics and	conflicts.		
Course out	Year/ semester:	Subject name code: Management	No. of Hours	Credits:	
come	II/I Sem	of Industrial Relations	L:4 T:0 P:0	03	
		(M18MB19H2)			
On successfu	al completion of this	s course, student should be able to:			
1	Demonstrate indust	rial relation and Indian IR system			
2	Outline the trade un	nion, types and their recognition			
3	Analysis dispute se	ttlement missionary and its instrument	S		
4	Develop grievance	handling procedure			
5	Analyze collective	bargaining levels and legal framework	<u>(</u> S		
Course out	Year/ semester:	Subject name code:	No. of Hours	Credits:	
come	II/I Sem	Compensation Management	L:4 T:0 P:0	03	
		(M18MB20H3)			
On successfu	al completion of this	s course, student should be able to:			
1	Define the compens	sation management and its objectives			
2	Explain issues and	models of executive compensation			
3	Explain the compo	nents of pay structure and its strategy	• • .• • •		
4	Determine internati	onal compensation system and manag	ing variations in in	ternational	
	pay	1 1' 1 '' '' ''			
<u> </u>	Plan employee stoc	k ownership plans and broad based op	tion plans	C 1'4	
Course out	Y ear/ semester:	Subject name code: Internship	INO. OI HOURS	Credits:	
come	II/I sem	and Seminar (M18MB21)	L:0 T:0 P:0	02	

On successfu	al completion of this	s course, student should be able to:		
1	Improve their practical knowledge by working in any organization			
2	Apply their conceptual learning to practical business problems			
3	List out organizational working teams and dynamics of organization			
4	Develop his competencies for future job requirement			
Course out	Year/ semester:	Subject name code: Global	No. of Hours	Credits:
come	II/II Sem	Entrepreneurship (M18MB18E1)	L:4 T:0 P:0	03
On successfu	ll completion of this	s course, student should be able to:		
1	Define the backgrou	und of entrepreneurship and Global en	trepreneurship	
2	Explain critical fact	ors for starting a new venture		
3	Analyze the environ	nmental situation and market opportun	nity	
4	Develop financial a	ssumptions and identifying the startup	capital resource	
5	Estimate startup ca	pital requirement and legal environment	nt	
Course out	Year/ semester:	Subject name code:	No. of Hours	Credits:
come	II/II Sem	MSME	L:4 T:0 P:0	03
		Management(M18MB18E2)		
On successfu	al completion of this	s course, student should be able to:		
1	Define issues and c	hallenges of MSMEs.		
2	Explain various bus	siness opportunities, and formalities fo	r setting up an ente	erprise
3	Develop rural entre	preneurship and a entrepreneurship		
4	Identify and develo	p sources of financial support		
5	Build the role of go	vernment in promoting entrepreneursh	nip	
Course out	Year/ semester:	Subject name code: Women	No. of Hours	Credits:
come	II/II Sem	Entrepreneurship (M18MB20E3)	L:4 T:0 P:0	03
On successfu	al completion of this	s course, student should be able to:		
1	Defines women Ent	trepreneurship, Nature and its intention	n.	
2	Constructs status of	women Entrepreneurship.		
3	Analyze the challer	ages of women Entrepreneurship in Inc	lian scenario.	
4	Outline the Role of	financial institutions in women Entrep	preneurial developr	nent
	programmes.			
5	Develop strategic p	erspective in family business and in In	trapreneurship.	
		II/II Sem		
Course out	Year/ semester:	Subject name code: Business	No. of Hours	Credits:
come	II/II sem	Laws and Ethics (M18MB22)	L:4 T:0 P:0	04
On successfu	al completion of this	s course, student should be able to:		
1	Outline the variou	s laws affecting the business conce	ern. Define the pr	ocedure for
	incorporation and w	vinding up of company		
2	Categorize contrac	ts and define essential elements of	f Indian contract	act and its
	remedies for bread	ch. Explain the general principles,	conditions and w	arranties in
	contract of sale.			
3	Choose the approp	priate negotiable instrument under t	he negotiable inst	trument act.
	Determine the rules	and regulations of GST in India.		
4	Asses the ethical iss	sues in business.		
5	Identify the issues a	and challenges in cybercrime and its ne	eed in Indian conte	xt.
Course out	Year/ semester:	Subject name code: Production	No. of Hours	Credits:

come	II/II sem	and Operations Management	L:4 T:0 P:0	04		
On guagaafu	l completion of this	(MITOMB23)				
	Determine optimum	a production methods. Compare and c	ontrast production	methods		
1	Illustrate the product and process design					
2	Choose the energy	Choose the appropriate facilities location and Plant layout				
3	Choose and apply t	he techniques of sequencing and sche	uling in productio	n control		
	Asses the concents	of quality control	uning in productio	ii contioi.		
5	Apply materials ma	Apply materials management techniques for inventory controlling				
Course out	Year/ semester:	Subject name code: Gender	No. of Hours	Credits:		
come	II/II sem	Sensitization (M18MB24A)	L:4 T:0 P:0	03		
On successfu	l completion of this	s course, student should be able to:				
1	Discuss about key b	biological aspects of genders.				
2	Find Demographic	consequency				
3	Create insight into	gendered division of labour and its rel	ation to politics and	d economics		
4	Identify causes of S	exual violence.	1			
5	Develop a sense of	appreciation of women in all walks of	f life.			
Course out	Year/ semester:	Subject name code: Disaster	No. of Hours	Credits:		
come	II/II sem	Management (M18MB24B)	L:4 T:0 P:0	03		
On successfu	l completion of this	s course, student should be able to:				
1	Define concept of E	Environmental Hazards & Disasters.				
2	Identify causes of e	arthquakes.				
3	Discuss about the d	isasters and their impact on the enviro	onment.			
4	Estimate sedimenta	tion & Environmental problems				
5	Formulate correctiv	e measures of Erosion & Sedimentation	on.			
Course out	Year/ semester:	Subject name code: Health Care	No. of Hours	Credits:		
come	II/II sem	Management (M18MB24C)	L:4 T:0 P:0	03		
On successfu	ll completion of this	s course, student should be able to:				
1	Identify the prevail	ing health care system in India				
2	Avail the facility pr	ovided by the health policies				
3	Adopt the benefits	from different programs introduced by	government			
4	Utilize different hea	althcare schemes and funds offered by	WHO and UNICE	EF		
5	Outline the trends in	n the health insurance sector	T			
Course out	Year/ semester:	Subject name code:	No. of Hours	Credits:03		
come	II/II sem	Data Analytics (M18MB24D)	L:4 T:0 P:0			
On successfu	ll completion of this	s course, student should be able to:				
1	Explain basic Data	concepts such as Data Analytics conc	epts to include Imp	ortance of		
	data analytics, data	visualization tools, Descriptive Statis	tical Measures, Pre	dictive		
2	Analytics, Data Mil	ang, and Simulation	iaa taabniquaa with	aamputar		
2	(MS Excel)	o solve simple tasks using data analyti	ics techniques with	computer		
3	(IVIS LACEI).	ages and disadvantages of simulation	rick analysis and d	acision trag		
5	analysis	iges and disadvantages of sinulation,	115K allarysis allu u			
Δ	Measure the data ar	nalytics parameters (descriptive analytics	ics diagnostic ana	lytics		
	incubile the data al	and the parameters (descriptive analyt	ies, angliostic alla	<i>j</i> (100,		
4	Measure the data and	halytics parameters (descriptive analyt	ics, diagnostic ana	lytics,		

5	Choose the data and	alytics techniques for solving practical	problems in busine	ess.	
Course out	Year/ semester:	Subject name code: Disability &	No. of Hours	Credits:	
come	II/II Sem	Rehabilitation (M18MB24E)	L:4 T:0 P:0	03	
On successfu	l completion of this	s course, student should be able to:			
1	Define the Disabilit	y and Rehabilitation services			
2	Identify causes and	Identify causes and prevention of impairments			
3	List out the differen	nt models of service delivery			
4	Explain the barriers	of Rehabilitation and reforming po	olicies		
5	Design the commun	nity based Rehabilitation, awareness	s and participation	n	
Course out	Year/ semester:	Subject name code:	No. of Hours	Credits:	
come	II/II Sem	Sustainability Management	L:4 T:0 P:0	03	
		(M18MB24F)			
On successfu	al completion of this	s course, student should be able to:			
1	List out the History	and emergence of sustainable develop	oment		
2	Explain the Indian.	Judiciary system and Sustainability c	levelopment		
3	Develop the quality	of life, equation of poverty population	n and pollution		
4	Prioritize biodivers	ity conservation and ecosystem integri	ty		
5	Design the sustaina	ble development strategies			
Course out	Year/ semester:	Subject name code: Customer	No. of Hours	Credits:	
come	II/II Sem	Relationship Management	L:4 T:0 P:0	03	
		(M18MB25M4)			
On successfu	ll completion of this	s course, student should be able to:			
1	Define the various	concepts in customer relationship man	agement		
2	Determine the impo	ortance of customer relationship managed	gement		
3	Explain the recent t	rends in customer relationship manage	ement		
4	Build the customer	relations and customer profile			
5	Develop strategies	for customer, retention and developme	ent		
Course out	Year/ semester:	Subject name code: Services	No. of Hours	Credits:	
come	II/II Sem	Marketing (M18MB26M5)	L:4 T:0 P:0	03	
On successfu	al completion of this	s course, student should be able to:			
1	Differentiate Marke	eting services Vs. Physical services, a	nalyze services ma	arketing mix	
	and Gaps model of	service quality.			
2	Understand consum	ner requirements and extend custome	er relationships wi	th regard to	
	services.				
3	Identify critical is	sues in service design, service blu	e printing, plan	new service	
	development proces	ss and service standards.			
4	Explain the Employ	zee's and Customer's roles in service of	lelivery.		
5	Integrate services	marketing communications and five	categories of str	ategies, and	
	creates an environ	ment that achieves excellence in cus	tomer service. Des	sign the key	
	issues in pricing of	services.		I	
Course out	Year/ semester:	Subject name code: International	No. of Hours	Credits:	
come	II/II Sem	Marketing (M18MB27M6)	L:4 T:0 P:0	03	
On successfu	al completion of this	s course, student should be able to:			
1	Define internationa	I marketing and its environment			
2	Understand world t	rade, features and opportunities			

3	Compare the domestic market with international market				
4	Discuss the various factors influencing pricing decisions				
5	Develop the global	marketing program and segmentation	of product and ser	vices	
Course out	Year/ semester:	Subject name code: Financial	No. of Hours	Credits:	
come	II/I Sem	Derivatives (M18MB25F4)	L:4 T:0 P:0	03	
On successfu	il completion of this	s course, student should be able to:			
1	Define significance	of derivatives in stock in commodity	market.		
2	Explain players in Derivative market				
3	Differentiate forwar	rd and future contract			
4	Analyze Trading w	ith option			
5	Explain strategies in	nvolving option			
Course out	Year/ semester:	Subject name code:	No. of Hours	Credits:	
come	II/II Sem	Strategic Investment & Financing	L:4 T:0 P:0	03	
		Decisions (M18MB26F5)			
On successfu	il completion of this	s course, student should be able to:			
1	Define investment	decisions under conditions of risk and	uncertainty		
2	Make use of discou	nted payback, post payback, return on	investment and su	rplus	
	payback				
3	Maximize the advar	ntages of leasing and leasing decisions			
4	Develop the various	s strategies for financing decisions			
5	Solve various probl	ems on mergers and acquisitions		1	
Course out	Year/ semester:	Subject name code: Corporate	No. of Hours	Credits:	
come	II/II Sem	Taxation and Planning	L:4 T:0 P:0	03	
		(M18MB27F6)			
On successfu	il completion of this	s course, student should be able to:			
1	Express Basic conc	epts of direct & Indirect taxes and able	e to compute Resid	ential Status	
	and Scope of Total	Income of a Company and exempted l	Incomes of compar	ny.	
2	Compute total Income of corporate.				
2	Compute total Inco	me of corporate.			
5	Compute total Inco Identify the importa	me of corporate. ance of Tax planning, Tax Managemer	nt and able to use T	ax planning	
3	Compute total Inco Identify the importa techniques towards	me of corporate. ance of Tax planning, Tax Managemer Capital Structure decisions.	nt and able to use T	ax planning	
4	Compute total Inco Identify the importa techniques towards Use the tax plannin	me of corporate. ance of Tax planning, Tax Managemer Capital Structure decisions. g with reference to setting up of a new	nt and able to use T business.	ax planning	
3 4 6	Compute total Inco Identify the importa techniques towards Use the tax plannin Perform tax plannin	me of corporate. ance of Tax planning, Tax Managemer Capital Structure decisions. g with reference to setting up of a new ng in respect of mergers and Amalgam	t and able to use T business. ations.	Cax planning	
3 4 6 Course	Compute total Inco Identify the importate techniques towards Use the tax plannin Perform tax plannin Year/ semester:	me of corporate. ance of Tax planning, Tax Managemer Capital Structure decisions. g with reference to setting up of a new ng in respect of mergers and Amalgam Subject name code: International	nt and able to use T business. ations. No. of Hours	Credits:	
4 6 Course out come	Compute total Inco Identify the importa techniques towards Use the tax plannin Perform tax plannin Year/ semester: II/II Sem	me of corporate. ance of Tax planning, Tax Managemer Capital Structure decisions. g with reference to setting up of a new ag in respect of mergers and Amalgam Subject name code: International Human Resource Management	t and able to use T business. ations. No. of Hours L:4 T:0 P:0	Credits: 03	
4 6 Course out come	Compute total Inco Identify the importa techniques towards Use the tax plannin Perform tax plannir Year/ semester: II/II Sem	me of corporate. ance of Tax planning, Tax Managemer Capital Structure decisions. g with reference to setting up of a new ng in respect of mergers and Amalgam Subject name code: International Human Resource Management (M18MB25H4)	nt and able to use T business. ations. No. of Hours L:4 T:0 P:0	Credits: 03	
3 4 6 Course out come On successful	Compute total Inco Identify the importa techniques towards Use the tax plannin Perform tax plannin Year/ semester: II/II Sem Il completion of this	me of corporate. ance of Tax planning, Tax Managemer Capital Structure decisions. g with reference to setting up of a new ig in respect of mergers and Amalgam Subject name code: International Human Resource Management (M18MB25H4) s course, student should be able to:	nt and able to use T business. ations. No. of Hours L:4 T:0 P:0	Credits: 03	
3 4 6 Course out come On successful 1	Compute total Inco Identify the importa techniques towards Use the tax plannin Perform tax plannir Year/ semester: II/II Sem Il completion of this Define nature, scop	me of corporate. ance of Tax planning, Tax Managemer Capital Structure decisions. g with reference to setting up of a new ng in respect of mergers and Amalgam Subject name code: International Human Resource Management (M18MB25H4) s course, student should be able to: e and components of IHRM.	nt and able to use T business. ations. No. of Hours L:4 T:0 P:0	Credits: 03	
3 4 6 Course out come On successful 1 2	Compute total Inco Identify the importate techniques towards Use the tax plannin Perform tax plannin Year/ semester: II/II Sem Il completion of this Define nature, scop Compare IHRM and	me of corporate. ance of Tax planning, Tax Managemer Capital Structure decisions. g with reference to setting up of a new ng in respect of mergers and Amalgam Subject name code: International Human Resource Management (M18MB25H4) s course, student should be able to: e and components of IHRM. d domestic HRM	nt and able to use T business. ations. No. of Hours L:4 T:0 P:0	Credits: 03	
346Courseout comeOn successfu123	Compute total Inco Identify the importate techniques towards Use the tax plannin Perform tax plannin Year/ semester: II/II Sem Il completion of this Define nature, scop Compare IHRM and Tell transfer policie	me of corporate. ance of Tax planning, Tax Managemer Capital Structure decisions. g with reference to setting up of a new ag in respect of mergers and Amalgam Subject name code: International Human Resource Management (M18MB25H4) s course, student should be able to: e and components of IHRM. d domestic HRM	nt and able to use T business. ations. No. of Hours L:4 T:0 P:0	Tax planning Credits: 03	
3 4 6 Course out come 0n successfu 1 2 3 4	Compute total Inco Identify the importate techniques towards Use the tax plannin Perform tax plannin Year/ semester: II/II Sem Il completion of this Define nature, scop Compare IHRM and Tell transfer policie Identify IHRM prace	me of corporate. ance of Tax planning, Tax Managemer Capital Structure decisions. g with reference to setting up of a new ng in respect of mergers and Amalgam Subject name code: International Human Resource Management (M18MB25H4) s course, student should be able to: e and components of IHRM. d domestic HRM es and compensation management ctices in selected countries	nt and able to use T business. ations. No. of Hours L:4 T:0 P:0	Credits: 03	
3 4 6 Course out come 0n successfu 1 2 3 4 5	Compute total Inco Identify the importate techniques towards Use the tax plannin Perform tax plannin Year/ semester: II/II Sem Il completion of this Define nature, scop Compare IHRM and Tell transfer policie Identify IHRM prace Classify workers an	me of corporate. ance of Tax planning, Tax Managemer Capital Structure decisions. g with reference to setting up of a new ag in respect of mergers and Amalgam Subject name code: International Human Resource Management (M18MB25H4) s course, student should be able to: e and components of IHRM. d domestic HRM es and compensation management ctices in selected countries ad cadres	nt and able to use T business. ations. No. of Hours L:4 T:0 P:0	Credits: 03	
3 4 6 Course out come 0n successfu 1 2 3 4 5 Course out	Compute total Inco Identify the importa techniques towards Use the tax plannin Perform tax plannin Year/ semester: II/II Sem Il completion of this Define nature, scop Compare IHRM and Tell transfer policie Identify IHRM prac Classify workers an Year/ semester:	me of corporate. ance of Tax planning, Tax Managemer Capital Structure decisions. g with reference to setting up of a new ng in respect of mergers and Amalgam Subject name code: International Human Resource Management (M18MB25H4) s course, student should be able to: e and components of IHRM. d domestic HRM es and compensation management etices in selected countries and cadres Subject name code: Performance	nt and able to use T business. ations. No. of Hours L:4 T:0 P:0	Credits: 03 Credits:	
346Course0n successfu12345Course outcome	Compute total Inco Identify the importa techniques towards Use the tax plannin Perform tax plannin Year/ semester: II/II Sem Il completion of this Define nature, scop Compare IHRM and Tell transfer policie Identify IHRM prac Classify workers an Year/ semester: II/II Sem	me of corporate. ance of Tax planning, Tax Managemer Capital Structure decisions. g with reference to setting up of a new ng in respect of mergers and Amalgam Subject name code: International Human Resource Management (M18MB25H4) s course, student should be able to: e and components of IHRM. d domestic HRM es and compensation management ctices in selected countries and cadres Subject name code: Performance Management Systems	nt and able to use T business. ations. No. of Hours L:4 T:0 P:0 No. of Hours L:4 T:0 P:0	Credits: 03 Credits: 03	
346Course out come0n successfu12345Course out come	Compute total Inco Identify the importate techniques towards Use the tax plannin Perform tax plannin Year/ semester: II/II Sem Il completion of this Define nature, scop Compare IHRM and Tell transfer policie Identify IHRM prace Classify workers an Year/ semester: II/II Sem	me of corporate. ance of Tax planning, Tax Managemer Capital Structure decisions. g with reference to setting up of a new ng in respect of mergers and Amalgam Subject name code: International Human Resource Management (M18MB25H4) s course, student should be able to: e and components of IHRM. d domestic HRM es and compensation management ctices in selected countries nd cadres Subject name code: Performance Management Systems (M18MB26H5)	nt and able to use T business. ations. No. of Hours L:4 T:0 P:0 No. of Hours L:4 T:0 P:0	Credits: 03	

1					
1	Define performance management and methods of performance appraisal				
2	Measure the employee performance towards the predetermine standards				
3	Examine the performance management system and appraisal practices in Asian				
	countries	countries			
4	Improve the employ	yee performance through performance	related concepts		
5	Identify the Legal i	ssues involved in performance manage	ement and reward s	ystems	
Course out	Year/ semester:	Subject name code: Strategic	No. of Hours	Credits:	
come	II/II Sem	Human Resource Management	L:4 T:0 P:0	03	
		(M18MB27F6)			
On successfu	al completion of this	s course, student should be able to:			
	(SHRD)	en strategic business planning (SBP)	and strategic HR de	evelopment	
2	Discuss about trend	ls in utilization of HR and relocation of	of work		
3	Identify managerial	l issues in strategic formulation.			
4	Compare Results O	riented vs Process oriented measures.			
5	Evaluate strategic c	contribution of traditional areas such as	s selection, training	g and	
	compensation		-		
Course out	Year/ semester:	Subject name code:	No. of Hours	Credits:	
come	II/II sem	Comprehensive Subject Viva-	L:0 T:0 P:0	02	
		Voce (M18MB28)			
On successfu	al completion of this	s course, student should be able to:			
1	Appraise and streng	gthen the students conceptual knowled	ge in all the subjec	ts of the	
	semester.				
2	Maximize the comp	petencies regarding subjects.	1	Γ	
Course out	Year/ semester:	Subject name code: Main project	No. of Hours	Credits:	
come	II/II sem	and viva-voce (M18MB29)	L:0 T:0 P:0	04	
On successfu	al completion of this	s course, student should be able to:			
1	Gain knowledge or	real time working environment.			
2	Develop skills in re	port writing through data collection, d	lata analysis, data e	xtraction,	
	presentation and in	terpretation.			
3	Analyze best practi	ces, system, processes, procedures and	l policies of a		
	company/industry i	n different functional areas.			
4	Improve research k	nowledge on business problems			
5	Recommend sugge	stions in scope of the organization		~	
Course out	Year/ semester:	Subject name code:	No. of Hours	Credits:	
come	II/II Sem	Entrepreneurial Finance	L:4 T:0 P:0	03	
		(M18MB25E4)			
On successfu	al completion of this	s course, student should be able to:			
1	Define the challeng	es of entrepreneurs for raising finance			
3	Build the skills, fra	me works and knowledge in entrepren	eurial finance.		
4	Determine the vent	ure worth and basic mechanisms of ve	nture valuation.	<u> </u>	
5	Decide and develop	projected financial statements for dis	counted cash flow	valuation.	
6	Build the financing	for the growing ventures.	NT 077		
Course out come	Year/ semester: II/II Sem	Subject name code: Entrepreneurial Marketing	No. of Hours L:4 T:0 P:0	Credits: 03	

		(M18MB26E5)				
On successful completion of this course, student should be able to:						
1	Explain the charact	eristics, functions of marketing and its	challenges.			
2	Define the concept	of enterprise growth and forms and ty	pes and they able t	o adapt		
	operative and strate	gic targets for growth, and evaluate S	WOT analysis.			
3	Compare growth str	rategies and models for choosing best	strategy in marketi	ng.		
4	Explain segmenting	, Targeting, positioning and pricing in	entrepreneurial			
	communication stra	itegy.				
5	Analyze and able to	choose best entrepreneurial marketin	g tools.			
Course out	Year/ semester:	Subject name code: Creativity	No. of Hours	Credits:		
come	II/II Sem	Innovation & Entrepreneurship	L:4 T:0 P:0	03		
		(M18MB27E6)				
On successfu	ll completion of this	s course, student should be able to:				
1	Explain the creativi	ty phenomenon including spiritual and	d social routes of c	reativity		
2	Adapt entrepreneur	ial and empowerment creativities.				
3	Apply different crea	ative problem solving techniques.				
4	Apply innovation n	nanagement techniques for new produc	ct development.			
5	Apply different inn	ovation techniques for micro and mac	ro economies.			



Viswambhara Educational Society

VAAGDEVI COLLEGE OF ENGINEERING

UGC-Autonomous

Department of Mechanical Engineering

COURSE OUTCOMES FOR B.TECH - ME R18 FOR THE YEAR 2018-2019

Course Outcome	Year/Semester I/I Sem	Subject Name (Subject Code) LINEAR ALGEBRA AND CALCULUS (B18MA01)	No. of Hours L:3 T:1 P:0	Credits: 4		
After the o	completion of this c	course, the students should be able to				
1	1 Write the matrix representation of a set of linear equations and to analyze the solution of the system of equations					
2	Find the Eigen values and Eigen vectors					
3	Reduce the quadrat	ic form to canonical form using orthogonal tra	nsformation			
4	Analyze the nature	of sequence and series.				
5	Solve the application	ons on the mean value theorems.				
6	Evaluate the impro	per integrals using Beta and Gamma functions				
7	Find the extreme values of functions of two variables with/ without constraints.					
Course Outcome	Year / semester I/I Sem	Subject Name (Subject Code) ENGLISH (B18EN01)	No. of Hours L:2 T:0 P:0	Credits:2		
After the o	completion of this c	course, the students should be able to				
1	Use English Lang	uage effectively in spoken and written for	ms.			
2	Comprehend the	given texts and respond appropriately.				
3	Communicate con	nfidently in various contexts and different of	cultures.			
4	Acquire basic pro writing and speak	ficiency in English including reading and l ing skills.	istening compre-	hension,		
Course Outcome	Year / semester I/I Sem	Subject Name (Subject Code) ENGINEERING CHEMISTRY (B18CH01)	No. of Hours L:3 T:1 P:0	Credits: 4		
After the c	completion of this c	course, the students should be able to				
1	The knowledge of	molecular and electronic changes, band theory	related to conduct	tivity.		
2	The knowledge of	water treatment and corrosion.				
3	The knowledge of	organic reaction mechanisms and polymers.				
4	Apply phase rule a	nd adsorption to construct the materials by ana	lyzing their compo	ositions.		

5	The required principles and concepts of electro chemistry and batteries.				
Course Outcome	Year / semester I/I Sem	Subject Name (Subject Code) ENGINEERING GRAPHICS (B18ME01)	No. of Hours L:1 T:0 P:4	Credits: 3	
After the c	completion of this (course, the students should be able to			
1	1 Analyse the Projections of Points.				
2	Understand the projections of solids.				
3	Estimate the use of	drawings, dimensioning, scales and conic sect	tions		
4	Modify the applica	tions of this knowledge in computer graphics.			
5	Compare the Conv	ersion of Isometric views to Orthographic view	/8		
Course Outcome	Year / semester I/I Sem	Subject Name (Subject Code) ENGLISH LANGUAGE AND COMMUNICATION SKILLS LAB(B18EN02)	No. of Hours L:0 T:0 P:2	Credits: 1	
After the c	completion of this (course, the students should be able to	•		
1	Better understandin activities.	ng of nuances of English language through aud	io- visual experier	ice and group	
2	Speaking with clar	ity and confidence which in turn enhances their	r employability sk	ills.	
Course	Year /semester	Subject Name (Subject Code)	No. of Hours	Credits: 4	
Outcome	I/II Sem	DIFFERENTIAL EQUATIONS AND VECTOR CALCULUS (B18MA02)	L:3 T:1 P:0		
After the co	mpletion of this c	ourse, the students should be able to			
1	Identify whether the	he given differential equation of first order is ex	kact or not		
2	Solve higher differ problems.	rential equation and apply the concept of different	ential equation to	real world	
3	Evaluate the multi gravity for cubes,	ple integrals and apply the concept to find areas sphere and rectangular parallel piped.	s, volumes, centre	of mass and	
4	Evaluate the line,	surface and volume integrals and converting the	em from one to an	other.	
Course	Year /Semester	Subject Name (Subject Code)	No. of Hours	Credits:4	
Outcome	I / II Sem	ENGINEERING PHYSICS (B18PH03)	L.5 1.11.0		
After com	pletion of this cou	rse, the student shall be/shall			
1	The student learn	is about transformation concept learns basic	cs of quantum m	echanics.	
2	The student gain new innovations	s knowledge on basics of rigid body dynam and improvements.	nics and lasers wl	hich leads to	
3	The knowledge of technology	of physics relevant to engineering is critical	for converting i	deas into	
4	Characterization materials for var	and study of properties of optodevices help ious engineering applications.	os the students to	prepare new	
Course	Year /Semester	Subject Name (Subject Code)	No. of Hours	Credits:4	
Outcome	I / II Sem	ENGINEERING MECHANICS (B18CE01)	L:3 T:1 P:0		
After com	pletion of this cou	rse, the student shall be/shall			

1	Know the fundamental knowledge of Specification of force vector.			
2	Compare Spatial	Force systems.		
3	Understand the C	Coplanar Force Systems.		
4	Apply Deformat	ion of Stepped shaft due to axial loading in	problems.	
5	Evaluate Kinema	atics Problems and Kinetics Problems.		
Course Outcome	Year /Semester I / II Sem	Subject Name (Subject Code) ENGINEERING WORKSHOP & IT 0WORKSHOP (B18ME02)	No. of Hours L:0 T:0 P:3	Credits:1. 5
After comp	letion of this cou	rse, the student shall be/shall		
1	Know the funda Applications.	mental knowledge of various trades and the	eir usage in real ti	me
2	Compare Found	ry, Welding, Black smithy, Fitting, Machine	e shop and house	wiring.
3	Understand the believes the bel	basis for analyzing power tools in construction ering and mechanical engineering.	on and wood wo	rking,
4	Apply basic cond	cepts of computer hardware for assembly ar	nd disassembly.	
Course Outcome	Year /Semester I / II Sem	Subject Name (Subject Code) ENGINEERING PHYSICS LAB (B18PH04)	No. of Hours L:0 T:0 P:3	Credits:1. 5
After com	pletion of this cou	rse, the student shall be/shall		
1	The laboratory construction of the laboratory of the engineering. It all experiments in e	ourse helps the student how to operate diffe lso allows the student to develop experiment ngineering.	erent equipments atal skills to desig	related to n new
2	The course enlig etc.,	htens the student about modern equipment	like solar cell, op	tical fibre
3	With the exposure with experiment.	re to these experiments, the student can con	npare the theory a	and correlate
Course Outcome	Year /Semester II / I Sem	Subject Name (Subject Code) BASIC ELECTRICAL AND ELECTRONICS ENGINEERING (B18EE02)	No. of Hours L:3 T:0 P:0	Credits:3
After com	pletion of this cou	rse, the student shall be/shall		
1	Learn Basic circui reduction techniqu	t concepts such as electrical parameters, quanti- ues and apply the network theorems with DC ex	ties, laws and netw citation in the syst	vork ems
2	Analyze the steady relationship between the steady structure to the struc	y state operation of single phase and three phase en voltage and current for delta and star connect	e AC circuits and s ctions.	tudy the
3	Explore the constr	uction, working , control and testing of various	DC and AC Mach	ines
4	Gain knowledge o their V-I character	n basic electronic devices such as P-N junction istics.	Diode, rectifiers a	nd filter with
5	Acquire extended diode and SCR de	knowledge on next generation of electronic dev vices.	vices such transisto	ors,zener
Course Outcome	Year /Semester II / I Sem	Subject Name (Subject Code) METALLURGY AND MATERIAL SCIENCE (B18ME03)	No. of Hours L:3 T:0 P:0	Credits:3
After com	pletion of this cou	rse, the student shall be/shall	-	
1	Understand the bo	ond formation, grains and grain boundaries in	crystalline metal	S.

2	Apply lever rule in calculating the liquid and solid percentage.						
3	Apply heat treatment processes to different materials to get required properties.						
4	Gain knowledge	about advanced materials like composites & c	ceramics.				
5	Analyze the appli	cations and the properties of cast irons and st	eels.				
Course Outcome	Year /Semester II / I Sem	Year /Semester II / I SemSubject Name (Subject Code) MECHANICS OF SOLIDS (B18ME04)No. of Hours L:3 T:1 P:0Credits:4					
After com	pletion of this cou	rse, the student shall be/shall					
1	Understand the c	concepts of stress and strain in mechanics of	f solids and mater	rial			
2	Apply the fundation simply supported loads & their con	properties. Apply the fundamental concepts of shear force & bending moment for Cantilever beam, simply supported beam & overhanging beam with point loads, UDL, gradually varying loads & their combination					
3	Apply the fundate Beams.	mental concepts of Bending stresses & shea	r stresses for diff	erent			
4	Apply the different double integration	ent methods to determine the deflection & s on method, Area moment method & Macau	lope of different ay's method.	beams like			
5	Apply the Lame's equation to determine stresses in Thick cylinders. To understand the concept of torsion and its application to circular shafts.						
Course	Year /Semester	Subject Name (Subject Code)	No. of Hours	Credits:3			
Outcome	II / I Sem	THERMODYNAMICS (B18ME05)	L:31:0P:0				
After com	pletion of this cou	rse, the student shall be/shall					
1	Understand the b	basic thermodynamic principles and their ap	plications				
2	Apply the laws of	of thermodynamics for different thermal sys	tems.				
3	Use mollier diag	ram and steam tables to find the properties	of pure substance	es.			
4	Calculate differe	nt properties of perfect gases, real gases and	d mixtures of per	fect.			
5	Analyse differen	t power cycles.					
Course Outcome	Year /Semester II / I Sem	Subject Name (Subject Code) MACHINE DRAWING (B18ME06)	No. of Hours L:1 T:0 P:2	Credits:2			
After com	pletion of this cou	rse, the student shall be/shall					
1	Understand vario	ous conventions used in machine drawing.					
2	Prepare the asser	nbly and part drawings from component dr	awing.				
3	Identify the use of	of various machine components.					
4	Interpret and ma	ke conclusions about a given drawing.					
5	Apply the First a	ingle projection.					
Course Outcome	Year /Semester II / I Sem	Subject Name (Subject Code) MECHANICS OF SOLIDS AND METALLURGY LAB (B18ME07)	No. of Hours L:0 T:0 P:3	Credits:1. 5			
After com	pletion of this cou	rse, the student shall be/shall	•				
1	Identify grain an	d grain boundary, crystal structure of differ	ent materials.				

2	Study the microstructure of various materials.				
3	Analyze the corr	elation between Mechanical and Metallurg	ical properties.		
4	Perform material	testing and analyze various material prope	erties.		
Course Outcome	Year /Semester II / I Sem	Subject Name (Subject Code) FUELS AND LUBRICANTS LAB	No. of Hours L:0 T:0 P:2	Credits:1	
After com	pletion of this cou	rse, the student shall be/shall			
1	Apply different methods to determine the flash point & fire point of liquid fuels.				
2	Apply carbon res	sidue test to determine carbon% in liquid fu	iels.		
3	Apply Different	methods to determine viscosity of Liquid h	ubricants.		
4	Apply different 1	nethods to determine the calorific value of	fuels.		
Course Outcome	Year /Semester II / I Sem	Subject Name (Subject Code) BASIC ELECTRICAL AND ELECTRONICS ENGINEERING LAB (B18EE03)	No. of Hours L:0 T:0 P:3	Credits:1. 5	
After com	pletion of this cou	rse, the student shall be/shall			
1	1 Learn to simplify complex electric and electronic circuits by applying the KVL and KCL laws.				
2	Identify the opting	nal loading on the system.			
3	Analyze the perf	ormance of DC machines.			
4	Identify and analyze the performance and operation of semi conducting devices.				
Course Outcome	Year /Semester II / I Sem	Subject Name (Subject Code) INDIAN CONSTITUTION (B18MC04)	No. of Hours L:2 T:0 P:0	Credits:0	
After com	pletion of this cou	rse, the student shall be/shall			
1	To introduce the	concepts and features Indian constitution.			
2	To identify the c	ore values reflected in Preamble of the Con	stitution.		
3	To examine the 1 government.	nature of the Indian federal system and the	parliamentary for	m of	
Course Outcome	Year /Semester II / II Sem	Subject Name (Subject Code) GENDER SENSITIZATION (B18MC07)	No. of Hours L:2 T:0 P:0	Credits:0	
After com	pletion of this cou	rse, the student shall be/shall			
1	Students will hav	ve developed a better understanding of impo	ortant issues relat	ed to gender	
2	In contemporary Students will be	India.	vical sociological	1	
2	psychological an	d legal aspects of gender. This will be achie	eved through disc	cussion of	
	materials derived	l from research, facts, everyday life, literati	ure and films.		
3	Students will atta	ain a finer grasp of how gender discrimination	ion works in our s	society	
4	and now to coun Students will acc	ter mem.	labour and its rela	ation to	
- T	politics and econ	omics.			
5	Men and women	students and professionals will be better ed	quipped to work a	and live in	

	harmony. Students will develop a sense of appreciation of women in all walks of life.				
Course	Year /Semester	Subject Name (Subject Code)	No. of Hours	Credits:4	
Outcome	II / II Sem	PROBABILITY & STATISTICS (B18MA05)	L:3 T:1 P:0		
After completion of this course, the student shall be/shall					
1	Use probability t	heory and deals with modelling uncertainty	and apply discre	ete and	
2	continuous proba	ability, in order to evaluate the probability of	of real world ever	lts.	
Z	to generate data	from Binomial and Poisson Distributions.	ns, and use these	techniques	
3	Develop continu	ous probability distributions and its applica	tions, and use the	ese	
	techniques to get	nerate data from Normal Distribution.			
4	Perform correlat	ion analysis, in order to estimate the nature	and the strength	of the linear	
	relationship that	may exist between two variables of interest	t, Perform regress	sion analysis	
	to estimate the fi	lagnitude of change in one variable due to a	a given change in	the other	
5	Construct confid	ence interval estimates for population para	meters and condu	ct	
-	hypothesis tests	concerning population parameters, for singl	le and multiple po	pulations	
	based on sample	data. And also perform Student T-test, F-te	est and X2- test(c	hi-square).	
Course	Year /Semester	Subject Name (Subject Code)	No. of Hours	Credits:3	
Outcome	II / II Sem	FLUID MECHANICS & HYDRAULIC	L:31:0F:0		
A 64 or a comp	alation of this oou	MACHINER I (BISME09)			
Alter com	Apply mathemat	ics and basic sciences and translates this kn	owledge to unde	rstand fluid	
1	flow principles a	and their applications.	lowledge to unde	istaliu liulu	
2	Understand fund	amental knowledge of the mechanics of flu	id at rest and in r	notion.	
3	Observe fluid ph	enomena by developing and using the princ	ciples, laws.		
4	Analyze fluid int	teractions with natural and constructed systematics	ems.		
5	Associate fundai	nental knowledge & performance of differe	ent turbines & pu	mps.	
Course	Year /Semester	Subject Name (Subject Code)	No. of Hours	Credits:4	
Outcome	II / II Sem	THERMAL ENGINEERING-I (B18ME10)	L:3 T:1 P:0		
After com	pletion of this cou	rse, the student shall be/shall			
1	Understand the c	concept and working of two and four stroke	s I.C. engines.		
2	Analyse the norr	nal and abnormal condition for the combust	tion of SI and CI	engines also	
	the parameters w	which effect the combustion characteristics.			
3	Able to calculate	e the performance of the engine with differe	ent parameters.		
4	Get knowledge a	bout compressors and their classifications.			
5	Differentiate various compressor on the basis of their working and requirement and can use suitable one.				
Course	Year /Semester	Subject Name (Subject Code)	No. of Hours	Credits:4	
Outcome	II / II Sem	KINEMATICS OF MACHINES (B18ME11)	L:4 T:0 P:0		
After com	pletion of this cou	rse, the student shall be/shall	1		

1	Identify the basic mechanisms involved in machines.				
2	Develop familia	Develop familiarity with application of kinematics theories to real-world machines.			
3	Identify the basic	c relations between distance, time, velocity	and acceleration.		
4	Understand anal	ytical linkage analysis, determine cam profi	iles		
5	Analyze gear tra	ins and gear profiles.			
Course	Year /Semester	Subject Name (Subject Code)	No. of Hours	Credits:3	
Outcome	II / II Sem	PRODUCTION TECHNOLOGY (B18ME12)	L:3 T:0 P:0		
After com	pletion of this cou	rse, the student shall be/shall			
1	Apply the know	ledge of casting, welding joints and forces a	and power require	ements in	
	metal forming p	rocesses.			
2	Relate the meltir	ng, solidification, pattern allowances, gating	g and riser design	of mold	
	cavity, aspects o	f casting.			
3	Understand basic	c calculations of forces and power requirem	ents in the metal	forming	
	operations.		1.1.	•	
4	Differentiate the	application of welding using the arc welding	ng, gas welding, i	resistance	
5	welding, solderin	welding, soldering and brazing.			
3	Survey the defec	its occurring in forging operation.	[
Course	Year /Semester	Subject Name (Subject Code)	No. of Hours	Credits:1.	
Outcome	II / II Sem	FLUID MECHANICS & HYDRAULIC	L:0 1:0 P:3	5	
		MACHINERY LAB (B18ME13)			
After com	pletion of this cou	rse, the student shall be/shall			
1	Apply knowledg	e of fluid mechanics and hydraulic machine	es and translates t	this	
	knowledge for u	nderstanding fluid flow principles and their	application to ex	periments.	
2	Practical exposu	re by using components vacuum gauge, pre	ssure gauge, man	iometers,	
2	pipes, motors, pu	of theoretical values with the real personate	***		
5		of theoretical values with the feat parameter	15.		
4	Know and under	stand the experimental analysis in turbines	and pumps with	parameters	
	such as discharge	e, head of water, speed of brake drum.	No of House	Crediter1	
Course	Year /Semester	Subject Name (Subject Code)	No. 01 Hours	Credits:1.	
Outcome	II / II Sem	(B18MF14)		2	
A fton com	lation of this pour	the student shall be/shall			
Alter com	Lindorstand basi	a knowledge and concepts of various experi	monte		
1	Daufanna iainina	c knowledge and concepts of various experi-			
2	Perform joining	of materials (similar/dissimilar) using weld	ing.		
3	Analyze the con	cepts of extrusion and design of die.			
4	Operate injection	n molding and blow molding machines.	1		
Course	Year /Semester	Subject Name (Subject Code)	No. of Hours	Credits:3	
Outcome	III/ I Sem	MACHINE TOOLS AND METAL	L:3 T:0 P:0		
		CUTTING (B18ME15)			
After com	pletion of this cou	rse, the student shall be/shall			
1	Apply cutting m	echanics to metal machining based on cuttin	ng force and pow	er	

	consumption.				
2	Operate lathe, milling machines, drill press, grinding machines, etc.				
3	Evaluate mach ir finish.	nability of different materials using specific	cutting forces an	d surface	
4	Understand Prince	ciples of design of Jigs and fixtures.			
5	Compare grindin	g, lapping and honing operations.			
Course Outcome	Year /Semester III/ I Sem	Year /Semester III/ I SemSubject Name (Subject Code) DYNAMICS OF MACHINERY (B18ME16)No. of Hours L:4 T:0 P:0Credits:4			
After com	pletion of this cou	rse, the student shall be/shall			
1	Analyze the forc function of gover	es and torques in mechanisms and machine rnors, clutches and bearings.	s in operation. K	now the	
2	Compute the fric	tional torque in clutches and braking torque	e in brakes.		
3	Design the flywh	neel for different IC engines.			
4	Evaluate the bala	ancing masses in rotary and reciprocating ba	alancing.		
5	Calculate the frequencies of different vibrations.				
Course Outcome	Year /Semester III/ I Sem	Subject Name (Subject Code) DESIGN OF MACHINE MEMBERS – I (B18ME17)	No. of Hours L:3 T:0 P:0	Credits:3	
After com	pletion of this cou	rse, the student shall be/shall			
1	Design a particul using design data	lar machine element and make use of standa a book.	ards parts and din	nensions	
2	Design of shafts	, shaft couplings like flange couplings, flex	tible couplings.		
3	Determine the St	resses and deflections of bolded joints, key	s, cotters, knuckl	e joints.	
4	Determine the St	tresses and deflections of helical springs.			
5	Design of riveted	d, welded joint and screwed joints.			
Course Outcome	Year /Semester III/ I Sem	Subject Name (Subject Code) METROLOGY AND SURFACE ENGINEERING (B18ME18)	No. of Hours L:3 T:0 P:0	Credits:3	
After com	pletion of this cou	rse, the student shall be/shall			
1	Apply mathemat R.M.S. methods.	ics to calculations of surface texture assess	ment by using C.	L.A. and	
2	Analyse principl	es of optics, interference, light to optical fla	ats, interferometer	rs,	
2	microscopes and	optical measuring instruments.	of components	-1	
3	transition interfe	ed physical data that are useful to assembly prence fits	of components,	clearance,	
4	Illustrate linear, a auto collimator e	angular measurement by using various micr	rometers, bevel p	rotractor,	
5	Classify the basic coatings, and sur	c techniques of surface engineering, surface face cleanings.	e treatment, surfa	ce	

Course Outcome	Year /Semester III/ I Sem	Subject Name (Subject Code) THERMAL ENGINEERING – II (B18ME19)	No. of Hours L:3 T:0 P:0	Credits:3
After com	pletion of this cou	rse, the student shall be/shall		
1	Understand the b	basic concept behind the thermal power plan	nt.	
2	Get knowledge a	bout working of boilers with their specification	ation.	
3	Analyze the imp	ortance of nozzle and condenser in steam p	ower plant.	
4	Identify the diffe	rent types of steam turbines and use accord	lingly to the requi	irement.
5	Get the concepts	of gas power plant with its different compo	onents.	
Course Outcome	Year /Semester III/ I Sem	Subject Name (Subject Code) MANAGERIAL ECONOMICS AND FINANCIAL ANALYSIS (B18MB01)	No. of Hours L:3 T:0 P:0	Credits:3
After com	pletion of this cou	rse, the student shall be/shall		
1	To study fundam certain basic issu	nental concepts in managerial economics an nes governing the business operations.	d financial analys	sis including
2	To learn the concepts of demand, elasticity of demand and demand forecasting and methods of demand forecasting.			
3	To learn various	issues involved in production decision anal	lysis.	
4	To gain the knowledge of Break – Even Analysis and its importance in managerial decision making.			
5	To learn differen	t types of market environment under variou	is types of compe	etition.
Course Outcome	Year /Semester III/ I Sem	Subject Name (Subject Code) DESIGN OF MACHINE MEMBERS – I (B18ME17)	No. of Hours L:3 T:0 P:0	Credits:3
After com	pletion of this cou	rse, the student shall be/shall		
1	Design a particul using design data	lar machine element and make use of standa a book.	ards parts and din	nensions
2	Design of shafts	, shaft couplings like flange couplings, flex	ible couplings.	
3	Determine the St	resses and deflections of bolded joints, key	s, cotters, knuckl	e joints.
4	Determine the St	resses and deflections of helical springs.		
5	Design of riveted	l, welded joint and screwed joints.		
6	To gain the knov	vledge of new economic environment in po	st – liberalization	scenario.
7	To know the concepts of capital budgeting and various methods of capital budgeting and its application in business decision making.			
Course Outcome	Year /Semester III/ I Sem	Subject Name (Subject Code) ENTREPRENEURSHIP DEVELOPMENT (B18MB03)	No. of Hours L:3 T:0 P:0	Credits:3
After com	pletion of this cou	rse, the student shall be/shall		
1	To understand th an idea on the leg entrepreneurship	e mindset of the entrepreneurs, identity ver gal framework. and also understand strateg	ntures for launching ic perspectives in	ng, develop

Course	Year /Semester	Subject Name (Subject Code)	No. of Hours	Credits:3		
Outcome	III/ I Sem	ENERGY STORAGE SYSTEMS (B18EE49)	1.5 1.01.0			
After com	pletion of this cou	rse, the student shall be/shall				
1	Apply the technology to have energy storage system for any electrical Loads.					
2	To save the elect	Γo save the electrical power in peak time loads using ESS				
3	To store energy a	and to avoid the environmental pollution				
Course	Year /Semester	Subject Name (Subject Code)	No. of Hours	Credits:1.		
Outcome	III/ I Sem	THERMAL ENGINEERING	L.0 1.01.5	5		
After com	l nletion of this cou	rse the student shall be/shall				
1	Identify various	types of engines and their parts.				
2	Understand the r	power of different engine and where they ca	n be used.			
3	Estimate the per	formance of different engine and analyze th	em.			
4	Analyze engines	to set better efficiencies by knowing Brake	specific fuel			
	consumption of t	the engines.	n <u>r</u>			
Course	Year /Semester	Subject Name (Subject Code)	No. of Hours	Credits:1.		
Outcome	III/ I Sem	METROLOGY AND MACHINE TOOLS	L:0 1:0 P:3	5		
After com	nletion of this cou	rse, the student shall be/shall				
1	Use different typ	bes of measuring instruments				
2	Perform differen	t operations on Lathe machines.				
3	Measure angles a	and taper measurements.				
4	Evaluate differen	nt heights by using Vernier height gauge.				
5	This course prov	ides fundamental knowledge and principles	of machining to	the		
	operation of diffe	erent marching processes on machine tools.	4	(1		
0	milling drilling	shaping slotting and grinding machines	es turnouts the la	tnes,		
7	The course show	vs how to evaluate machined work piece sur	face finish and			
	dimensional accu	uracy using metrology equipment.				
8	Students will be	able to differentiate the lubrication and coo	ling effects of va	rious		
Carrier	Very Semester	Subject Neme (Subject Code)	No. of Hours	Credits:3		
Outcome	i ear /Semester	FINITE ELEMENT METHODS (B18ME22)	L:3 T:0 P:0	creatione		
After com	nlation of this cou	rsa the student shall be/shall				
1	Student is able to	analyze real time engineering objects and	to present a well	designed		
	structures.		I IIIII	8		
2	Student can anal	yze bars beams, shafts and array symmetric	solids.			
3	Student is able to	o understand and analyze the heat flow and	know the temper	ature		
A	distribution at va	trious points on the components.	he computer a - C			
4	like ANSYS inst	ead of analytical methods.	ne computer son	ware		

5	Estimate Load vector and stresses in 2D problems.			
Course Outcome	Year /Semester III/ II Sem	Subject Name (Subject Code) DESIGN OF MACHINE MEMBERS – II (B18ME23)	No. of Hours L:4 T:0 P:0	Credits:4
After com	pletion of this cou	rse, the student shall be/shall		
1	Design journal a	nd roller bearings,		
2	Design engine pa cylinder liner.	arts like connecting rod, crank pins, crank s	shafts, pistons, cy	linder and
3	Understand Pow	er transmission system by belt drives and c	hain drives.	
Course Outcome	Year /Semester III/ II Sem	Subject Name (Subject Code) HEAT& MASS TRANSFER (B18ME24)	No. of Hours L:3 T:0 P:0	Credits:3
After com	pletion of this cou	rse, the student shall be/shall		
1	Understand the band radiation.	basics of heat transfer with good knowledge	e of conduction,	convection
2	Identify the free	convection and forced convection requiren	nent for particular	design.
3	Analyse the concept of heat convection and get better result from free convection.			
4	To know the concept of hydrodynamics and thermal boundary in forced convection.			
5	Design effective heat exchanger by considering concepts of radiation heat transfer along with conduction and convection.			
Course Outcome	Year /Semester III/ II Sem	Subject Name (Subject Code) ENVIRONMENTAL SCIENCE (B18MC02)	No. of Hours L:3 T:0 P:0	Credits:3
After com	pletion of this cou	rse, the student shall be/shall		
1	Recall previously environment.	y learned ecosystem and find how the biod	iversity changes v	went in the
2	Demonstrate out	lines of types of pollutions and related to d	ay-to-day life.	
3	Organize import	ant seminars on natural resources.		
4	Apply models of	food chains and energy flow models to so	lve the identified	parameters.
5	Classify the type that take part in t	s of pollutants and distinguish the function the environment.	s of sustainable d	evelopment
6	Design the expen which cause con	iments with BOD, COD, OD and to estimation and can propose solutions.	ate the micro orga	nisms
Course	Year /Semester	Subject Name (Subject Code)	No. of Hours	Credits:3
Outcome	III/ II Sem	INDUSTRIAL MANAGEMENT (ELECTIVE-I) (B18MB05)	L:3 T:0 P:0	
After com	pletion of this cou	rse, the student shall be/shall		
1	Plan an organizat operations throug	ional structure for a given context in the orga h Work study.	anisation carry out	production
2	Carry out product	tion operations through Work study.		
3	Understand the mappropriately	narkets, customers and competition better and	l price the given p	roducts

4	Ensure quality for a given product or service.				
5	Plan and control the HR function better.				
6	Plan, schedule and control projects through PERT and CPM.				
7	Evolve a strategy	for a business or service organisation.			
Course Outcome	Year /Semester III/ II Sem	Subject Name (Subject Code) DATABASE MANAGEMENT SYSTEMS (OPEN ELECTIVE) (B18CS08)	No. of Hours L:4 T:0 P:0	Credits:4	
After com	pletion of this cou	rse, the student shall be/shall			
1	A strong foundation in core Computer Science and Engineering, both theoretical and applied concepts.				
2	An ability to app problems.	bly knowledge of mathematics, science, and	l engineering to re	ealworld	
3	Ability to model as well as applic	, understand, and develop complex softwar ation software.	e for system softw	ware	
4	An ability to communicate effectively, both in writing and oral.				
5	The broad education necessary to understand the impact of computer science and engineering solutions in the scientific, societal and human contexts				
7	A recognition of the need for, and an ability to engage in life-long learning.				
8	A knowledge of	contemporary issues.			
Course Outcome	Year /Semester III/ II Sem	Subject Name (Subject Code) DISASTER MANAGEMENT (OPEN ELECTIVE) (B18CE54)	No. of Hours L:4 T:0 P:0	Credits:4	
After com	pletion of this cou	urse, the student shall be/shall			
1	Acquire the know	wledge of disaster Management			
2	Understand the	vulnerability of ecosystem and infrastructu	re due to a disaste	er	
3	Acquire the know	wledge of Disaster Management Phases			
4	Understand the	hazard and vulnerability profile of India			
Course Outcome	Year /Semester III/ II Sem	Subject Name (Subject Code) NANO TECHNOLOGY (B18ME25)	No. of Hours L:3 T:0 P:0	Credits:3	
After com	pletion of this cou	rse, the student shall be/shall			
1	Understand the f	undamentals of Nanotechnology			
2	Know the differe	ent classes of nano materials			
3	Impart basic knowledge on various synthesis and characterization techniques involved in Nanotechnology				
4	Make the learner	familiarize with nanotechnology potential	ities.		
5	Apply transfer ir nanotechnology.	nterdisciplinary systems engineering approa	aches to the field	of	
Course Outcome	Year /Semester III/ II Sem	Subject Name (Subject Code) MECHATRONICS (PROFESSIONAL ELECTIVE-I) (B18ME26)	No. of Hours L:3 T:0 P:0	Credits:3	

After com	pletion of this cou	rse, the student shall be/shall		
1	Use the control system; mechatronics design systems and measurement systems.			
2	Work on various actuating systems.			
3	Convert the sign	als from one form to another form.		
4	Estimate the mic	ro controllers and micro processors.		
5	Develop the sim	ple programming code for PLC's.		
Course Outcome	Year /Semester III/ II Sem	Subject Name (Subject Code) AUTOMOBILE ENGINEERING (PROFESSIONAL ELECTIVE-I) (B18ME27)	No. of Hours L:3 T:0 P:0	Credits:3
After com	pletion of this cou	rse, the student shall be/shall	·	
1	Understand the v	various parts used in automotive pollution s	tandards.	
2	Understand diffe	rent types of fuel injection system and pur	np system.	
3	Analyze the cooling systems depending upon the cooling requirements for particular automobile and Understand different types of ignition systems used in case of an automobile.			
4	Understand the power transmission in automobile gearbox and clutch system.			
5	Understand various transmission systems, steering systems and suspension and breaking systems.			
Course Outcome	Year /Semester III/ II Sem	Subject Name (Subject Code) MAINTENANCE AND SAFETY ENGINEERING (PROFESSIONAL ELECTIVE-II) (B18MF28)	No. of Hours L:3 T:0 P:0	Credits:3
After com	Detion of this cou	rse, the student shall be/shall	I	
1	Understand The r	naintenance in equipment life cycle.		
2	Analyse The prev	rentive and corrective measures in maintenan	ce.	
3	Estimate The invo	entory control in maintenance.		
4	Classify The inco	sting and budget preparation		
5	Compare the relia	bility measures, reliability networks and reliability	ability analysis	
Course Outcome	Year /Semester III/ II Sem	Subject Name (Subject Code) MECHANICS OF COMPOSITE MATERIALS (PROFESSIONAL ELECTIVE-II) (B18ME29)	No. of Hours L:3 T:0 P:0	Credits:3
After com	pletion of this cou	rse, the student shall be/shall		
1	Highlight the app	propriate use of composite materials in the	industry	
2	Understand the s materials whene	ignificance of replacing existing metal stru ver beneficial.	ctures with comp	osite
3	Comprehend the	complexity of design of composite materia	als and structures.	
4	Apply knowledg	e of mechanics of composite materials for a	analyzing advance	ed materials

	involved in current trends and research area.			
5	Apply the knowledge of composite materials for designing structures for aerospace			
	applications and	smart structures.	-	
Course	Year /Semester	Subject Name (Subject Code)	No. of Hours	Credits:3
Outcome	III/ II Sem	REFRIGERATION & AIR CONDITIONING	L:5 1:0 P:0	
		(PROFESSIONAL ELECTIVE-II) (B18ME30)		
After com	nletion of this cou	rse_the student shall be/shall		
1	Understand all the	e basic principles of refrigeration.		
2	Prepare a model 1 requirement.	refrigeration system and designing various co	mponents accordi	ng to the
3	Design an A.C. u	nit by calculating the heat loads.		
4	4. Observe and an units.	nalyze large capacity units like ice plants, colo	d storages and cer	tralA.C.
5	Know all Psychro	ometric properties and processes.		
Course	Year /Semester	Subject Name (Subject Code)	No. of Hours	Credits:1.
Outcome	III/ II Sem	HEAT TRANSFER LAB (B18ME31)	L:0 T:0 P:3	5
After com	pletion of this cou	rse, the student shall be/shall		
1	Student is able t	o analyze and conduct the experiments to k	now the heat tran	sfer and
	temperatures.			
2	Student is able to	o interpret the experimental knowledge in the	ne real life situati	on like
2	in, electric iron,	and refrigerator.	1	
3	Student is able to	o possess the application knowledge of engineers solar collectors etc.	ne radiation, air	
4	Student can desi	$\frac{1}{2}$ on a heat transfer system to cool the given c	component to rea	uired
	temperature with	in the desired time		uneu
Course	Year /Semester	Subject Name (Subject Code)	No. of Hours	Credits:2
Outcome	III/ II Sem	ADVANCED ENGLISH	L:0 T:0 P:3	
		COMMUNICATION SKILLS LAB		
A 64		(B18EN03)		
After com	Developing effect	rse, the student shall be/shall	ad contextually	
1	Developing effect	for Writing and folicity in written expression	n contextually.	
2	Enhanging ich n	rospects)11.	
3				
4	Acquiring effect	ive speaking abilities.	N. 677	
Course	Year /Semester	Subject Name (Subject Code)	No. of Hours	Credits:3
Outcome	IV / I Sem	CAD/CAM (B18ME32)	2.5 1.01.0	
After com	pletion of this cou	rse, the student shall be/shall		
1	Observe the vari	ous input and output devices used in CAD/	CAM systems.	
2	Understand 2D a	and 3D transformations problems.		
3	Write the programs for different models by using NC part programming.			

4	Analyze the Group Technology (GT)				
5	Differentiate CAQC (Computer Aided Quality Control) and CIM (Computer				
	Integrated Manufacturing) systems.				
Course	Year /Semester	Subject Name (Subject Code)	No. of Hours	Credits:3	
Outcome	IV / I Sem	INSTRUMENTATION AND CONTROL	L:5 1:0 P:0		
After completion of this course, the student shall be/shall					
After completion of this course, the student shall be/shall					
1	design construction of machine parts.				
2	To gain knowledge of functioning of parts such as connecting rod, eccentric etc.				
3	To understand how heat and electricity are combined in calibrating				
	thermoelectric devices, especially resistance temperature detector, thermo couple.				
4	To measure the displacement using LVDT transducer. To gain knowledge on				
	flow measurement using rotameter.				
5	Classify Open and closed systems Servomechanisms.				
Course	Year /Semester	Subject Name (Subject Code)	No. of Hours	Credits:3	
Outcome	IV / I Sem	UNCONVENTIONAL MACHINING	L:3 T:0 P:0		
		PROCESSES (PROFESSIONAL			
After completion of this course, the student shall be/shall					
1	Understand selection of processes.				
2	Design the components of Abrasive Jet machining process.				
3	Observe surface properties after machining without destructing the material.				
4	Select the material with respect to process.				
5	Apply plasma for machining like Magnetic abrasive finishing. Abrasive flow				
C C	finishing etc.,				
Course	Year /Semester	Subject Name (Subject Code)	No. of Hours	Credits:3	
Outcome	IV / I Sem	DESIGN FOR MANUFACTURING	L:3 T:0 P:0		
		(PROFESSIONAL ELECTIVE-III)			
		(B18ME35)			
After completion of this course, the student shall be/shall					
1	Classify the steps in design process.				
2	Understand the overview of various machining processes.				
3	Apply the factors in design of weldments.				
4	Analyse general design recommendations of extrusion.				
5	Compare the development of systematic dfa methodology.				
Course	Year /Semester	Subject Name (Subject Code)	No. of Hours	Credits:3	
Outcome	IV / I Sem	POWER PLANT ENGINEERING	L:3 1:0 P:0		
		(PROFESSIONAL ELECTIVE-III) (B18ME36)			
After completion of this course, the student shall be/shall					
1	Understand the different types of operation takes place in the power plant with its				
	plant layout.				
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2	Got knowledge about internal combustion power plants and their uses.				
3	Explore the oppo power plant.	ortunities to improve the capacity and the effective of the second secon	fficiency of hydro	electric	
4	Understand the c against radiation	concept of nuclear power generation and fin hazards.	nd out the better v	vay	
5	Analyze the plan establishment of	tt economics and the environmental consider plant.	erations for the		
Course Outcome	Year /Semester IV / I Sem	Subject Name (Subject Code) PRODUCTION PLANNING & CONTROL (PROFESSIONAL ELECTIVE-IV) (B18ME37)	No. of Hours L:3 T:0 P:0	Credits:3	
After com	pletion of this cou	rse, the student shall be/shall			
1	Design and plan	an economical production system.			
2	Learn about effe	ctive utilization of plant resources.			
3	Provide alternate	e production strategies.			
4	Guide shop floor	r people for manufacturing products of requ	ired quantity.		
5	Define dispatche	er and its procedures.			
Course Outcome	Year /Semester IV / I Sem	Subject Name (Subject Code) ROBOTICS (PROFESSIONAL ELECTIVE-IV) (B18ME38)	No. of Hours L:3 T:0 P:0	Credits:3	
After com	pletion of this cou	rse, the student shall be/shall			
1	Apply the knowl	edge of robotics in real time human life app	plications		
2	Analyse the cond	cept of CAD/CAM and automation to the re-	obotics.		
3	Compare knowle loading and unlo	edge of robot applications in manufacturing ading etc.	i like, material ha	ndling,	
4	Experiment the r	obotics to the spot and continuous arc weld	ling and spray pa	inting.	
5	Relate the Robot	Application in Manufacturing.			
Course Outcome	Year /Semester IV / I Sem	Year /Semester IV / I SemSubject Name (Subject Code) COMPUTATIONAL FLUID DYNAMIC S (PROFESSIONAL ELECTIVE-IV) (B18ME39)No. of Hours L:3 T:0 P:0Credits:3			
After com	pletion of this cou	rse, the student shall be/shall			
1	Describe Govern	ning equations of CFD.			
2	Analyze problem	ns with Euler and Navier Stokes Eqns.			
3	Evaluate CFD co	odes.			
4	Analyze differen	t models with different algorithms.			
5	Understand Finit	e volume formulations for diffusion equation	on.		

Course Outcome	Year /Semester IV / I Sem	Subject Name (Subject Code) AUTOMATION IN MANUFACTURING (PROFESSIONAL ELECTIVE-V) (B18ME40)	No. of Hours L:3 T:0 P:0	Credits:3
After com	pletion of this cou	rse, the student shall be/shall		
1	Analyse necessit automation.	y of automating any industry and procedur	e to be adopted fo	or
2	Define different	types of automated flow lines, transfer line	s.	
3	Associate all typ	es of material handling systems and adapti	ve control system	s.
4	Choose packages engineering.	s available for advanced techniques availab	le in mechanical	
5	Discuss the Tech	nniques of Rapid Proto typing.		
Course Outcome	Year /Semester IV / I Sem	Subject Name (Subject Code) MECHANICAL VIBRATIONS (PROFESSIONAL ELECTIVE-V) (B18ME41)	No. of Hours L:3 T:0 P:0	Credits:3
After com	pletion of this cou	rse, the student shall be/shall		
1	Students acquire the ability to format mathematical models of problems in vibrations systems (damped & undamped subjected to non periodic forcing functions).			
2	Students will hav	ve an ability to obtain the complete solution	n for the motion o	f vibrator.
3	Students will be for complicated	able to obtain design parameters and indica vibratory problems.	ate methods of sol	lutions
4	Students will be	able to solve the vibrations problems for m	ulti degrees of fre	eedom.
5	Students will be	able to obtain numerical solutions in vibrat	ions problems.	
Course	Year /Semester	Subject Name (Subject Code)	No. of Hours	Credits:3
Outcome	IV / I Sem	NON CONVENTIONAL ENERGY	L:51:0F:0	
		(PROFESSIONAL ELECTIVE V)		
		(B18ME42)		
After com	pletion of this cou	rse, the student shall be/shall		
1	Apply the techno Wind ocean bio	blogy to capture the energy from the renewa	able sources like s	sun,
2	Use different ren	newable energy sources to produce electrica	l power minimize	e the use of
	conventional ene	ergy sources to produce electrical energy.		
3	Identify the fact	that the conventional energy resources are	depleted.	
4	Understand dired	ct energy conversion.		
5	Learn different r	nethods in solar energy system.		
Course Outcome	Year /Semester IV / I Sem	Subject Name (Subject Code) CAD/CAM LAB (B18ME43)	No. of Hours L:0 T:0 P:3	Credits:1. 5
After com	pletion of this cou	rse, the student shall be/shall		
1	Draw the part dr	awings which are utilized in real time appli	cations.	
2	Understand the c	lifferent types of stress analysis, load calcu	lations by using A	NSYS

	software.			
3	Analyze 2D and	3D part drawings using AutoCAD, CREO	software package	es.
4	Develop and understand the NC part program generation by using CADEM packages.			
Course Outcome	Year /Semester IV / I Sem	Subject Name (Subject Code) INSTRUMENTATION AND CONTROL SYSTEMS LAB (B18ME44)	No. of Hours L:0 T:0 P:3	Credits:1. 5
After com	pletion of this cou	rse, the student shall be/shall		
1	Identify the diffe	erent pressure gauges.		
2	Understand the d	lifferent types of temperature measurements	5.	
3	Analyze the calil	pration of capacitive transducer for angular	displacement.	
4	Evaluate seismic	pickup for the measurement of vibration and	mplitude.	
Course Outcome	Year /Semester IV / II Sem	Subject Name (Subject Code) INTELLECTUAL PROPERTY RIGHTS (OPEN ELECTIVE-I) (B18MB06)	No. of Hours L:3 T:0 P:0	Credits:3
After com	pletion of this cou	rse, the student shall be/shall		
1	An ability to app problem.	ly knowledge of mathematics, science and	engineering to re	al world
2	Ability to model as application so	, understand and develop complex software ftware.	for system softw	vare as well
3	The broad educa engineering solu	tion necessary to understand the impact of or tions in the scientific, societal and human c	computer science ontexts.	and
4	A recognition of	f the need for, and an ability to engage in lif	è-long learning.	
Course Outcome	Year /Semester IV / II Sem	Subject Name (Subject Code) AIR POLLUTION AND CONTROL (OPEN ELECTIVE) (B18CE53)	No. of Hours L:4 T:0 P:0	Credits:4
After com	pletion of this cou	rse, the student shall be/shall		
1	Acquire the know	wledge of Air pollution Concepts.		
2	Acquire the know	wledge of Effects of air pollution.		
3	Acquire the know	wledge of Air pollution Control devices.		
4	Acquire the know	wledge of Air quality monitoring devices.		
Course Outcome	Year /Semester IV / II Sem	Subject Name (Subject Code) STATISTICAL OPERATIONS RESEARCH (OPEN ELECTIVE-III) (B18MA07)	No. of Hours L:3 T:0 P:0	Credits:3
After com	pletion of this cou	rse, the student shall be/shall		
1	Find optimum so	olutions by various techniques of Linear Pro-	gramming Proble	em.
2	Analyze the opti	mum expenditure of the products by Transp	ortation Problem	l.
3	Find out the opti	mum allocation and time of the tasks.		
4	Examine the grap	phical solution of a game theory problems.		
5	Formulate concre knowledge and p	ete problems using Queuing theoretical app principles of Queuing Theory.	roaches and gain	strong

Course Outcome	Year /Semester IV / II Sem	Subject Name (Subject Code) PLANT LAYOUT & MATERIAL HANDLING (PROFESSIONAL ELECTIVE – VI) (B18ME47)	No. of Hours L:3 T:0 P:0	Credits:3
After com	pletion of this cou	rse, the student shall be/shall		
1	Get the knowled	ge of various types of material handling sys	stems.	
2	Understand appl	ications of different types of plant layouts.		
3	Get the knowled	ge of applications of ergonomics in materia	l handling.	
4	Get the knowled	ge of designing of cost effective material ha	andling systems.	
5	Understand meri	ts of different types of plant layouts.		
Course Outcome	Year /Semester IV / II Sem	Subject Name (Subject Code) CNC TECHNOLOGIES (PROFESSIONAL ELECTIVE – VI) (B18ME48)	No. of Hours L:3 T:0 P:0	Credits:3
After com	pletion of this cou	rse, the student shall be/shall		
1	Understand the b	basic procedures and concepts of programm	ing, set up and op	peration of a
2	CNC Machining	center.		
3	Create geometry	and tool paths from the specifications on a	blueprint for sim	nle narts
5	using Master cam programming software.			
4	Identify and define the functions of the CNC machine control.			
5	Analyze the CN	C machining center for manufacturing simp	le parts.	
Course	Year /Semester	Subject Name (Subject Code)	No. of Hours	Credits:3
Outcome	IV / II Sem	JET PROPULSION & ROCKET	L:3 T:0 P:0	
		(PROFESSIONAL ELECTIVE – VI)		
		(B18ME49)		
After com	pletion of this cou	rse, the student shall be/shall		
1	Compare the cha	racteristics & performance of aerospace pro	opulsion systems.	
2	Estimate their Pe	erformance and behavior of ramjets.		
3	Analyze prelimir	nary designs of rocket to meet specified req	uirements.	
4	Identify testing a propulsion.	and instrumentation methods for cryogenics	like nuclear and	plasma and
5	Understand the f	undamentals of turbojet, ramjet and their pe	erformance evalu	ation.



Viswambhara Educational Society

VAAGDEVI COLLEGE OF ENGINEERING

UGC-Autonomous

Department of Mechanical Engineering

COURSE OUTCOMES FOR M.TECH – THERMAL ENGINEERING R18 FOR THE YEAR 2018-2021

Course Outcome	Semester I Sem	Subject Name (Subject Code) ADVANCED THERMODYNAMICS (M18TE01)	No. of Hours L:3 T:0 P:0	Credits: 3
After the o	completion of this c	ourse, the students should be able to		
1	Emphasize the resubstance	elevance of Evaluation of thermodynamic I	properties of wor	king
2	Know the applic	ations of Energy properties of real gases, V	apour pressure,	Clausius
3	Know about Psyc processes, cooling	hometric mixture properties and psychome g towers.	tric chart, Air co	nditioning
4	Get uses of the Co Reference levels of	ombustion Reactions, Enthalpy of formatio of tables. Energy of formation, Heat reaction	n. Entropy of for	rmation,
5	Solve a problem i Second law analy	n Review binary vapour cycle, co generations state of cycles and Refrigeration cycles.	on and combined	cycles,
6	Know about Fuel Thermodynamic o	cells, Thermo electric energy, Thermo ion devices magneto hydronamic generations, I	c power generat Photovoltaic cell	ion, s.
Course Outcome	Semester I Sem	Subject Name (Subject Code) ADVANCED FLUID MECHANICS (M18TE02)	No. of Hours L:3 T:0 P:0	Credits: 3
After the o	completion of this c	course, the students should be able to		
1	Know about App	ications of In viscid Flow of Incompressib	le Fluids	
2	Applicability of E	Basic Laws of fluid Flow		
3	Understanding the	e Viscous Flow		
4	Get Knowledge o	n Boundary Layer Concepts		
5	Deal with Fundan	nental concept of turbulence		
6	Deal with Thermo	odynamic basics – Equations of continuity,	Momentum and	Energy –
	Acoustic Velocity	V Derivation of Equation for Mach Number	[[
Course Outcome	Semester I Sem	Subject Name (Subject Code) ADVANCED REFRIGERATION AND AIR CONDITIONING (M18TE03)	No. of Hours L:3 T:0 P:0	Credits: 3
After the o	completion of this c	ourse, the students should be able to		
1	Deal with Comp	onents of Vapor Compression System		
2	Develop the stud	ly skills on Production of Low Temperatur	e	
3	Develop the study diagrams – limita	y skills on Steam Jet refrigeration system: F tions and applications	Representation or	n T-s and h-s
4	Enable students o conditioning, The	n Construction of Psychometric chart, Req rmodynamics of human body.	uirements of Co	nfort Air –

5	Equip students wi and year round air	th Parameters influencing the Effective Terr r – conditioning systems	mperature. Sumr	ner, winter
6	Make students aw cleaning Grills an and Humidity	are of Humidification and dehumidification d diffusers Fans and blowers Measurement	n equipment, Systand control of T	stems of Air Semperature
Course Outcome	Semester I Sem	Subject Name (Subject Code) TURBO MACHINES (M18TE04)	No. of Hours L:3 T:0 P:0	Credits: 3
After the o	completion of this c	ourse, the students should be able to		
1	Understand the I	Fundamentals of turbo machines and their a	pplications	
2	Applicability of st flow on performation	team nozzle and steam turbine in power plance of plant.	ant and the relation	on of their
3	To equip student	ts with the fundamental of thermodynamics	s concepts for ga	s dynamics
4	Get Knowledge	about type and working principle of centrif	ugal compressor	S
5	Deal with Funda systems	mental concept of Axial flow compressors	and different typ	be of cascade
6	To understand regas turbines	elations of degree of reaction for maximum	performance of	axial flow
Course Outcome	Semester I Sem	Subject Name (Subject Code) ENERGY MANAGEMENT (M18TE05)	No. of Hours L:3 T:0 P:0	Credits: 3
After the o	completion of this c	ourse, the students should be able to		
1	To understand the	e need of energy management and its princi	ples.	
2	Analyze the requi	rement of energy audit and its concepts.		
3	Understand the co	oncepts of economic analysis and its scope.		
4	Get Knowledge al	bout methods of evaluation of projects.		
5	Deal with Fundan	nental concept energy audit		
6	Demonstrate the a	application of alternative energy sources in	energy managen	nent
Course Outcome	Semester I Sem	Subject Name (Subject Code) GAS TURBINES (M18TE06)	No. of Hours L:3 T:0 P:0	Credits: 3
After the o	completion of this c	ourse, the students should be able to		
1	Explain the Appli	cations and classifications of gas turbine		
2	Applicability of d	ifferent processes for improving the perform	mance of the pla	nt.
3	Analysis of Ideal	and Real cycle gas turbines and concept of	improving the e	fficiency.
4	Get Knowledge a	bout fundamental equations and laws of rot	ating machines	
5	Learn the basic ar compressors.	nd advanced concepts and working principle	es of different ty	pe of
6	To determine the of gas turbine plat	importance of effective combustion system nt.	for maximize th	ne efficiency
Course Outcome	Semester I Sem	Subject Name (Subject Code) NON CONVENTIONAL ENERGY SOURCES (M18TE07)	No. of Hours L:3 T:0 P:0	Credits: 3
After the o	completion of this c	ourse, the students should be able to		

1	Know about Solar	Energy Applications: Solar water heating.	Space heating,	Active and
1	passive heating E	nergy		
2	Deal with Structu	re of earth, Geothermal Regions, Hot spring	gs. Hot Rocks	
3	Deal with to solve a problem in Thermionic & thermoelectric generation, MHD			
	generator.			
4	Deal with Fusion,	Fusion reaction, P-P cycle, Carbon cycle,	Deuterium cycle	, Condition
	for controlled fusi	ion, Fuel cells and photovoltaic.		
5	To enable student	s on energy sources. Plant productivity, Bio	omass wastes, ae	erobic and
	Anaerobic biocon	version processed	• • • • •	
6	To equip students	with Wind, Beaufort number, Characterist	ics, Wind energy	y conversion
	systems, Types, B	setz model. Interference factor	-	
Course	Semester	Subject Name (Subject Code)	No. of Hours	
Outcome	I Sem	EQUIPMENT DESIGN FOR THEDMAL SYSTEMS (M12TEO2)	L:3 T:0 P:0	Credits: 3
	1.4. 6.1.	THERWAL STSTEWS (WIGTEOO)		
After the c	completion of this c	ourse, the students should be able to		
1	Get details about	heat exchanger and its classifications.		
2	Determine the eff	ect of increasing pipes in performance of h	eat exchanger an	id get idea
	about double pipe	heat exchanger.	1 (1 1	
3	Understand the w	Understand the working principle of steam condenser and explore the condensation of		
	single vapors.	hout managed like venerization eveneration	an and rehailing	and study
4	Get Knowledge at	bout processes like vaporization, evaporation	on and redoning	and study
5	To understand the	working principle of cooling tower		
5	To understalld the	working principle of cooling tower		
0	Determine the des	sign requirement of effective cooling tower		
Course	Semester	Subject Name (Subject Code)	No. of Hours	Caralitary 2
Outcome	I Sem	ADVANCED THERMAL FNGINEERING LAB (M18TE09)	L:0 T:0 P:4	Creatts: 2
A fton the	amplation of this s	everse the students should be able to		
	the densities of the A	ourse, the students should be able to		
1	Understand the A	nalysis of air conditioning unit.		
2	Understand the A	nalysis of heat pipe.		
3	Know about Perfo	ormance analysis of flat plate collector.		
4	Know about Perfo	ormance analysis of evacuative tube concer	itrator	
Course	Semester	Subject Name (Subject Code)	No. of Hours	
Outcome	I Sem	MODELING AND ANALYSIS LAB-I	L:0 T:0 P:4	Credits: 2
1 Q. 1		(M181E10)		
After the o	completion of this c	ourse, the students should be able to	1	
1	Understand the A	nalysis of flow profile on the designed noz	zle.	
2	Understand the Dodiffuser.	esigning the diffuser and Analysis of flow	profile on the de	signed
3	Understand the A	nalysis of fluid flow on over curved surface	e.	
4	Understand the A	nalysis of force exerted by the fluid jet on f	fixed flat plate	
Course	Somestor	Subject Name (Subject Code)	No of Hours	
Outcome	I Sem	RESEARCH METHODOLOGY	L:2 T:0 P:0	Credits: 2
Guttome		(M18MC01)		

After the o	completion of this c	ourse, the students should be able to		
	Understand that w	when IPR would take such important place i	in growth of indi	viduals &
1	nation, it is needle	ess to emphasis the need of information abo	out Intellectual P	roperty
	Right			
0	Compose and wri	te quality research reports and attain famili	arity with intelle	ctual
2	property rights.		2	
3	Understand resear	rch problem formulation		
4	Analyze research	related information		
Course	Semester	Subject Name (Subject Code)	No. of Hours	Credits: 0
Outcome	I Sem	STRESS MANAGEMENT (M18AC02)	L:2 T:0 P:0	
After the o	completion of this c	course, the students should be able to	1	
1	To understand the	e need of energy management and its princi	ples.	
2	Analyze the requi	rement of energy audit and its concepts.	•	
3	Understand the co	oncepts of economic analysis and its scope.		
4	Get Knowledge a	bout methods of evaluation of projects		
~		Subject Name (Subject Code)		
Course	Semester	ADVANCED HEAT TRANSFER	No. of Hours	Credits: 3
Outcome	11 Sem	(M18TE11)	L:3 1:0 P:0	
After the o	completion of this c	course, the students should be able to		
1	Emphasize the Ge	eneral heat Conduction equation.		
2	Know the Lumpe	d system analysis		
3	Know about Equa	ations of fluid flow		
4	To understand the	e concept of free convection, boiling and co	ondensation	
5	Get the knowledg	e about transfer of heat in the space and at	higher temperatu	ire.
6	Understand the co	oncepts of mass transfer and significance of	f non dimensiona	l numbers
C	C (Subject Name (Subject Code)	NI CII	
Course	Semester	ADVANCED I.C. ENGINES	No. of Hours	Credits: 3
Outcome	II Sem	(M18TE12)	L:5 1:0 P:0	
After the o	completion of this c	ourse, the students should be able to		
1	Know about Des	sign and operating Parameters		
2	Applicability of	Thermo-chemistry of Fuel-Air mixtures.		
3	Understanding t	he effect of Volumetric Efficiency on the p	erformance of th	e engines.
4	Get Knowledge	on Mean velocity and turbulent characteris	tics.	
5	Deal with Abnor	rmal combustion Fuel factors, MPFI.		
6	To determine Er	nissions, Measurement & Exhaust Gas Tre	atment	
C	C (Subject Name (Subject Code)	NJ CIT	
Course	Semester	CRYOGENIC ENGINEERING	No. of Hours	Credits: 3
Outcome	11 Sem	(M18TE13)	L:5 1:0 P:0	
After the o	completion of this c	ourse, the students should be able to		
1	To understand the	main concept of cryogenic systems.		
2	To know the impo	ortance and applications of gas liquefaction		
3	Understand the w	orking of liquefaction systems for various type	s of gases	
4	Equip students with the knowledge of gas separation systems and purification systems.			

5	To impart knowle	dge on cryogenic refrigeration systems		
6	Make students aw	are applications of cryogenic system in space t	echnology	
Course Outcome	Semester II Sem	Subject Name (Subject Code) JET PROPULSION AND ROCKET ENGINEERING (M18TE14)	No. of Hours L:3 T:0 P:0	Credits: 3
After the c	completion of this c	ourse, the students should be able to		
1	To understand th	e concept of turbo jet propulsion system an	d performance o	f flight.
2	Enable students	to learn the concept of rocketry and its fund	damentals.	C
3	To impart know propulsion.	ledge on the effect of nozzle design on the	performance of j	et
4	Get idea about th	ne combustion chemistry of fuels used in ro	ocketry.	
5	Equip students w	with the knowledge of advanced rocket eng	ines.	
6	To learn the vari	ous method of liquid rocket propulsion sys	tem	
Course Outcome	Semester II Sem	Subject Name (Subject Code) ALTERNATE FUELS (M18TE15)	No. of Hours L:3 T:0 P:0	Credits: 3
After the c	completion of this c	ourse, the students should be able to	·	
1	Know about Ava hydrogen, and am	ilability and properties of alternate fuels, ge monia.	eneral use of Alc	cohols, LPG,
2	Deal with Properties as engine fuel, alcohols and gasoline blends.			
3	Deal with to solv	ve a problem in performance in SI & CI En	gines.	
4	Deal with perfor	mance and emission characteristics, bio die	esel and its chara	cteristics
5	To enable studen specifications, sy	nts on Layout of an electric vehicle, advantation structure of an electric vehicle, advantation of the structure of the struc	age and Limitation	ons,
6	To equip student	s with electronic control system.		
Course Outcome	Semester II Sem	Subject Name (Subject Code) ADVANCED COMPUTATIONAL FLUID DYNAMICS (M18TE16)	No. of Hours L:3 T:0 P:0	Credits: 3
After the c	completion of this c	ourse, the students should be able to		
1	Understand Finite	difference method, finite volume method,	finite element m	ethod
2	Consider Solution	on methods of elliptical equations		
3	Understand Bou	ndary layer equations for laminar, turbulen	t flow	
4	Solve numerical method.	on Burgers equations: Explicit and implici	t schemes, Rung	e- Kutta
5	Get knowledge of methods.	on Formulations of incompressible viscous	flows by finite d	lifference
6	Get knowledge of	on Finite volume method via finite differen	ce method	
Course Outcome	Semester II Sem	Subject Name (Subject Code) THERMAL AND NUCLEAR POWER PLANTS (M18TE17)	No. of Hours L:3 T:0 P:0	Credits: 3
After the o	completion of this o	course, the students should be able to		
1	Understand the T	ype of Power plants, Direct energy convers	ion system.	
2	Analysis and Un	derstand Recent developments in power ge	eneration.	
3	Know about Fee	d water heaters.		

4	To impart know	ledge on Combined cycle power plant and	its importance.	
5	To understand th	ne concepts of Nuclear Reactor and its Class	sification	
6	Get knowledge of	on Factors affecting the economics		
Course Outcome	Semester II Sem	Subject Name (Subject Code) THERMAL MEASUREMENTS & PROCESS CONTROLS (M18TE18)	No. of Hours L:3 T:0 P:0	Credits: 3
After the c	completion of this c	ourse, the students should be able to	·	
1	Understand the fu	ndamental principles of measuring instrum	ents.	
2	Identify the wor	king principle of all the instruments used to	determine the f	low.
3	Develop the adv	anced thermometers for different type of o	perations.	
4	Measure the leve	el by direct or indirect methods.		
5	Impart knowledg	ge on principles used for process control.		
6	Design open as v	well as closed loop control system		
Course Outcome	Semester II Sem	Subject Name (Subject Code) ADVANCED INTERNAL COMBUSTION ENGINES LAB (M18TE19)	No. of Hours L:0 T:0 P:4	Credits: 2
After the c	completion of this c	ourse, the students should be able to		
1	Understand the effect of change in compression ratio on the performance of diesel& petrol engine.			
2	Analyze the effect of change in fuel injection timing on the performance of diesel engine.			
3	Understand and	analysis Flame propagation analysis of gas	eous fuels.	
4	Use different typ	be of fuels and analyze its effect on the per-	formance of dies	el and petrol
Course Outcome	Semester II Sem	Subject Name (Subject Code) MODELING AND ANALYSIS LAB-II (M18TE18)	No. of Hours L:0 T:0 P:4	Credits: 2
After the c	completion of this c	ourse, the students should be able to	·	
1	Aware of Therma	l stress analysis of piston head of diesel en	gine for real con	dition.
2	Design of intake	and exhaust valve for diesel engine.	-	
3	Analyze the ther	mal stress of crank rod of diesel engine for	real operating c	onditions.
4	Understand effect	ct of thermal stress on the intake and outlet	valve of IC engi	nes
Course Outcome	Semester II Sem	Subject Name (Subject Code) ENGLISH FOR RESEARCH PAPER WRITING (M18AC01)	No. of Hours L:0 T:0 P:4	Credits: 2
After the c	completion of this c	ourse, the students should be able to		
1	To understand th	ne nuances of language and vocabulary in v	vriting a Researc	h Paper.
2	To develop the c	content, structure and format of writing a re	search paper.	1
3	To give the prac	tice of writinga Research Paper.	* *	
4	To enable the stu plagiarism	idents to evolve original research papers w	ithout subjected	to
Course Outcome	Semester III Sem	Subject Name (Subject Code) ADVANCED MATERIALS FOR THERMAL SYSTEMS (M18TE22)	No. of Hours L:3 T:0 P:0	Credits: 3

After the c	completion of this c	ourse, the students should be able to		
1	Understand the f	fundamentals of different type of testing me	ethods.	
2	Analysis and Understand Impact Behavior Heat Treatment of Steels and Cast Irons.			
3	Impart knowledge on fundamentals of Nuclear Power Plant and Their Materials			
4	Get knowledge a	bout materials in Fuel cells and Solar Cells	s Electro catalyst	-
5	Determine the ad	avancement of use of super alloys.		
6	Design advanced	l energy storage system.		
Course Outcome	Semester III Sem	Subject Name (Subject Code) COMPUTER SIMULATION OF SI & CI ENGINES (M18TE23)	No. of Hours L:3 T:0 P:0	Credits: 3
After the c	completion of this c	ourse, the students should be able to		
1	Impart knowledg	ge on importance of computer simulation of	f IC engines.	
2	To understand the	ne concept of Wiebe's function in SI engine	e modeling.	
3	Determine the in	nportance of Watsons and White house and	l Way models in	CI engines.
4	Understand the b	basics of gas exchange processes.		
5	Equip students w	with knowledge of heat transfer to the surro	unding from the	IC engines.
6	Analyze the effe engines	ct of friction in moving parts of the engine	s on the perform	ance of
Course Outcome	Semester III Sem	Subject Name (Subject Code) ADVANCED FINITE ELEMENT ANALYSIS (M18TE24)	No. of Hours L:3 T:0 P:0	Credits: 3
After the c	completion of this c	ourse, the students should be able to		
1	Understand the I	Basic concepts, historical back ground, app	lications of FEM	Ι.
2	Analysis and Un	derstand Virtual energy principle		
3	Know about 1-D	Structural Problems.		
4	Impart knowledg	ge on Hermite shape functions, stiffness ma	trix, and Load v	ector.
5	Know about Fin	ite element modeling of Axi-symmetric sol	ids	
6	Get knowledge of	on Dynamic considerations and Dynamic ed	quations	
Course Outcome	Semester III Sem	Subject Name (Subject Code) ADVANCED OPTIMIZATION TECHNIQUES & APPLICATIONS (M18MA01)	No. of Hours L:3 T:0 P:0	Credits: 3
After the c	completion of this c	ourse, the students should be able to		
1	Know about the	basics of one dimensional Optimization me	ethods.	
2	Choose the ways	s to use Direct search method		
3	Calculate dynam	ic programming.		
4	Construct linear	programming		
5	Analyze integer	programming		
6	Categorize stoch	astic programming.		
Course Outcome	Semester III Sem	Subject Name (Subject Code) BUSINESS LAW AND ETHICS (M18MB23)	No. of Hours L:3 T:0 P:0	Credits: 3
After the c	completion of this c	ourse, the students should be able to		
1	Know the Busine	ess Laws related to incorporating a compar	ıy	

2	Identify the Importance of Ethics in Business
3	Categorize Cyber Crime and Legal Aspects.
4	Analyze Business Ethics.
5	Understand Negotiable Instruments Act – 1881
6	Compare Need for cyber laws in the Indian context.

COURSE OUTCOMES FOR B.TECH-CSE R18 FOR THE YEAR 2018-2019

Course	Year/Semester	Subject Name (Subject Code)	No. of Hours	Credits: 4
Outcome	I/I Sem	LINEAR ALGEBRA AND CALCULUS	L:3 T:1 P:0	
		(BI8MA0I)		
After the o	Completion of this C	course, the students should be able to	tamiation of avator	n of lincon
1	algebraic equation	rinciples of matrix to calculate the charact	lensuics of syster	n of finear
2	Determine eigen	values, eigen vectors and orthogonally diag	onalize symmetr	icmatrices.
2			, <u> </u>	
3	Analyze the natur	e of sequence and series to identify the con	vergence.	Analuza
4	improper integral	s using Beta and Gamma functions.	computationally.	Analyze
5	Calculate Partial	derivatives, Jacobian and extrema of func	tions of multiple	variables
	with or without c	onstraints.		
Course	Year /Semester	Subject Name (Subject Code)	No. of Hours	Credits:4
Outcome	I / I Sem	APPLIED PHYSICS (B18PH01)	L:4 T:0 P:0	
After com	pletion of this cou	rse, the student shall be/shall	•	
1	Illustrate fabricati	on of semi conductors, photo detectors, design	basis of quantum	mechanics
2	Recall facts of wa	ve optics extend & construct basics of wave op	otics.	
3	Interpret about las	ers, which leads to new innovations and impro	vements	
4	Elaborate and for students to prepare	mulate the study of characterization properties e new materials for various engineering applica	of opto-devices, o ations	organize the
5	Apply basic know	ledge on principles and recalls facts of light pro-	operties, and moti	vate for new
	innovations and a	nalyse applications of optical fibers	I	Γ
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:2
Outcome	I/I Sem	ENGLISH(B18EN01)	L:2 T:0 P:0	
After the o	completion of this c	course, the students should be able to		
1	Use English Langu	age effectively in spoken and written forms.		
2	Comprehend the gi	ven texts and respond appropriately.		
3	Communicate conf	idently in various contexts and different culture	es	whiting
4	and speaking skills		ng comprehension	, writing
5	Develops and Con	nmunicates by stating main ideas relevantly a	and coherently in	
	speaking &writing	5.	1	r
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits: 3
Outcome	I/I Sem	ENGINEERING GRAPHICS (B18ME01)	L:1 T:0 P:4	
After the o	completion of this c	course, the students should be able to		
1	Analyze the Proje	ections of points.		
2	Understand the Pr	rojections of solids.		
3	Estimate the use of	of Drawings, dimensioning, scales and coni-	c sections.	
4	Modify the Appli	cations of this knowledge in Computer Gra	phics.	
5	Compare the conversion of isometric views to Orthographic views			
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits: 4
Outcome	I/I Sem	PROGRAMMING FOR PROBLEM SOLVING(B18CS01)	L:4 T:0 P:0	
After the o	completion of this o	course, the students should be able to		
1	Understanding h	now problems are posed and how they ca	an be analyzed	for obtaining
2	Solution.	he fundamentals of C programming		
		ne rundamentais of C programming.		

3	Learning of sequencing, branching, looping and decision making statements to solve Scientific and engineering problems			
4	Implementing d	ifferent operations on arrays and creating	g and using of t	functions to
5	Ability to design Methodology	and implement different types of file struc	tures using stand	lard
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:
Outcome	I/I Sem	APPLIED PHYSICS LAB (B18PH02)	L:0 T:0 P:3	1.5
After the o	completion of this c	course, the students should be able to		
1	Operate different	equipments related to light & electronics.		
2	Develop experime	ental skills to design new experiments & circuit	design.	
3	Understand about	modern equipment like solar cell, optical fibre	etc.,	
4	Have Exposure to	develop novel semi conductor devices.	[
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:1
Outcome	I/I Sem	PROGRAMMING FOR PROBLEM SOLVING – LAB (B18CS02)	L:0 T:0 P:2	
After the o	completion of this c	course, the students should be able to		
1	Understand basic	structure of the C Programming, data types	, declaration and	l usage of
	variables, control	structures and all related concepts.		-
2	Ability to underst	and any algorithm and Write the C program	nming code in ex	ecutable
	form.		e	
3	Implement Progra	ams using functions, pointers and arrays, ar	nd use the pre-pr	ocessors to
	solve real time pr	oblems.	1 1	
4	Ability to use file	structures and implement programs on file	S.	
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits: 4
Outcome	I/II Sem	DIFFERENTIAL EQUATIONS AND VECTOR CALCULUS (B18MA02)	L:3 T:1 P:0	
After the o	completion of this c	course, the students should be able to		
1	Apply the fundame	ntal concepts of ordinary differential equations	to real time probl	ems.
2	Find the complete s conceptsin solving	solution of a non homogeneous differential eq physical problems of Engineering.	uations and apply	ing its
3	Evaluate the multip	le integrals in various coordinate systems.		
4	Apply the concepts	of gradient, divergence and curl to formulate E	Engineering proble	ems.
5	Analyze line, surfa	ce and volume integrals using fundamental theo	prems.	
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits: 3
Outcome	I/II Sem	BASIC ELECTRICAL AND	L:3 T:0 P:0	
		ELECTRONICS ENGINEERING		
		(B18FF02)		
After the	omplotion of this s	(Drolleo2)		
Arter tile (Learn Basic circuit	t concents such as electrical parameters quant	ities laws and ne	twork
1	reduction techniqu	ues and apply the network theorems with DC ex	citation in the sys	stems
2	Analyze the stead	y state operation of single phase and three phase een voltage and current for delta and star conne	e AC circuits and ctions	study the
3	Explore the constr	uction, working, control and testing of various	DC and AC Mac	hines
4	Gain knowledge of with their V-I char	n basic electronic devices such as P-N junctior racteristics.	Diode, rectifiers	and filter
5	Acquire extended diode and SCR de	I knowledge on next generation of electronic de vices.	evices such transis	tors, zener

Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits: 4
Outcome	I/II Sem	ENGINEERING CHEMISTRY (B18CH01)	L:3 T:1 P:0	
After the c	completion of this c	course, the students should be able to		
1	Recall previous l	knowledge regarding atomic and molecular	structure.	
2	Design polymeri	c engineering materials. Recall basic organ	nic reactions	
3	Construct batteri	es and classify different electronics and ele	ectrical like cells	,
4	Examine which t and explain the c	type of impurities are present in water, spec	cification of drin	king water
5	Apply phase rule compositions.	e and adsorption to construct the materials	by analyzing the	ir
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits: 1
Course		ENGLISH LANGUAGE AND		creation 1
Outcome	1/11 Sem	COMMUNICATION SKILLS LAB(B18EN02)	L:0 1:0 P:2	
After the c	ompletion of this c	course, the students should be able to		
1	Neutralization of t	he influence of the sounds of their mother to	າດແຮ	
1		the influence of the sounds of their mouler to	igue	
2	Better understanding of nuances of English language through audio- visual experience and group activities			
3	Speaking with clar	ity and confidence which in turn enhances th	eir emplovability	skills
4	Using language ap	propriately for public speaking	<u> </u>	
Course	Vear / semester	Subject Name (Subject Code)	No. of Hours	Credits 1 5
Course		BASIC ELECTRICAL AND		Ci cuito.i.o
Outcome	I/II Sem	ELECTRONICS ENGINEERING LAB	L:0 1:0 P:3	
		(B18EE03)		
	1.4. 641.			
After the c	completion of this c	course, the students should be able to		
1	Learn to simplify	complex electric and electronic circuits by appl	lying the KVL and	I KCL laws.
2	A notward the north	al loading on the system.		
3	Analyze the perior	mance of DC machines	ducting devices	
4	Identify and analy	ze the performance and operation of semi cond	ducting devices.	
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:1.5
Outcome	I/II Sem	ENGINEERING WORKSHOP & ITWORKSHOP (B18ME02)	L:0 T:0 P:3	
A fton the a	omplotion of this c	nourse the students should be able to		
	Know the funder	ental knowledge of various trades and their use	age in real time An	plications
2	Gain knowledge o	f Foundry Welding Black smithy Fitting Ma	ige in real tille Ap	pheanons.
3	Understand the h	asis for analyzing power tools in construction	and wood worki	ng electrical
5	engineering and m	nechanical engineering.	und worki	
4	Use basic concept	s of computer hardware for assembly and disas	sembly.	
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits: 4
Outcome	II/I Som	MATHEMATICAL FOUNDATIONS	I .4 T.0 D.0	
Outcome	II/I Sem	OF COMPUTER SCIENCE(B18CS03)	1.41.01.0	
After the c	completion of this c	course, the students should be able to		
1	Evaluate the notic	ons of propositions, predicate formulae, Rul	es of inference.	
2	Illustrate and desc	cribe various types of Relations and Function	ons.	
3	Apply knowledge	of Mathematics, Combinations & Permuta	ations, Binomial	Multinomial
	theorems, Pigeon	hole principles.		
4	Develop to solve	the recurrence relations by using various me	ethods.	
5	Perceive the basic concepts of graph theory and apply for real time examples.			

Course Outcome	Year / semester II/I Sem	Subject Name (Subject Code) DIGITAL LOGIC DESIGN & MICRO PROCESSORS(B18EC49)	No. of Hours L:3 T:0 P:0	Credits: 3
After the c	nompletion of this c	course, the students should be able to		
1	Understand the b	asic concepts of different Number system	s and basic theo	rems
-	using inBoolean	algebra.	s and busic theo	Tems
2	Design the logic of expressions with	circuits using basic logic gates by reducing he help of Karnaugh Map.	the Boolean	
3	Analyze various t	ypes of combinational and sequential circuit	ts.	
A	Understand the in	ternal organization of popular 8086 microny	2000690 r 9	
5	Learn the design	of microprocessors based systems	000055015.	
0		S his 4N s (S his 4 G h)	NT CIT	C 1 ¹ 4
Course Outcome	Year / semester II/I Sem	Subject Name (Subject Code) DATABASE MANAGEMENT SYSYEMS(B18CS04)	No. of Hours L:4 T:0 P:0	Credits: 4
After the o	completion of this c	course, the students should be able to		
1	Perceive the fund	amental concepts of database management.		
2	Analyze database	models & Entity Relationship models and	to draw the E-R	
	diagram forthe gi	ven case study.		
3	Apply relational lexpressions forque	Database Theory, and be able to write relation to the relation of the second se	ational algebra	
4	Apply Normaliza Issues of Transact	tion Process to construct the database and e	explain Basic	
5	Compare the basi	c Database storage structures and access te	chniques: File	
	Organizationinde	xing methods including B- Tree and Hashi	ng.	
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits: 4
Outcome	II/I Som	DATA STRUCTURES	I •4 T•0 P•0	
Outcome	II/I Selli	THROUGH	2.41.01.0	
		C++(B18CS05)		
After the o	completion of this o	course, the students should be able to		
1	To find the differ	ence between structured programming and	object oriented	
	programming Lar oriented program	nguage and understanding the features of C- ming.	++ supporting ob	ject
2	To explain and ap orientedPrograms	pply the major object oriented concepts to ir in C++.	nplement object	
3	To build the basic searching, and Tra	knowledge to handle operations like insert aversing mechanisms in linear data structur	ions, deletions, res.	
4	Examine with adv queue datastructu	vanced data structure such as hash tables an res.	d priority	
5	Ability to have kr code fornon- line	nowledge on trees, balanced trees, graphs an ar data structures, and different sorting tecl	nd developing Canniques.	++
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits: 4
Outcome	II/I Sem	COMPUTER ORGANIZATION &	L.4 T.0 P.0	
		ARCHITECTURE(B18CS06)		
After the o	completion of this o	course, the students should be able to		
1	Perceive basics C	omputer types, buses, registers.		
2	Understand basic	design of Computer, addressing modes, Mi	cro Program Exa	imple.
3	Perceive control u	init operations and arithmetic Operations.		
4	Understand vario	us Peripheral devices operations.		
5	Design memory o	rganization that uses banks for different wo	ord size operation	18.
Course Outcome	Year / semester II/I Sem	Subject Name (Subject Code) DIGITAL LOGIC DESIGN & MICROPROCESSORS	No. of Hours L:0 T:0 P:3	Credits: 1.5

		LAB(B18EC50)		
After the o	completion of this o	course, the students should be able to		
1	Demonstrate vari XNOR)and flip f	ous types of logic gates (AND, OR, NOT, Nops.	NAND, NOR, X	OR,
2	Analyze and desi	gn various types of combinational and seque	ential circuits.	
3	Develop micropro	ocessor based programs for Arithmetic and	Logical Operation	ons
4	Develop micropro	ocessor based programs for various problem	18.	
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits: 1.5
Outcome	II/I Sem	DATABASE	L:0 T:0 P:3	
		MANAGEMENT SYSTEMS LAB(B18CS07)		
After the c	completion of this (course, the students should be able to		
1	Design database s	schema for given Application.		
2	Transform ER M	odel to Relational Model.		
3	Apply the normarealistic problems	lization techniques for development of ap	oplication softwa	are to
4	Construct SQL q	ueries to retrieve information from database	s.	
Course	Year/semester	Subject Name (Subject Code)	No. of Hours	Credits:1.5
Outcome	II/I Som	DATA STRUCTURES	L:0 T:0 P:3	
		ΓHROUGH C++ Lab(B18CS08)		
After the c	completion of this o	course, the students should be able to		
1	To be able to desi	gn and implement Object Oriented Program	nming concepts.	
2	Be able to select	the appropriate Data Structure for given pro	blem.	
3	To illustrate operation	ations like searching, insertion, deletion and	l traversing	
	mechanism on Va	rious Data Structures.		
4	To understand an	d apply the hashing techniques.	T	
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits: 0
Outcome	II/I Sem	ENVIRONMENTAL	L:2 T:0 P:0	
		SCIENCE(B18MC02)		
After the c	ompletion of this a	course, the students should be able to		
1	Recall previously	learned ecosystem and find how the biodiv	versity changes	
	went in theenviro	onment.	8	
2	Demonstrate outl	ines of types of pollutions and related to day	y-to-day life.	
3	Organize important seminars on natural resources.			
4	Apply models of	food chains and energy flow models to solv	e the identified p	parameters.
5	Classify the types	s of pollutants and distinguish the functions	of sustainable	
	developmentthat	take part in the environment.		
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits: 3
Outcome	II/II Sem	STATISTICAL	L:3 T:0 P:0	
		METHODS FOR FNCINFFPS(R18MA04)		
A ftor the c	ompletion of this	course the students should be able to		
1	Use probability th	heary and deals with modeling uncertainty i	in order to evalue	atethe
-	probability of rea	l time events.		
2	Develop discrete	e and continuous probability distributions to	o generate data fi	om
	Binomial, Poisson and Normal Distributions.			

3	Perform correlation and regression analysis, in order to estimate the nature and the strength of the linear relationship between two variables			
4	Construct confidence interval estimates for population parameters to test the			
5	Formulate conci knowledge and	rete problems using Queuing theoretical a principles of Queuing Theory.	pproaches and g	gainstrong
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:4
Outcome	II/II Sem	DESIGN AND ANALYSIS OF ALGORITHMS (B18CS09)	L:3 T:1 P:0	
After the o	completion of this o	course, the students should be able to		
1	Expose student's	to few known methods of solution process	sses, build new s	solution
	algorithms, analy	ze the asymptotic performance of algorithr	ns and to write r	igorous
2	Identify appropri	s for algorithms.	methods for sr	pecified
-	classes of applica	tions.	methous for sp	
3	Perceive how the	e choice of data structures and algorithm	design methods	would
	impact theperform	nance of programs and how to compare the	em.	
4	Design methods programming, ba	such as the greedy method, divide a cktracking and branch and bound	and conquer, d	ynamic
5	Perceive methods	to deal with logarithmic type, polynomial t	ype and non-poly	ynomial
	type of classes	of problems and Synthesis of efficient	algorithms in c	ommon
	engmeening desig		Γ	
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits: 3
Outcome	II/II Sem	AUTOMATA THEORY(B18CS10)	L:3 T:0 P:0	
After the o	completion of this o	course, the students should be able to		
1	Explain basic con	cepts in formal language theory, grammars	s, automata	
2	theory (DFA&NF Know the produc	A), computability theory, and complexity the tion rules of regular expressions and grammer the transmission of transmission of the transmission of	neory.	
_	includingcontext:	free and context: sensitive grammars.	liais,	
3	Construct a push	down automata and context free, regular,	normal	
	formgrammars to	design computer languages		
4	Evaluate solution	for various problems using a theoretical	computer	
5	(Turniginacinite) Explain the relativ	onship among language classes and gramm	ars with the	
	help of Chomsky	Hierarchy, and Distinguish between decidal	oility and	
	undecidability.		-	
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:4
Outcome	II/II Sem	(B18CS11)	L:4 T:0 P:0	
After the o	completion of this o	course, the students should be able to		
1	Compare various	Operating Systems architectures, IO structu	ures, Network St	ructure
2	Analyze the virtu	al memory, paging and memory allocation t	echniques for	
3	Apply Deadlock	ns. prevention and Deadlock Detection algorith	ums and perceive	the
_	working of an operating system as a File manager. I/O manager. Process manager.			
4	Understand the ov	verview of Disk Storage Structure.		-
5	Analyze assess ac	ccess controls to protect files.		
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:3
Outcome	II/II Sem	MANAGERIAL ECONOMICS & FINANCIAL	L:3 T:0 P:0	

		ACCOUNTANCY(B18MB01)		
After the o	completion of this o	course, the students should be able to		
1	Understand the na	ature, scope and importance of Managerial	Economics.	
2	Know what dema	nd is, analyze demand and how elasticity of	f demand is used	for pricing
	decisions and to e	evaluate methods for forecasting demand.		
3	Know how produ	ction function is carried out to achieve least	t cost combination	on
	of Inputsand how	to analyze cost.		
4	Understand the cl	haracteristics of different kinds of markets a	and outline differ	ent
	form of business of	organization and analyze now capital budge	ting techniques a	are
5	Know how to pre	nare final accounts and how to interpret the	m analyze and	
c	interpretfinancial	statements using ratio analysis.	in, unuryze und	
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:1.5
Outcome	II/II Som	OPERATING SYSTEMS	I .0 T.0 P.3	Creansine
	II/II Selli	LAB	1.01.01.3	
		(B18CS12)		
After the o	completion of this of	course, the students should be able to		
1	Apply CPU schec	luling algorithms, Page replacement algorith	hms.	
2	Explain Bankers	Algorithm for Dead Lock Avoidance & Dea	ad Lock Preventi	on
5	Describe the cond	cepts of paging and segmentation.		
4	Make use of Linu	x commands.		
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:1.5
Outcome	II/II Sem	WEB IECHNULUGIES I AR(R18CS13)	L:0 T:0 P:3	
After the o	completion of this o	course, the students should be able to		
1	Develop applicat	ions for a range of problems using object of	riented	
	programmingtech	niques.		
2	Design GUI base	d applications and Applets for web applicat	ions.	
3	How to connect a	java program with the mysql database.		
4	Develon web pag	es using advanced server side programming	through Servlet	s and ISP
Course	Vear / semester	Subject Name (Subject Code)	No of Hours	Credits: 0
Outcome		GENDER SENSITIZATION		creates. o
Outcome	II/II Seili	(B18MC07)	L:2 1:0 P:0	
After the o	completion of this	course, the students should be able to		
1	Define the need a	nd importance of women empowerment.		
2	Extend the levels	of understanding and classification of gend	er disparities.	
3	Identify the need	of equal distribution of work in the entire se	ector	
4	irrespective ofgender.			
4	Construct the emergency needs of saving girl child.			
5	Improves thinkin	g levels to find solution to the missing wom	en and bring	
C	realizationin the s		NI CII	C 1 ¹ 1 2
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:3
Outcome	III/I Sem	COMPUTER NETWORKS	L:3 T:0 P:0	
		(B18CS14)		
After the co	ompletion of this co	ourse, the students should be able to		
1	Illustrate basic co	omputer network technology.		
2	Identify the different types of network topologies and protocols.			

3	Categorize the hardware and software commonly used in data communications and			
	networking.			
4	Interpret Design	and Evaluate subnet masks and addr	resses to fulfill	networking
	requirements			
5	Analyze the featu	res and Operations of TCP/UDP, FTP, HT	TP, SMTP,SNM	P etc.
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:4
Outcome	III/I Sem	(B18CS15)	L:3 T:1 P:0	
After the co	mpletion of this co	ourse, the students should be able to		
1	Apply the knowle	edge of modern phases of compiler and its	features.	
2	Identify the simil	arities and differences among varies parsing	g techniques.	
3	Explain semantic	analysis in the context of the compilation p	process.	
4	Design a symbol	table format for the language defined by a s	grammar	
5	Analyze the code	generation algorithm.	5	
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:3
Outcome	III/I Sem	SOFTWARE ENGINEERING	L:3 T:0 P:0	
After the ee	mulation of this as	(B18CS16)		
			<u> </u>	• 1
1	Define Software	Engineering and list core principles of se	oftware engineer	ring and
2	Understand variot	is process models	ha ahla ta muan	ore CDC
2	Develop an unde	erstanding of software requirements and	be able to prep	are sks
2	document.	ano desian en sin serie a necessaria e staret	wal and abiant a	wing to d
3	approaches and b	e able to model.	ural and object of	oriented
4	Differentiate the	techniques of verification and validation ir	the process of	software
	development, Ap	ply the testing strategies on different level	of implementati	on (unit,
	integration,)			
5	Understand and a	able to compute quality measures and dev	velop a software	e quality
	assurance plan fo	r a software development.		
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:3
Outcome	III/I Sem	MACHINE LEARNING	L:3 T:0 P:0	
A 64 4]		(BI8CSI7)		
After the c	Completion of this (course, the students should be able to		
2	Explain the theor	ary classification		
3	Recognize and in	inferent various genetic algorithms		
4	Construct algorithms to learn tree, to learn linear, non-linear models and Probabilistic			
5	Able to analyze the	ne data using R Programming.		
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:3
Outcome	III/I Sem	PRINCIPLES OF PROGRAMMING	L:3 T:0 P:0	
		LANGUAGES (PROFESSIONAL ELECTIVE-D		
		(B18CS18)		
After the co	mpletion of this co	ourse, the students should be able to		
1	Analyze Svntax r	elated concepts including context free gram	mars, Attribute	Grammar
	parse trees.		,	
2	Perceive the sema	antic issues associated with function implementation	nentations.	

3	Perceive the concepts of Abstraction and Encapsulation constructs of classes, interfaces,				
	packages of various Language Examples.				
1	Danaaiya tha imm	amontation of abject ariented languages			
5	Compare the Fun	ctional Programming Languages and Logic	Programming I	anguages.	
Course	Voor / somostor	Veen / semester Subject Neme (Subject Code)			
Outse		COMPUTER GRAPHICS		Creans.5	
Outcome	III/I Sem	(PROFESSIONAL ELECTIVE-I)	L:3 1:0 P:0		
A 64 41		(B18CS19)			
After the co	mpletion of this co	burse, the students should be able to			
1	Get overview on	applications areas of Computer Graphics, C	Braphic devices a	and Monitors.	
2	Learn about bas	sic tools for constructing pictures with	straight lines,	methods for	
	Hours I carray pa	terns and text	curves, filled are	ea, cenno. or	
3	Learn about vario	us surface functions such as quadrics poly	voon surfaces su	per quadrics	
-	splines or blobby	objects and 3-Dimensions transformations	in computer gra	phics.	
4	Describe the im	portance of viewing. Learn major consider	erations in the g	generation of	
	realistic graphic	lisplays, detecting visible surfaces in a 3-D	imension scene a	nd designing	
	animation sequer	ices.			
5	Discuss the appli	cations of computer Graphics. Analyze the	fundamentals of	animations	
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:3	
Outcome	III/I Sem	MOBILE APPLICATION	L:3 T:0 P:0		
		DEVELOPMENT			
		(PROFESSIONAL ELECTIVE-I)			
After the co	mpletion of this co	DIOC520) Surse, the students should be able to			
1	Student understand	the working of Android OS Practically			
2	Ability to evaluat	te and select appropriate solutions to the mo	bile computing	platform	
3	Ability to develo	p the user interface.	one computing		
4	Ability to work w	vith SQLITE DB.			
5	Student will be abl	e to develop, deploy and maintain the Android	Applications.		
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:3	
Outcome	III/I Sem	(OPEN ELECTIVE-I) (B18MB06)	L:3 T:0 P:0		
After the co	mpletion of this co	ourse, the students should be able to	I		
1	Understand the le	egal rights related to design, trade and unfai	r competition.		
2	Ability to apply a	and assess principles in intellectual property			
3	Discuss the real t	ime areas related to semiconductor chip pro-	otection act.		
4	Develop differen	t law of patents.			
5	Introduce trade se	ecret and apply state law and trade secret la	w.		
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:3	
Outcome	III/I Sem	DISASTER MANAGEMENT	L:3 T:0 P:0		
		(OPEN ELECTIVE-I)			
		(B18CE53)			
After the co	mpletion of this co	ourse, the students should be able to			
1	Perceive the varie	ous types of disaster.			
2	Interpret the varie	ous types of Hazards and Vulnerability.			
3	Perceive differen	t approaches of disaster risk reduction.			
4	Describe the disa	ster management and safety plan.			

5	Discuss the various disaster risks in India.					
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:3		
Outcome	III/I Sem	MANAGEMENT SCIENCE	L:3 T:0 P:0			
		(OPEN ELECTIVE –I)				
A (0) 17		(B18MB02)				
After the co	mpletion of this co	ourse, the students should be able to				
1	Outline the funda	mentals of management and contributions t	to management.			
2	Define the social	Define the social Responsibilities of an organization towards stakeholders and build the				
	suitable organizat	tion structure and to identify factors influen	cing plant location	on and layout		
	decisions.					
3	Know importanc	e of materials management, evaluate qua	ality of products	s using SQC		
	techniques and	Identify the basic concepts of marketing	mix and Hum	an Resource		
4	concepts.					
4	Know how PER	T and CPM different and to construct a	network by pro	per planning		
5	organizing an ma	naging the efforts to accomplish a successful analyzing the efforts to accomplish a successful analyzing the successful a	ul project.	tomporary		
3	management prac	tices one applicable in modern business and	d service organiz	zations.		
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:1.5		
Outcome	III/I Sem	COMPUTER NET WORKS AND COMPILER DESIGN LAB (B18CS21)	L:0 T:0 P:3			
After the co	mpletion of this co	ourse, the students should be able to				
1	Create any topolo	bgy using network devices and build a device	ce for sharing on	network.		
2	Explain the major	r software and hardware technologies used	on computer net	works.		
3	Demonstrate a wo	orking process of lexical analysis, parsing a	nd other compile	er design		
	aspects.		<u> </u>			
4	Interpret the work	ting of lex and yacc compiler for debugging	g of programs.			
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:1.5		
Outcome	III/I Sem	(B18CS22)	L:0 T:0 P:3			
After the co	mpletion of this co	ourse the students should be able to :				
1	Discuss different	application on Machine Learning problems	5.			
2	Describe various	algorithms on Machine Learning mentionir	ng its strengths a	nd		
	weaknesses.					
3	Improve the perfo	ormance of Machine Learning algorithms w	vith different			
	parameters.	test issues missed by summent messagehous				
4	Understand the la	S his the stated by current researchers.	NI CII			
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:0		
Outcome	III/I Sem	(B18MC04)	L:2 T:0 P:0			
After the co	mpletion of this co	ourse, the students should be able to				
1	Demonstrate the	fundamental rights and duties of a citizen				
2	Classify the admi	nistrative structure of the Indian union				
3	Identify the power of state government and make use of positions					
4	Categorize the va	rious department and local administrations	responsibilities			
5	Functions of election commission and its roles					
Course	Voorlamastar	Subject Name (Subject Cade)	No of Hours	Credite.2		
Outse		NETWORK PROGRAMMING (B18CS23)		Creans:3		
Outcome	111/11 Sem		L:3 1:0 P:0			
After the co	mpletion of this co	ourse, the students should be able to				

1	Demonstrate advanced knowledge of OSI layers, TCP & UDP concepts, Networking.			
2	Summarize the T	CP socket functions and Byte Ordering.		
3	Make use of TC	P client server applications and analyze	I/O Multiplexin	g and socket
	options.			
4	Define about the	Elementary UDP sockets and Address conv	versions.	
5	Explain inter pro	cess communication consisting of pipes, F	FIFOs, Semapho	res, Message
	Queues and Rem	ote Procedure Calls	_	_
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:3
Outcome	III/II Som	SOFTWARE TESTING (B18CS24)	I •3 T•0 P•0	
Outcome	III/II Selli		L.5 1.01.0	
After the co	mpletion of this co	ourse, the students should be able to		
1	Design test cases	suitable for a software development for dif	ferent domains.	
2	Prepare test planr	ning based on the document.		
3	Identify suitable t	tests to be carried out.		
	-			
4	Validate test plan	and test cases designed.		
5	Use of automatic	testing tools.		
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:3
Outcome	III/II Sem	DATA WAREHOUSING AND DATA	L:3 T:0 P:0	
		MINING (B18CS25)		
After the c	completion of this c	course, the students should be able to		
1	Introduce data mi	ning concepts and develops understanding	of data mining a	pplication.
2	Develop an under	rstanding of data warehouse, designing and	using data in da	ta warehouse
	using various ope	prations.		
3	Develop an outlook of Association rule mining, association rule mining methods and their			
	application on so	me sample data sets, evaluate these method	s based on need.	
4	Develop an under	standing of classification and prediction, cl	assification meth	ods and their
~	application on sol	me sample data sets, evaluate these method	s based on need.	
5	Develop concept	ual understanding of clustering, various	clustering metho	ods and their
	application on sol	me sample data sets, evaluate these method	s based on need.	
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:3
Outcome	III/II Sem	WEB SERVICES (B18CS26)	L:3 T:0 P:0	
After the c	completion of this c	course, the students should be able to	. 1*1	1
1	Implement Web	service client and server with interoperable	systems like co	re distributed
	computing, J2EE	, SOA, WSDL, UDDI and EBXML		
2	Perceive and anal	yze the principles of SOAP.		1 (
5	Perceive the impl	ement web services life cycle, Anatomy of	wSDL definition	on accument.
4	How to utilize th	e semantics of web services Working wi	th LIDDL progra	amming with
	UDDI UDDI dat	a structures	ai ODDi, piogla	with
5	Explore interoper	ability between different frameworks. Desi	gn web based ar	plications
	that use web serv	ices	8	1
Course	Year / semester	Subiect Name (Subiect Code)	No. of Hours	Credits:3
Outcome	III/II Sem	ADVANCED DATABASE	L.3 T.0 P.0	
Guttome		MANAGEMENT SYSTEMS		
		(PROFESSIONAL ELECTIVE-II)		
		(B18CS27)		
After the c	ompletion of this c	pourse the students should be able to		
1	Define Database	Languages Models along with Client Same	r Architactura	
2	Evolgin principle	s of Database Recovery protocols		
4	LAPIANI PUNCIPIE	s or Database recovery protocors.		

3	Construct EER model for real world problems.			
5	Adapt with advanced Data models and its applications			
5			NT OTT	C 1 1 1
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:3
Outcome	III/II Sem	PROFESSIONAL ELECTIVE-II)	L:3 T:0 P:0	
		(B18CS28)		
After the co	mplotion of this of	ourse, the students should be able to		<u> </u>
	Identify the energy	ourse, the students should be able to	tad dagign proble	2000
2	Identify the appro	priate design patterns to solve object orien		enns.
2	and imp	and documentation and enacifications include	g programming	problems by
	and existing sour	cal documentation and specifications, include code	uunig uesign pa	tien catalogs
3	Understand basic	elements of structural patterns and their im	nlementation	
5	Understand Dasie	elements of structural patterns and then in	ipiementation.	
4	Understand basic	elements of creational patterns and their in	nplementations.	
5	Understand basic	elements of behavioral patterns and their i	mplementation a	long with
	growth in the field	d of using design patterns.	r	8
Course	Vear / semester	Subject Name (Subject Code)	No. of Hours	Credits:3
Outcome		OPEN SOURCE SOFTWARE		Ci cuits.5
Outcome	III/II Sem	(PROFESSIONAL ELECTIVE-II)	L:3 1:0 P:0	
		(B18CS29)		
After the co	ompletion of this co	ourse, the students should be able to		
1	Install and run op	en-source operating systems.		
2	Gather Information	on about free and open source software pr	ojects from soft	ware releases
	and from sites on	the internet.	5	
3	Build and modify	one or more free and open source software	e packages.	
	-	-	1 0	
4	Ability to learn ve	ersion control system and interface with ve	rsion control sys	tems used by
	development com	munities.		
5	Contribute softw	are to and interact with free and open s	source software	development
	Projects.	Γ	1	
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:3
Outcome	III/I Sem	AIR POLLUTION CONTROL	L:3 T:0 P:0	
		(OPEN ELECTIVE – II) (B18CE52)		
After the c	completion of this c	course, the students should be able to		
1	Perceive Air poll	ution Concepts.		
2	Analyze the Effect	cts of air pollution on the environment.		
3	Identify the signif	ficance of meteorological factors in pollutation	nt dispersion and	l to predict
	the pollutant conc	centration.		
4	Apply plume disp	persion modelling and assess the concentrat	ions.	
5	Perceive Air qual	ity monitoring devices.	1	
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:3
Outcome	III/II Sem	BIOMEDICAL INSTRUMENTAION	L:3 T:0 P:0	
		(OPEN ELECTIVE – II) (B18EC23)		
After the c	completion of this c	course, the students should be able to		
1	Understand the fu	inctions of bio amplifiers, characteristics of	f medical instrun	nents and bio
	signals.			
2	Discuss the vario	us internal, external Bio electrodes and rela	tions between el	ectrical and
	mechanical activi	ties of heart.		
3	Compare various	concepts of Cardiac Instrumentation and g	ain the knowledg	ge about
A	A 1			
4	Analyze the Ther	apeutic Equipment and their operation.		

5	Acquires knowledge about neuro-muscular Instrumentation like ECG EMG and EEG.			
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:3
Outcome	III/II Sem	DIGITAL IMAGE PROCESSING	L:3 T:0 P:0	
		(OPEN ELECTIVE – II) (B18EC24)		
A ftor the a	omplotion of this	pourse the students should be able to		
After the c	Gain the knowled	log of digital image fundamentals and image	e transforms	
2	Discuss the analy	is of image enhancement in spatial and free	quency domain	
3	Understand the d	ifferent methods to restore an image	quency domain.	
C		interent methods to restore an image.		
4	Inspect different processing.	image segmentation techniques and underst	and morphologi	cal image
5	Analyze the diffe	rent image compression techniques.		
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:1.5
Outcome	III/II Sem	ADVANCED ENGLISH	L:0 T:0 P:3	
outcome		COMMUNICATION SKILLS LAB		
		(B18EN03)		
After the c	completion of this of	course, the students should be able to		
1	Developing effecti In outpoting floir for	vely and appropriate vocabulary to be used con	textually	
2	Enhancing light for	spects		
5	Elinarie ing job pro	spects.		
4	Acquiring effective	e speaking abilities		
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:1.5
Outcome	III/II Sem	NETWORK PROGRAMMING LAB	L:0 T:0 P:3	
		(B18CS30)		
After the c	ompletion of this o	course, the students should be able to		
1	Elaborate basic U	NIX commands, shell scripts and AWK scr	ripts.	
2	Organize and ma	nipulate files and directories.		-
3	Model TCP and	UDP client server applications and outline t	he I/O multiples	ting concepts
4	of Select and Pol	tunctions.	Oc Samanharas	and
4	message Queues	and develop RPC applications.	Os, Semaphores	
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:1.5
Outcome	III/II Sem	DATAMINING AND SE LAB (B18CS31)	L:0 T:0 P:3	
A ftor the c	completion of this (course the students should be able to		
1	Develop a design	of data warehouse and implement OI AP o	nerations	
2	Explore WEKA f	For data mining task such as association rule	mining classifi	cation and
-	clustering using a	few algorithms from the respective task.	inining, clussifi	cution and
3	Explore text mini	ng using WEKA and apply classification us	sing Naive baves	s technique.
	1		<i>.</i>	.1
4	Will have experie	ence and/or awareness of testing problems a	nd will be able t	o develop a
	simple testing report.			
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:0
Outcome	III/II Sem	LOGICAL REASONING &	L:2 T:0 P:0	
		(B18MC05)		
After the c	completion of this a	course, the students should be able to		
1	Apply quantitativ	e reasoning and mathematical analysis met	hodologies to un	derstand and
	solve problems.			und
2	Interpret given in	formation correctly, determine which mathe	ematical model l	best
	describes the data	l.		

3	Correctly apply mathematical language and notation to explain the reasoning underlying				
1	their conclusions	the metion of shills in versions concern as a set	<u> </u>	uld muchlours	
5	Ability to draw of	anclusions or make decisions based on logi	to solve real wor	d d d d d d d d d d d d d d d d d d d	
5	mathematical abi	lity.		u	
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:3	
Outcome	IV/I Sem	NETWORK SECURITY &	L:3 T:0 P:0		
		(R18CS22)			
A 64 41					
After the c	completion of this c	course, the students should be able to			
1	Identifies various	types of vulnerabilities, attacks, mechanism	ns and security se	ervices.	
2	Compare and con	trast symmetric and asymmetric encryption	algorithms.		
3	Implementation o	of message authentication, hashing algorithm	ns and able to		
1	understand Kerbe	ros.	t laval wash and		
4	Explore the attach E-mailsecurity.	ks and controls associated with IP, transpor	t level, web and		
5	Develop intrusion	n detection system, solutions for wireless ne	tworks and		
	designing ofvario	us types of firewalls.			
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:3	
Outcome	IV/I Sem	MANAGEMENT AND	L:3 T:0 P:0		
		ORGANISATIONAL BEHAVIOR			
A (0) - 17		(B18MB04)			
After the c	completion of this of	course, the students should be able to			
1	Evolution of Man	agement and contribution of Management t	hinkers.		
2	The relevance of	environmental scanning, planning and to tal	ce decisions.		
5	Organizing and controlling.				
4	Individual and gro	oup Behaviour.			
2	Leadership and M	Iotivation.			
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:3	
Outcome	IV/I Sem	CLOUD COMPUTING	L:3 T:0 P:0		
		(PROFESSIONAL ELECTIVE-III) (B18CS33)			
After the c	completion of this c	course, the students should be able to			
1	Perceive the mair	o concepts, key technologies of virtualizatio	n		
2	Describe the arch	nitecture and infrastructure of cloud compu	ting with all ser	vices	
	of cloudand deplo	oyment models.	0		
3	Analyze the issue	es of cloud computing like cloud security. E	xplain the core i	ssues	
	of cloudcomputir	ng such as security and privacy			
4	Identify problems	s; analyze various cloud computing solution	ns using python.		
	Writecomprehens	sive case studies by analyzing different clou	id computing		
5	solutions				
5	Perceive the virtualization and cloud computing concepts. Develop scalable				
Course	Voor / somestor	Subject Name (Subject Code)	No of Hours	Credita: 2	
Outer		INFORMATION SYSTEMS AND		Cicults:3	
Outcome	1 V/1 Sem	AUDITING (PROFESSIONAL	L:5 1:0 P:0		
		ELECTIVE-III) (B18CS34)			
After the c	completion of this o	course, the students should be able to			
1	Recognize the pro	opensity of errors and remedies in processes	s involving		
	InformationTech	nology.			
2	A consummate kr	nowledge of risks and controls in IT operation	ons in Industry.		

3	Apply the information systems auditing methodology. Identify and manage the				
4	Provide protectiv	e IT security guidelines for various types of nt issues in auditing	f Industries.		
5	The necessary wh Evaluate asset saf	nerewithal to become an IS Auditor and/or S feguarding and data integrity, system effection	Security speciali veness and syste	st eventually. em efficiency.	
Course Outcome	Year / semester IV/I Sem	Subject Name (Subject Code) ARTIFICIAL INTELLIGENCE	No. of Hours L:3 T:0 P:0	Credits:3	
		(PROFESSIONAL ELECTIVE-III) (B18CS35)			
After the c	completion of this o	course, the students should be able to			
1	Remember variou underlyingassum	as AI concepts like the AI technique, level options etc.	of model, there		
2	Perceive the conc methods	epts of AI search techniques. Solve various	s problems by ap	ply in search	
3	Apply knowledge	Representation techniques. Analyze different	ent structures of		
4	representation.				
4	Evaluate AI searc	ch techniques. Analyze different Planning T	echniques		
3	Create Expert sys	tems.			
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:3	
Outcome	IV/I Sem	(PROFESSIONAL ELECTIVE-IV) (B18CS36)	L:3 T:0 P:0		
After the c	completion of this o	course, the students should be able to			
1	Learn basics of artificial neural network and soft computing techniques.				
2	Perceive various supervised learning networks and training algorithms of various				
2	Associativememory networks				
3	Perceive the algo networks, Specia	Inetworks.	d learning		
4	Apply functional functions andper- fuzzy sets	mappings in fuzzy sets. Interpret the Sco ceive defuzzification methods and discussion	ope of Members	hip of	
5	Analyze and con various softcomp	nprehends the concepts and applications o puting techniques for problem solving	f genetic algorit	thms,	
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:3	
Outcome	IV/I Sem	BUSINESS INTELLIGENCE AND BIG DATA(PROFESSIONAL ELECTIVE-IV) (B18CS37)	L:3 T:0 P:0		
After the c	completion of this o	course, the students should be able to		I	
1	Explain the found	lations, definitions and capabilities of Bigda	ata.		
2	List the definitions, concepts, architectures and challenges in Big data environment. Outline the definitions, concepts, and enabling technologies of big data analytics				
3	Understand concepts on Handoop Ecosystem in Big data.				
4	Analyze the Map	reduce programming in Big data Analytics.			
5	Apply Security big data technologies in business intelligence using geospatial data, location-based analytics, social networking, Web 2.0, reality				
Course Outcome	Year / semester IV/I Sem	Subject Name (Subject Code) SOFTWARE PROJECT MANAGEMENT (PROFESSIONAL ELECTIVE-IV) (B18CS38)	No. of Hours L:3 T:0 P:0	Credits:3	

After the o	completion of this c	course, the students should be able to			
1	Gain knowledge of software economics, phases in the life cycle of software				
	development, project organization, and project control and process instrumentation.				
2	Summarize softw	vare economics, software development li	fe cycle, artifac	ts of the	
	process, workflo	ws, checkpoints, project organization and	d responsibilitie	s, project	
	control and proce	ss instrumentation.			
3	Choose the rig	ht software development approach. C	ompare various	s project	
	organizations and	l responsibilities.			
4	Analyze the majo	or and minor milestones, artifacts and met	rics for manager	nent and	
	technical perspect	tive.			
5	Design software p	product using conventional and modern prir	ciples of softwa	re project	
	management.	Γ			
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:3	
Outcome	IV/I Sem	NANO TECHNOLOGY	L:3 T:0 P:0		
		(B18ME25)			
After the o	completion of this c	course, the students should be able to			
1	Know the importa	ance of nano scale .types and their propertie	es.		
2	Identify quantum	mechanical phenomenon in two and three	limensional conf	inements.	
3	Understand the at	oplications of carbon nano structures.			
	- nacionalia une uj				
4	Differentiate nan	o scale characterization techniques.			
5	Categorize nano devices and other devices.				
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:3	
Outcome	IV/I Sem	ENTREPRENEURSHIP DEVELOPMENT	L:3 T:0 P:0		
		(OPEN ELECTIVE-III) (B18MB03)			
After the o	completion of this c	course, the students should be able to			
1	Define the nature	and Qualities of Entrepreneur and relate to	types of owners	hin	
2	What are risk Reduction, market scope and Imitation strategies				
3	Explain the legal	regulations system and IPRs and summarize	e the source of		
-	finance fromdiffe	rent institutions.			
4	Identify the needs	s of business ethics and develop the principl	es.		
5	Evaluate the issue	es of corporate governance and interpret the	guidelines.		
	Elaborate thecono	cept of social responsibility and improve pro-	ofessional ethics		
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:3	
Outcomo	W/I Som	EMBEDDESYSTEMS	I.2 T.0 D.0	Creatiste	
Outcome	I V/I Sem	(OPEN ELECTIVE-III)	L.3 1.01.0		
		(B18EC31)			
After the o	completion of this c	course, the students should be able to			
1	Explain the differ	ent embedded system design techniques and	d the metrics or o	challenges in	
	designing them.			-	
2	Understand the co	omplete architecture of 8051 and Advanced	Processor.		
3	Demonstrate Soft	ware programming in Assembly language a	and High Level I	Language.	
4					
4	Classify the different Real Time Operating System (RTOS), RTOS Vx Works, WindowsCE.				
5	Understand the E	mbedded Software Development Process an	nd Tools and Per	form	
	testing onTesting	on Host Machine, Simulators, Laboratory	Tools		
G				a ma	
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:2	
Outcome	IV/I Sem	MINI PROJECT & INTERNSHIP (B18CS46)	L:0 T:0 P:0		

After the o	completion of this o	course, the students should be able to				
1	Perceive, plan and execute a mini project as an individual or in a team in					
	development ofmini project.					
2	Prepare a technica	al report based on the Mini project.				
3	As a team student	can organize, record and compile their wor	rk done through	out the		
4	Develop offective	a communication skills for presentation of m	ini project relat	dactivition		
5	Develop effective	communication skins for presentation of in	init project relate	ed activities.		
	Demonstrate tech	nical seminar based on the Mini Project wo	ork carried out.	1		
Course	rse Year / semester Subject Name (Subject Code) No. of Hours C					
Outcome	IV/I Sem	NETWORK SECURITY & CRVPTOCRAPHVIAR	L:0 T:0 P:3			
		(B18CS39)				
After the o	completion of this o	course, the students should be able to				
1	Implement the cit	oher techniques.				
2	Apply the mathem	natical foundation required for various cryp	tographic algorit	thms.		
3	Develop the vario	bus security algorithms.				
	I.I		:			
4	Use different ope	n source tools for network security and anal	lysis.	0 114 4		
Course	Year / semester	Subject Name (Subject Code) MA IOR PROJECT PHASE – I	No. of Hours	Credits:4		
Outcome	IV/I Sem	(B18CS47)	L:0 T:0 P:8			
After the o	completion of this o	course, the students should be able to				
1	Uses fundamenta project.	l knowledge and skills in engineering and a	pply it effectivel	y on a		
2	Apply knowledge	of the 'real world' situations that a profess	ional engineer c	an encounter.		
3	Apply critical and creative thinking in the design of software, Hardware and					
	Networkingproje	cts.				
4	As a team student	t can organise, record and compile their wor	rk done through	out the		
	projectin an effici	ient manner.				
5	Manage any disp	utes and conflicts within and outside their te	eam.			
6	Demonstrate a so	und technical knowledge of their selected p	roject topic.			
7	Demonstrate the l	knowledge, skills and attitudes of a professi	onal engineer.			
8	Summonizo on on	monniata list of literature review, analyse n		d relate them		
	Summarize an ap	propriate list of interature review, analyse p	revious work and	a relate them		
	tocurrent project.					
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:0		
Outcome	IV/I Sem	HUMAN VALUES AND	L:2 T:0 P:0			
		(B18MC09)				
After the o	completion of this o	course, the students should be able to				
1	Perceive the impo	ortance of ethics and values in life and socie	ety.			
2	Develop moral responsibility and mould them as best professionals.					
3	Create ethical vis	ion and achieve harmony in life.				
4	Provide a critical	perspective on the socialization of men and	women.			
5	Perceive the important issues related to gender in contemporary India.					

Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:3	
Outcome	IV/II Sem	INTERNET OF THINGS (IoT) (PROFESSIONAL ELECTIVE-V)	L:3 T:0 P:0		
		(B18CS40)			
After the c	ompletion of this c	ourse, the students should be able to			
1	Interpret the visio	n of IoT from global context.			
2	Perceive building	blocks of Internet of Things and its charact	eristics.		
3	Learn the basic co	oncepts of Python. Implement the python pr	ogramming usin	g Raspberry.	
4	Perceive the appli Cloud & Sensor N	cation areas of IoT. Realize the revolution of Networks	of Internet in Mo	bile Devices,	
5	Determine the M servers for IoT.	arket perspective of IoT. Develop Python	web applicatio	ns and cloud	
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:3	
Outcome	IV/II Sem	ADVANCED OPERATING SYSTEMS (PROFESSIONAL ELECTIVE-V) (B18CS41)	L:3 T:0 P:0		
After the c	completion of this c	course, the students should be able to			
1	Discuss the variou	is synchronization scheduling and memory	management is	sues	
	demonstrate the N	Autual exclusion.			
2	Deadlock detection	on and agreement protocols of Distributed o	perating system		
3	Discuss the various resource management techniques for distributed systems				
4	Identify the different features of real time and mobile operating systems				
5	Install and use ava	ailable open source kernel. Modify existing	open source ker	nels in terms	
	of functionality or	r features used	1		
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:3	
Outcome	IV/II Sem	PYTHON PROGRAMMING (PROFESSIONAL ELECTIVE-V) (B18CS42)	L:3 T:0 P:0		
After the c	ompletion of this c	course the students should be able to	<u> </u>		
1	Read write execution	ute by hand simple Python programs			
2	Structure simple I	Python programs and decomposing programs.	into functions		
3	Represent compo	und data using Python lists, tuples, dictiona	ries		
4	Read and write da	ata from/to files in Python Programs.			
5	To build software	for real needs.	r		
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:3	
Outcome	IV/II Sem	(PROFESSIONAL ELECTIVE-VI) (B18CS43)	L:3 T:0 P:0		
After the c	completion of this c	course, the students should be able to			
1	Outline kev terms	and concepts in cyber law, intellectual pro	perty and cyberc	rimes.	
2	Explore the vulne	rabilities, threats and cybercrimes posed by	criminals.		
3	Identify various so	ecurity challenges phased by mobile device	S.		
4	Identify various to	vpes of tools and methods used in cybercrit	ne, develops the	secure	
	countermethods to	o maintain security protection.	,		
5	Analyze the cybe	er security risk management policies in c	order to adequat	ely protect	
	anorganization's critical information and assets.				

Course Outcome	Year / semester IV/II Sem	Subject Name (Subject Code) SERVICE ORIENTED ARCHITECTURE (PROFESSIONAL ELECTIVE-VI) (B18CS44)	No. of Hours L:3 T:0 P:0	Credits:3	
After the c	completion of this c	course, the students should be able to			
1	Design various se	ervice layers			
2	Model service car	ndidate derived from existing business docu	mentation.		
3	Design the compo	osition of SOA.			
4	Design applicatio	n services for technology abstraction.			
5	Principles of Serv	ice-Orientation	I		
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:3	
Outcome	IV/II Sem	INFORMATION RETRIEVAL SYSTEMS (PROFESSIONAL ELECTIVE-VI) (B18CS45)	L:3 T:0 P:0		
After the c	completion of this c	course, the students should be able to			
1	Define Vector spa	ace model, understand various similarity coefficients	efficient and mea	asures.	
2	Develop an Unde Analysis,Thesaur	rstanding on Relevance feedback, , Cluster i.	ing, Regression		
3	Apply various Retrieval Utilities for Information Retrieval.				
4	Develop an Under	rstanding about Signature files, Duplicate d	ocument detection	on.	
5	Apply IR principl	es to locate relevant information large colle	ection of data.		
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:1	
Outcome	IV/II Sem	TECHNICAL SEMINAR (B18CS48)	L:0 T:0 P:2		
After the c	completion of this c	course, the students should be able to			
1	Identifies, unders	tand and discuss current, real -world issues.			
2	Explain the role o life	f self-efficacy, personal goals, and motivati	on in improving	academic	
3	Describe the beha	viours and characteristics of an effective le	arner. Gain knov	vledge of fast	
	and rapidly chang	ging by self learning		C	
4	Practice finding r	elevant course material on the Internet and	incorporate them	in their	
	courses. Develop	articles and presentation skills			
5	Develop the inter	personal skills, soft skills and creativity. Pre	esent features of	the	
	developedproject	to the targeted group through written and o	oral communicati	on.	
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:8	
Outcome	IV/II Sem	MAJOR PROJECT PHASE –II	L:0 T:0		
		(B18CS49)	P:16		
After the c	completion of this c	course, the students should be able to	•	·	
1	Uses fundamenta	knowledge and skills in engineering and a	pply it effectivel	y on a	
2	A a a les 1-1 - 1 - 1	of the final man 12 street is the fi	ional crei		
3	Apply knowledge	or the 'real world' situations that a profess	Hardware and	Networking	
	a sppry critical allo	rereative uninking in the design of software	, manuware and f	TOUNDIKIIIg	
	projects.				

4	As a team student can organize, record and compile their work done throughout the
	projectin an efficient manner.
5	Manage any disputes and conflicts within and outside their team.
6	Demonstrate a sound technical knowledge of their selected project topic.
7	Demonstrate the knowledge, skills and attitudes of a professional engineer.
8	Summarize an appropriate list of literature review, analyze previous work and relate them
	tocurrent project.

COURSE OUTCOMES FOR M.TECH-CSE R18 FOR THE YEAR 2018-2020

Course	Voor/Somostor	Subject Name (Subject Code)	No of Hours	Credits: 3		
Course	i ear/Semester	Subject Name (Subject Code)	No. of Hours			
Outcome	I Sem	Data Structures and	L:3 T:0 P:0			
		Algorithms(M18CS01)				
On successf	ful completion of th	is course, students will be able to:				
1	Define knowledge	basic on data structures to store and retrieve an	ordered or unorde	ered data. Such		
	as, arrays, linked li	sts, trees, heaps, and hash tables.				
2	Develop knowledg	e on applications of data structures having the	ability to impleme	nt algorithms		
	to perform operation	on as create, insert, delete, search, and sorting.				
3	Learn to analyze a	nd to compare efficiency of an algorithm.				
4	Understand the bas	ic concepts of latest techniques.				
5	Ability to have con	cepts on tree and graphs.				
6	Implement various	projects on these data structures and plan B-Tr	rees to implement	different		
	various operations.	1	1	Γ		
Course	Year /Semester	Subject Name (Subject Code)	No. of Hours	Credits:3		
Outcome	I Sem	Distributed Systems(M18CS02)	L:3 1:0 P:0			
On success		 f this course, students are able to:				
On success	siul completion o	t this course, students are able to:				
1	Explain distributed	system design and its properties.				
2	List the principles	underlined along with its functionality.				
3	Implement problem	Implement problems and challenges with these principles.				
4	Identify the effecti	veness and shortcomings for solutions.				
5	Identify the princip	les that are based on these contemporary distri	buted systems.			
6	Explain its affect of	on software design to identify the features.	1	1		
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:3		
Outcome	I Sem	Internet of Things(M18CS03)	L:3 T:0 P:0			
After the o	completion of this o	course, the students should be able to				
1	Describe the basic	terminology, latest technology along with its a	pplications.			
2	Discuss the protoco	ols based on the concepts such as machine to m	achine.			
3	Illustrate the IOT	devices using Python Scripting Language.				
4	Develop an applic	ation with Raspberry PI platform which can be	widely used in ma	any		
	applications of IoT	devices.				
5	Implement it widel	y that can be used in many applications of IoT	devices.			
6	Design a web application framework on REST ful web API.					
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits: 3		
Outcome	I Sem	Machine Learning(M18CS04)	L:3 T:0 P:0			
1	Discuss different	application on Machine Learning problems.	1	1		
2	Describe various al	Describe various algorithms on Machine Learning mentioning its strengths and weaknesses				
-	Describe various algorithms on Machine Learning mentioning its suchguts and weaknesses.					

3	Illustrate the basic theory focused on Machine Learning
4	Improve the performance of Machine Learning algorithms with different parameters.
5	Analyze current research papers
6	Understand the latest issues raised by current researchers

Course	Year/Semester	Subject Name (Subject Code)	No. of Hours	Credits: 3		
Outcome	I Sem	Cloud Computing(M18CS05)	L:3 T:0 P:0			
On successful completion of this course, students will be able to:						
1	Discuss main conce	epts, key strengths, and limitations for cloud co	omputing.			
2	Develop the architecture along with specific infrastructure on cloud computing, including SaaS, PaaS, JaaS, public cloud, private cloud, hybrid cloud, etc.					
3	Explain the issues	on cloud computing along with security, privac	y, and interoperab	ility.		
4	Choose and use the	e appropriate technology, methods on these issu	ies.			
5	Identify problems,	, and explain, analyze, and evaluate various clo	ud computing solu	itions.		
6	Provide the approp	priate solutions on cloud computing based on th	ne application.			
Course	Year /Semester	Subject Name (Subject Code)	No. of Hours	Credits:3		
Outcome	I Sem	Data Science(M18CS06)	L:3 T:0 P:0			
On success	sful completion of	f this course, students are able to:				
1	Describe a Data Science, skill sets available for a data scientist.					
2	Discuss the terms S	Statistical Inference, its significance to explore	data analysis.			
3	Understand Data S	cience Process and its components interact				
4	Adapt APIs tools to	o understand the Web data.				
5	Illustrate EDA and	the Data Science as a case study.				
6	Plan a effective vis	ualization on given data.				
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:3		
Outcome	I Sem	Advanced Wireless and Mobile Networks(M18CS07)	L:3 T:0 P:0			
After the o	After the completion of this course, the students should be able to					
1	Discuss the state-or	f-the-art in network protocols, architectures and	1 applications			
2	Analyze existing network protocols and networks.					
3	Develop new protocols on networking					
4	Describe novel ideas in the area of Networking via term-long research projects.					
5	Implement various protocols on localization Methods.					
6	Design a real time applications on RFID.					

Course	Year / semester	Subject Name (Subject Code) Scripting Languages(M18CS08)	No. of Hours	Credits: 3	
Outcome			L.3 1.01.0		
1	Explain scripting	as well as contributions on scripting languages	S.		
2	Discuss Python o	n regard as the object-oriented concepts,			
3	Design the differ	ent built-in objects of Python,			
4	Discuss advanced programming, We	applications such as TCP/IP network program b applications, discrete-event simulations, etc.	ming, multithread	ed	
5	Develop different	modules on exception handling applications.			
6	Plan a Real Time	Web systems.	I		
Course	Year/Semester	Subject Name (Subject Code)	No. of Hours	Credits: 2	
Outcome	I Sem	Research Methodology(M18MC01)	L:2 T:0 P:0		
On successf	ul completion of th	is course, students will be able to:			
1	Acquire knowledge	e on Research Design and statistical methods in	research.		
2	Analyze the variou	s methods in Data Collection, Data Organization	on and different ap	proaches of	
3	Understand all the	basic concepts required to prepare			
	a. Research sync	opsis			
	b. Dissertation	L			
	c. Writing a goo	d research proposal			
4	Interpret the Scope	of Patent Rights and Administration of Patent	System.		
Course	Year /Semester	Subject Name (Subject Code)	No. of Hours	Credits:0	
Outcome	I Sem	English for Research Paper Writing(M18MC01)	L:2 T:0 P:0		
On success	sful completion of	f this course, students are able to:		1	
	*	,			
1	Obtain complete kr	nowledge on Definition of a research paper, Pu	rpose of writing a	ny	
	research paper, its	Scope and Benefits.			
2	Understand the star	ndard English formats .for scripting the best res	search paper		
3	Analyze all the Qualitative and Quantitative Research Methodologies and the ethics of plagiarism.				
4	Explain the detailed	d process of writing and publishing any researc	h paper and perform	rm a case	
	study on paper writ	ting.	1	1	
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:2	
Outcome	I Sem	Data Structures and Algorithms Lab(M18CS09)	L:0 T:0 P:4		
After the c	After the completion of this course, the students should be able to				
1	Analyze algorithms	s efficiency .			
2	Summarize and im	plement various searching and sorting techniqu	ies.		
3	Demonstrate stack	, queue and linked list with various operations			
4	Implement different trees and graphs concepts.				

Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:2	
Outcome	I Sem	Cloud Computing Lab (M18CS10)	L:0 T:0 P:4		
1	Develop the architecture along with specific infrastructure on cloud computing, including SaaS, PaaS, IaaS, public cloud, private cloud, hybrid cloud, etc.				
2	Explain the issues on cloud computing along with security, privacy, and interoperability				
3	Identify problems, and explain, analyze, and evaluate various cloud computing solutions.				
4	Provide the appropriate solutions on cloud computing based on the application.				

II-SEMESTER

Course Outcome	Year/Semester II Sem	Subject Name (Subject Code) Network Programming(M18CS11)	No. of Hours L:3 T:0 P:0	Credits: 3		
On successf	ful completion of th	nis course, students will be able to:				
1	Determine Linux utilities.					
2	Identify file handling techniques and signals.					
3	Explain what is IPC and network programming in Java.					
4	Learn how processes communicate with each other across a Computer Network.					
5	Develop Network programming using TCP/UDP sockets					
6	Implement Real Time and current trends in client server Application.					
Course	Year /Semester	Subject Name (Subject Code)	No. of Hours	Credits:3		
Outcome	II Sem	Soft Computing Techniques(M18CS12)	L:3 T:0 P:0			
On success	sful completion o	f this course, students are able to:				
1	Understand the fuzzy logic, concepts of fuzziness involved in fuzzy set theory					
2	Explain the concepts of fuzzy sets, knowledge representation using fuzzy rules,					
	approximate reasoning, fuzzy inference systems, and fuzzy logic.					
3	Build the fundamental theory, concepts of neural networks.					
4	Identify different neural network architectures, algorithms, applications along their limitations.					
5	Classify different learning rules, architectures to learn several neural network paradigms along with its applications.					
6	Deploy different applications of these models to solve engineering					
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:3		
Outcome	II Sem	Computer Vision(M18CS13)	L:3 T:0 P:0			
After the o	completion of this	course, the students should be able to				
1	Elaborate development of algorithms and techniques.					
2	Analyze and interpret the visible world around us with real time problems.					
3	Apply the fundamental concepts on multi-dimensional signal processing, feature extraction, pattern analysis visual geometric modeling, stochastic optimization etc.					
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4	Take part to makeup and contribute in research developments in the field of computer vision.					
5	Explain different ap mining of visual co	Explain different applications ranging from Biometrics, Medical diagnosis, document processing, mining of visual content, to surveillance, advanced rendering etc.				
6	Identify applicatior	ns In-vehicle vision system.				
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits: 3		
Outcome	II Sem	Data Preparation and Analysis(M18CS14)	L:3 T:0 P:0			
1	Work for a busines	s environment dealing with data preparation.				
2	Prepare data mart	s for statistical analysis using SAS software.				
3	Implement SAS wi	th an efficient				
4	Analyze data from	databases to clean the data for statistical analys	sis in SAS.			
4	Develop many stra	tegies to deal with imperfect real world data.	1			
Course	Year/Semester	Subject Name (Subject Code)	No. of Hours	Credits: 3		
Outcome	II Sem	Digital Forensics(M18CS15)	L:3 T:1 P:0			
On successf	ful completion of th	is course, students will be able to:				
1	Discuss digital fore	ensics related to investigative process.				
2	Explain the legal is position.	ssues to prepare, perform digital forensic analy	sis based on the ir	vestigator's		
3	Demonstrate the te	echniques, usage of digital forensics tools				
4	Elaborate digital fo	rensics in detail.				
5	Analyze the state o	f the practice, gaps in technology, policy, and	legal issues			
6	Develop technique	s used on Data Analysis, cybercrime.				
Course Outcome	Year /Semester II Sem	Subject Name (Subject Code) Distributed Databases (M18CS16)	No. of Hours L:3 T:0 P:0	Credits:3		
On success	sful completion of	f this course, students are able to:		<u> </u>		
1	Describe various to distributed databas	echniques used for data fragmentation, replica	tion, and allocati	on for a		
2	Compare simple st	rategies for executing a distributed query opti	mization.			
3	Learn the two-phas	se commit protocol on multiple nodes.				
4	Describe distribute	ed concurrency control.				
5	Illustrate technique	es based on the distinguished voting methods.				
6	Learn different typ	es of Heterogeneous Database System				
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:3		
Outcome	I Sem	Human Computer Interaction(M18CS17)	L:3 T:0 P:0			
After the o	completion of this o	course, the students should be able to	•			
1	Discuss the charac	teristics of graphical and web user interfaces.				
2	Understand the pr	inciples of design of business function.				
3	Demonstrate the s	ystem menus and screen based controls.				

4	Adapt the goals and conceptualization interaction.					
5	Design the process of interaction and affective aspects					
6	Compare the fram	Compare the framework, predictive models and prototypes.				
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits: 3		
Outcome	II Sem	Software Process and Project Management (M18CS18)	L:3 T:0 P:0			
1	Discuss and plan to	o execute projects based on required standard	ds.			
2	Understand the ra	nge of tools used on project management.				
3	Analyze the conce	ots related on project governance and metho	dologies.			
4	Apply critical analy	sis on solving problems and planning process				
5	Describe planning,	Risk and issues management.				
6	Plan process, prag	matic planning service delivery and quality as	surance			
Course	Year/Semester	Subject Name (Subject Code)	No. of Hours	Credits: 0		
Outcome	II Sem	Stress Management (M18AC02)	L:2 T:0 P:0			
On successf	ul completion of th	is course, students will be able to:	L.			
1	Maintain a stress a effects.	wareness log. Include identification of causes,	symptoms, and a	nalysis of		
2	Gather information relevance.	n on current stress management techniques a	and evaluate perso	onal		
3	Practice specific te	chniques, track effectiveness, and revise to m	neet personal pref	erences.		
4	Choose an adaptat techniques.	le stress management plan for academic succ	ess incorporating	selected		
Course	Year /Semester	Subject Name (Subject Code)	No. of Hours	Credits:2		
Outcome	II Sem	Network Programming Lab(M18CS19)	L:0 T:0 P:4			
On success	sful completion of	f this course, students are able to:				
1	Understand the co	ncepts of Socket commands.				
2	Implement Connec	tion-Oriented Service using standard ports.				
3	Define Connection	less and Connection Oriented Service.				
4	Plan a case study c sockets.	on client and server and construct a Remote C	Command Execution	on using		
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:2		
Outcome	II Sem	Digital Forensics Lab (M18CS20)	L:0 T:0 P:2			
After the o	completion of this o	course, the students should be able to				
1	Understand the me	ethods available for retrieving the lost data.				
2	Classify the various	s mobile forensic techniques and how to hand	dle them.			
3	Identify the differe	nt Open-source intelligence techniques				
4	Demonstrate how to develop certification for Cyber Forensic.					

Course Outcome	Year / semester I I Sem	Subject Name (Subject Code) Mini Project (M18CS21)	No. of Hours L:0 T:0 P:2	Credits: 2		
1	Enhance students	Enhance students' knowledge in current technology				
2	Develop leadership ability and responsibility to execute the given task					
3	Enhance their employability skills along with real corporate exposure					
4	Elaborate the con	npleted task and compile the report.				

III-SEMESTER

Course Outcome	Year/Semester Ⅲ Sem	Subject Name (Subject Code) Semantic Web & Social Networks (M18CS22)	No. of Hours L:3 T:0 P:0	Credits: 3		
On successf	ul completion of th	is course, students will be able to:				
1	Perceive the concept structure of the semantic web technology and how this technology revolutionizes the World Wide Web and its uses.					
2	Analyze the conce descriptions in XM	Analyze the concepts of metadata, semantics of knowledge and resource, ontology, andtheir descriptions in XML-based syntax and web ontology language (OWL).				
3	Describe logic sem	antics and inference with OWL.				
4	Use ontology engin	neering approaches in semantic applications				
5	Program semantic	applications with Java API.				
6	Perceive the conc revolutionizes the	ept structure of the semantic web technolog World Wide Web and its uses.	gy and how this	technology		
Course	Year /Semester	Subject Name (Subject Code)	No. of Hours	Credits: 3		
Outcome	III Sem	Mobile Application and Security (M18CS23)	L:3 T:0 P:0			
On success	sful completion of	f this course, students are able to:				
1	Explain the mobile	issues and development strategies.				
2	Discuss WAP and r	nobile security issues.				
3	Define the Bluetoc	oth security issues.				
4	Classify the SMS Security issues.					
5	Demonstrate the Enterprise Security on the Mobile OS.					
6	Develop Applicatic	Develop Application and security on Mobile OS.				
Course Outcome	Year /Semester III Sem	Subject Name (Subject Code) Compiler for HPC (M18CS24)	No. of Hours L:3 T:0 P:0	Credits: 3		

After the o	completion of this o	course, the students should be able to			
1	Transform algorithms in the computational area to efficient programming code for modern				
	computer architect	computer architectures.			
2	Discuss, organize a	nd handle programs for scientific computatio	ns.		
3	Develop tools for p	performance optimization and debugging.			
4	Analyze code with	respect to performance and suggest and imple	ement performan	ce	
	improvements.				
5	Report on perform	ance analysis in clear and correct writing.			
6	Implement algorith	nms on sparse graphs.			
Course	Year /Semester	Subject Name (Subject Code)	No. of Hours	Credits: 3	
Outcome	III Sem	Advanced Optimization Techniques (M18MA01)	L:3 T:0 P:0		
On successf	ful completion of th	is course, students will be able to:			
1	Describe problem	clearly, identify and analyze the individual fur	nctions.		
2	Analyze study on s	olving optimization problem.			
3	Translate verbal fo	rmula on optimization problem.			
4	Design algorithms,	reliably to find an approximate solution.			
5	Compare the perfo	ormance of an algorithm.			
б	Discovery, study, ι	inderstand and solve optimization techniques	using algorithms		
Course	Year /Semester	Subject Name (Subject Code)	No. of Hours	Credits: 3	
Outcome	III Sem	Waste Management (M18SE27)	L:3 T:0 P:0		
On success	sful completion of	f this course, students are able to:			
1	Compare the subje	ect from the technical, legal and economical p	oints .		
2	Learn solid waste	management.			
3	Describe environm	ent for sound management.			
4	Understand a mun	icipal solid waste management system.			
5	Plan a solid waste	management system for decision makers.			
6	Design an incinera	tion facility.			
Course	Year /Semester	Subject Name (Subject Code)	No. of Hours	Credits: 3	
Outcome	III Sem	Embedded System Design (M18VL07)	L:3 T:0 P:0		
After the o	completion of this o	course, the students should be able to			
1	Describe embedd	ed systems, design, technology to explain its	metrics or challe	nges.	
3	Design custom sing	gie – purpose processors using combinationa	as well as seque	ntial logiC.	
5	andoperation of g	eneral purpose processors. Discuss			
4	Define and distin	guish between a timer and a counter var	ious types of tim	ners and	
	UniversalAsynchro Stepper Motor.	pnous Receiver/ Transmitter. Explain control	lers for LCD, Keyp	bad and	

5	Discuss common memory types ROM , RAM, advanced RAM. Explain microprocessor interfacingand arbitration methods, various protocols like serial, parallel.					
6	Explain basics of Systemarchitectu	Explain basics of interrupts, architectures like Round Robin, Real – Time Operating Systemarchitecture.				
Course Outcome	Year /Semester III Sem	Subject Name (Subject Code) Dissertation Phase-I (M18CS25)	No. of Hours L:0 T:0 P:20	Credits: 10		
1	Identify the prob	em by applying acquired knowledge.				
2	Analyze and cate	gorize executable project modules.				
3	Choose efficient	tools for designing project modules.				
4	Combine all the modules through effective team work after efficient testing					
5	Elaborate the cor	npleted task and compile the project repor	t.			

IV-SEMESTER

Course	Year/Semester	Subject Name (Subject Code)	No. of Hours	Credits: 16	
Outcome	I Sem	Dissertation Phase-II (M18CS26)	L:0 T:0 P:32		
On successful completion of this course, students will be able to:					
1	Identify the problem by applying acquired knowledge.				
2	Analyze and categorize executable project modules.				
3	Choose efficient tools for designing project modules.				
4	Combine all the modules through effective team work after efficient testing				
5	Elaborate the completed task and compile the project report.				

VAAGDEVI COLLEGE OF ENGINEERING

(AUTONOMOUS)

ELECTRICAL AND ELECTRONICS ENGINEERING

COURSE OUTCOMES FOR B.TECH-EEE R18

Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:
Outcome	I Sem	Linear Algebra and Calculus	B18MA01	L/T/P :3/1 /0	4
After learni	ng the conter	nts of this subject, the student must	be able to		
1	Define syste	em of linear equations to matrix and	d explore various i	methods of solving	g
	homogenou	s and non-homogenous equations.			
2	Find matrix	rank, Eigen values & Eigen vector	s and to find the in	nverse and power	of matrix.
	Reduce line	ear equations to quadratic equations	and transform int	o canonical form.	
3	Discuss con	vergence and divergence in its sim	plest form, classif	ying difference be	tween a
	sequence ar	nd series in application context and	further investigate	e infinite process.	
4	Judge the co	onsequences and geometrical appro	ach to the mean v	alue theorems and	
	engineering	applications to mathematical problem	lems. Learn to ado	pt different techni	ques for
	multi-dimer	nsional change of variables to trans	form the coordinat	tes over which into	egration
	proceeds.				
5	Understand	the maximum & minimum functio	n of two and three	variable involvin	g limits
	with Partial	differential equations and recogniz	their application	is in developing	
	mathematic	al models.		-	
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:
Outcome	I Sem	Applied Physics	B18PH01	L/T/P :4/0 /0	4
After learni	ng the conter	ts of this subject, the student must	be able to		
1	Illustrate fa	brication of semiconductors, photo	detectors, design	basis of quantum i	nechanics
2	Recall facts	of wave optics extend & construct	basics of wave op	otics.	
3	Interpret ab	out lasers, which leads to new inno	vations and impro	vements	
4	Elaborate a	nd formulate the study of character	ization properties	of opto-devices, o	rganize the
	students to	prepare new materials for various e	ngineering applica	ations	
5	Apply basic	e knowledge on principles and recal	ls facts of light pr	operties, and moti	vate for
	new innova	tions. Analyze applications of optic	cal fibers	-	
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:
Outcome	I Sem	English	B18EN01	L/T/P :2/0 /0	2
By the end	of the course	, students will be able to			
1	Use English	Language effectively in spoken ar	id written forms.		
2	Comprehen	d the given texts and respond appro	opriately.		
3	Communica	ate confidently in various contexts a	and different cultu	res.	
4	Acquire bas	sic proficiency in English including	reading and lister	ing comprehensio	on, writing
	and speakin	g skills.			
5	Develops an	nd Communicates by stating main i	deas relevantly an	d coherently in sp	eaking &
	writing				

Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:
Outcome	I Sem	Engineering Chemistry	B18CH01	L/T/P :3/1 /0	4
The basic c	oncepts inclu	ded in this course will help the stud	lent to gain:		
1	Recall prev	ious knowledge regarding atomic a	nd molecular strue	cture.	
2	Design poly	meric engineering materials. Reca	ll basic organic re	actions	
3	Construct b	atteries and classify different electr	onics and electric	al like cells, electi	odes, etc.,
	help them to	help them to construct different electrical/ electronic parts.			
4	Examine w	hich types of impurities are present	in water, specific	ation of drinking	water and
	explain the	explain the corrosion behavior/ activity of metals.			
5	Apply phas	e rule and adsorption to construct t	he materials by an	alyzing their com	positions.
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:
Outcome	I Sem	English Language and	B18EN02	L/T/P :0/0 /2	1
		Communication Skills Lab			
After learni	ng the conter	ts of this subject, the student must	be able to		
1	Capable in	Better Understanding of nuances of	f language through	n audio-visual exp	erience
	and group a	ctivities.			
2	Develop Ne	eutralization of accent for intelligib	ility		
3	Speak out w	vith clarity and confidence thereby	enhances the emp	loyability skills of	f the
	students by	acquiring knowledge and techniqu	es.		
4	Extend to sp	peak fluent English, through advan	ced vocabulary to	improve quality i	n
	speaking.				
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:
Outcome	I Sem	Applied Physics Lab	B18PH02	L/T/P :0/0 /3	1.5
After learni	ng the conter	ts of this subject, the student must	be able to		
1	Operate dif	ferent equipment's related to light a	& electronics		
2	Develop ex	perimental skills to design new exp	periments & circui	t design	
3	Understand	about modern equipment like solar	r cell, optical fiber	etc.,	
4	Have Expos	sure to develop novel semiconducto	or devices.		
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:
Outcome	I Sem	Engineering Workshop/IT	B18ME02	L/T/P :0/0 /3	1.5
		Workshop			
After learni	ng the conter	ts of this subject, the student must	be able to		
1	Perform dif	ferent trade exercise.			
2	Assemble a	nd Disassemble a computer and dia	agnostic exercises	with installation of	of
	operating sy	stems and Linux Tools			
3	Explore ind	ustrial environment and operation	of power tools		
4	Gain knowl	edge of foundry, welding, black sn	hithy, fitting and h	ouse wiring	
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:
Outcome	II Sem	Differential Equations And	B18MA02	L/T/P :3/1 /0	4
		Vector Calculus			
After learni	ng the conter	tts of this subject, the student must	be able to		
1	Recall fund	amentals of differential equations t	o build its solution	ns and Summarize	;
	differential equations and inspect its exactness process. Connect real world problems to				

	concept of o	differential equations			
2	Identify, analyze, formulate and perceive physical situation whose behavior can be described				
	by ordinary differential equations.				
3	Interpret the	e multiple integrals for functions ar	nd elaborate areas	and volumes in di	fferent
	situations. I	Evaluate line, surface and volume in	ntegrals to predict	its outcomes.	
4	Utilize the	concept of gradient, divergence and	l curl of vector fiel	ld to predict areas	and
	volumes				
5	Explain imp	portance of integrals theorems to de	esign different geo	metries and their	
	characterist	ics.			
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:
Outcome	II Sem	Electrical Circuits-I	B18EE01	L/T/P :3/1 /0	4
After learnin	ng the conter	tts of this subject, the student must	be able to		
1	Learn basic	es of electrical circuits such as laws	, transformation a	nd network reduct	ion
	techniques.				
2	Explore the	basic principles and concepts invo	olved in AC circuit	s and analyze pov	ver in
	series and p	barallel AC circuits			
3	Understand	various network theorems and its	applications in ele	ctrical circuits.	
4	Analyze the	e series and parallel magnetic circu	its with basic mag	netic principles ar	nd laws of
	electromag	netic induction.			
5	Explore var	rious network topologies and analy	ze the networks w	ith loop and nodal	methods
	with depen	dent and independent current and v	oltage sources.	-	
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:
Outcome	II Sem	Electronic Devices And	B18EC01	L/T/P :3/0 /0	3
		Circuits			
After learnin	After learning the contents of this subject, the student must be able to				
1					-
1	Understand	l operation of analog devices and ci	rcuits. Evaluate th	e characteristics a	nd
	Understand equivalent	l operation of analog devices and ci circuit of diodes	rcuits. Evaluate th	e characteristics a	nd
2	Understand equivalent Acquire kn	l operation of analog devices and ci circuit of diodes owledge of rectifiers and filters and	rcuits. Evaluate th	e characteristics a	nd
2 3	Understand equivalent Acquire kn Analyze the	l operation of analog devices and ci circuit of diodes owledge of rectifiers and filters and e operation of oscillators and ampli	rcuits. Evaluate th I their classification fiers.	e characteristics a	nd
2 3 4	Understand equivalent Acquire kn Analyze the Learn trans	l operation of analog devices and ci circuit of diodes owledge of rectifiers and filters and e operation of oscillators and ampli istor biasing and stabilization	rcuits. Evaluate th I their classification fiers.	e characteristics a	nd
$ \begin{array}{r} 2 \\ 3 \\ 4 \\ 5 \\ 7 \end{array} $	Understand equivalent Acquire kn Analyze the Learn trans Design mul	l operation of analog devices and ci circuit of diodes owledge of rectifiers and filters and e operation of oscillators and ampli istor biasing and stabilization It vibrators and wave shaping circu	rcuits. Evaluate th I their classification fiers.	e characteristics a	nd
2 3 4 5 Course	Understand equivalent Acquire kn Analyze the Learn trans Design mul Semester	l operation of analog devices and ci circuit of diodes owledge of rectifiers and filters and e operation of oscillators and ampli istor biasing and stabilization Iti vibrators and wave shaping circu Subject Name	rcuits. Evaluate th I their classification fiers. hits using basic con Subject Code	e characteristics a ons mponents No. of Hours	nd Credits:
2 3 4 5 Course Outcome	Understand equivalent Acquire kn Analyze the Learn trans Design mul Semester II Sem	l operation of analog devices and ci circuit of diodes owledge of rectifiers and filters and e operation of oscillators and ampli istor biasing and stabilization Iti vibrators and wave shaping circu Subject Name Programming for Problem	rcuits. Evaluate th I their classification fiers. hits using basic con Subject Code B18CS01	e characteristics a ons mponents No. of Hours L/T/P :4/0 /0	nd Credits: 4
2 3 4 5 Course Outcome	Understand equivalent Acquire kn Analyze the Learn trans Design mul Semester II Sem	l operation of analog devices and ci circuit of diodes owledge of rectifiers and filters and e operation of oscillators and ampli istor biasing and stabilization Iti vibrators and wave shaping circu Subject Name Programming for Problem Solving	rcuits. Evaluate th 1 their classification fiers. its using basic con Subject Code B18CS01	e characteristics a ons mponents No. of Hours L/T/P :4/0 /0	nd Credits: 4
2 3 4 5 Course Outcome	Understand equivalent Acquire kn Analyze the Learn trans Design mul Semester II Sem	l operation of analog devices and ci circuit of diodes owledge of rectifiers and filters and e operation of oscillators and ampli istor biasing and stabilization Iti vibrators and wave shaping circu Subject Name Programming for Problem Solving	rcuits. Evaluate th I their classification fiers. hits using basic con Subject Code B18CS01 be able to	e characteristics a ons mponents No. of Hours L/T/P :4/0 /0	nd Credits: 4
2 3 4 5 Course Outcome After learnin 1	Understand equivalent Acquire kn Analyze the Learn trans Design mul Semester II Sem ng the conter Understand	l operation of analog devices and ci circuit of diodes owledge of rectifiers and filters and e operation of oscillators and ampli istor biasing and stabilization Iti vibrators and wave shaping circu Subject Name Programming for Problem Solving its of this subject, the student must I the fundamental basics of program	rcuits. Evaluate th 1 their classification fiers. its using basic con Subject Code B18CS01 be able to ming language and	e characteristics a ons mponents No. of Hours L/T/P :4/0 /0 ed learn to illustrat	credits: 4
2 3 4 5 Course Outcome After learnin	Understand equivalent Acquire kn Analyze the Learn trans Design mul Semester II Sem II Sem understand problem in	l operation of analog devices and ci circuit of diodes owledge of rectifiers and filters and e operation of oscillators and ampli istor biasing and stabilization Iti vibrators and wave shaping circu Subject Name Programming for Problem Solving ats of this subject, the student must I the fundamental basics of program flowchart. Learn the basic operator	rcuits. Evaluate th I their classification fiers. its using basic con Subject Code B18CS01 be able to ming language and rs and expressions	e characteristics a ons mponents No. of Hours L/T/P :4/0 /0 Id learn to illustrat in C programmin	credits: 4 e a g.
2 3 4 5 Course Outcome After learnin 1 2	Understand equivalent Acquire kn Analyze the Learn trans Design mul Semester II Sem II Sem ng the conter Understand problem in Analyze the	l operation of analog devices and ci circuit of diodes owledge of rectifiers and filters and e operation of oscillators and ampli istor biasing and stabilization Iti vibrators and wave shaping circu Subject Name Programming for Problem Solving Its of this subject, the student must I the fundamental basics of program flowchart. Learn the basic operator e concepts of sequencing, branching	rcuits. Evaluate th I their classification fiers. its using basic con Subject Code B18CS01 be able to ming language and rs and expressions g, looping with res	e characteristics a ons mponents No. of Hours L/T/P :4/0 /0 ed learn to illustrat in C programmin spective decision r	nd Credits: 4 te a g. making
2 3 4 5 Course Outcome After learnin 1 2	Understand equivalent of Acquire kn Analyze the Learn trans Design mul Semester II Sem II Sem Ing the conter Understand problem in Analyze the statements	I operation of analog devices and ci circuit of diodes owledge of rectifiers and filters and e operation of oscillators and ampli istor biasing and stabilization Iti vibrators and wave shaping circu Subject Name Programming for Problem Solving its of this subject, the student must I the fundamental basics of program flowchart. Learn the basic operator e concepts of sequencing, branching and also explore various functions	rcuits. Evaluate th I their classification fiers. Subject Code B18CS01 be able to ming language and rs and expressions g, looping with rest and storage classe	e characteristics a ons mponents No. of Hours L/T/P :4/0 /0 ed learn to illustrat in C programmin spective decision r s.	nd Credits: 4 te a g. making
2 3 4 5 Course Outcome After learnin 1 2 3 4	Understand equivalent Acquire kn Analyze the Learn trans Design mul Semester II Sem II Sem understand problem in Analyze the statements	l operation of analog devices and ci circuit of diodes owledge of rectifiers and filters and e operation of oscillators and ampli istor biasing and stabilization Iti vibrators and wave shaping circu Subject Name Programming for Problem Solving Its of this subject, the student must I the fundamental basics of program flowchart. Learn the basic operator e concepts of sequencing, branching and also explore various functions different operations for problems u	rcuits. Evaluate th I their classification fiers. its using basic con Subject Code B18CS01 be able to ming language and rs and expressions g, looping with rese and storage classe using arrays, String	e characteristics a ons mponents No. of Hours L/T/P :4/0 /0 Id learn to illustrat in C programmin spective decision r s. gs and structures.	re a g. making
2 3 4 5 Course Outcome After learnin 1 2 3 4	Understand equivalent of Acquire kn Analyze the Learn trans Design mul Semester II Sem II Sem understand problem in Analyze the statements Implement Learn the b	l operation of analog devices and ci circuit of diodes owledge of rectifiers and filters and e operation of oscillators and ampli istor biasing and stabilization Iti vibrators and wave shaping circu Subject Name Programming for Problem Solving ats of this subject, the student must I the fundamental basics of program flowchart. Learn the basic operator e concepts of sequencing, branching and also explore various functions different operations for problems u asics of pointers and various opera	rcuits. Evaluate th I their classification fiers. its using basic con Subject Code B18CS01 be able to ming language and rs and expressions g, looping with rese and storage classe using arrays, String tions using pointer	e characteristics a ons mponents No. of Hours L/T/P :4/0 /0 ed learn to illustrat in C programmin spective decision r s. gs and structures.	nd Credits: 4 te a g. naking
2 3 4 5 Course Outcome After learnin 1 2 3 4 5	Understand equivalent Acquire kn Analyze the Learn trans Design mul Semester II Sem II Sem II Sem Inderstand problem in Analyze the statements Implement Learn the b Explore van	l operation of analog devices and ci circuit of diodes owledge of rectifiers and filters and e operation of oscillators and ampli istor biasing and stabilization Iti vibrators and wave shaping circu Subject Name Programming for Problem Solving Its of this subject, the student must I the fundamental basics of program flowchart. Learn the basic operator e concepts of sequencing, branching and also explore various functions different operations for problems u asics of pointers and various operator rious file handling functions employ	rcuits. Evaluate th I their classification fiers. its using basic con Subject Code B18CS01 be able to ming language and rs and expressions g, looping with rest and storage classe using arrays, String tions using pointer yed in problem so	e characteristics a ons mponents No. of Hours L/T/P :4/0 /0 id learn to illustrat in C programmin spective decision r s. gs and structures. rs lving.	re a g. naking

Outcome	II Sem	Electronic Devices and	B18EC02	L/T/P :0/0 /2	1	
		Circuits Lab				
After learni	ing the conte	nts of this subject, the student must	be able to		•	
1	Understand	the use of RPS & CRO & different	meters and test el	ectronic circuits u	Ising	
	experiment	experiment boards.				
2	Explore the	operation of different electronic co	mponents and des	ign electronic circ	uits to	
	meet specif	ic requirements.				
3	Understand	working principle of electronic circ	cuits.			
4	Evaluate the	e characteristics of the electronic cir	cuits.			
Course	Semester	emester Subject Name Subject Code No. of Hours Credits:				
Outcome	II Sem	Programming for Problem	B18CS02	L/T/P :0/0 /2	1	
		Solving Lab				
After learni	ing the conte	nts of this subject, the student must	be able to		•	
1	Understand	the fundamentals of C programmin	g.			
2	Analyze co	ncepts of sequencing, branching, loo	oping and decisior	n making statemer	nts to solve	
	scientific ar	nd engineering problems.				
3	Implement	different operations on arrays and fu	unctions to solve p	oroblems.		
4	Design and	implement different types of file str	ructures using star	dard methodolog	у.	
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits: 3	
Outcome	II Sem	Engineering Graphics	B18ME01	L/T/P :1/0/4		
After learni	ing the conte	nts of this subject, the student must	be able to			
1	Learn the p	rinciples of Engineering Graphics a	nd their significan	ce, ISO and ANS	I standards	
	for coordinate	ate dimensioning- usage of Drawing	g instruments, lette	ering		
2	Perform pro	pjection of lines inclined to one or tw	wo planes			
3	Perform the	projections and views on the plane	s and solids			
4	Developme	nt of surfaces on solids and understa	and and draw diffe	erent types of coni	c sections	
5	Convert ort	hographic views into isometric view	vs and vice versa.	And explore vario	ous	
	computer te	chnologies for graphical communic	ation			
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:	
Outcome	III Sem	Electrical Circuits – II	B18EE07	L/T/P :3/0 /0	3	
After learni	ing the conte	nts of this subject, the student must	be able to			
1	Understand	the basics of network representatio	n, method of analy	zing the network	and	
	duality of n	etwork.				
2	Analyze ba	lanced and unbalanced three phase of	circuits and measu	re voltage, curren	t and	
	power in th	ree phase star and delta connections				
3	Study the tr	ansient response of series and paral	lel RLC circuits fo	or DC and sinusoi	dal	
	excitations.	Analyze the response for step, ramp	p, impulse etc., us	ing Laplace transf	ormation	
4	Study differ	rent types of network functions and	evaluate the netwo	ork parameters in	two port	
	network usi	ng transformed variables				
5	Learn abou	t different types of filters and Fourie	er analysis applied	to AC circuits	<u>.</u>	
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:	
Outcome	III Sem	Numerical Methods and	B18MA03	L/T/P :3/1 /0	4	
		Complex Variables				

After learn	ing the conter	ts of this subject, the student must	be able to		
1	Find a better approximate root of a given equation				
2	Estimate the derivative at a given value and integral of function				
3	Analyze the complex function with reference to their analyticity, integration using Cauchy's				
	integral and	residue theorems			
4	Taylor's and	Laurent's series expansions of cor	nplex function		
5	Evaluate bil	inear transformation.			
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:
Outcome	III Sem	Power Systems – I	B18EE08	L/T/P :3/0 /0	3
After learn	ing the conter	ts of this subject, the student must	be able to		
1	Gain the know	owledge on operation of Hydro Elec	ctric generation.		
2	Acquire and	interpret fundamental concepts Th	ermal generation.		
3	Understand	various economic aspects of Power	system and tariff.		
4	Acquire kno	wledge on power system distribution	on systems and su	bstation	
5	Understand	design of underground cables			
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:
Outcome	III Sem	Electrical Machines-I	B18EE09	L/T/P :3/0 /0	3
After learn	ing the conter	ts of this subject, the student must	be able to		
1	Evaluate the	stored and converted energy and a	lso exerted force i	n electromechanic	al energy
	conversion of	levices.			
2	Able to anal	yze and design the types of dc gene	erators		
3	Able to sele	ct appropriate D.C Generator to me	et the requirement	ts of the application	on in
	industry				
4	To understar	nd the characteristics and concept s	of speed control.		
5	Able to Test	the performance and select approp	riate D.C machine	e to meet the requi	rements of
	the applicati	on in industry.			
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:
Outcome	III Sem	Electromagnetic Fields	B18EE10	L/T/P :3/0 /0	3
After learni	ing the conter	ts of this subject, the student must	be able to		
1	Analyze the	relation between the electric field a	and the magnetic f	ield, about the var	ious laws
	such as EFI,	Potential and other concepts of the	se fields		
2	Understand	the behavior of conductors and diel	ectrics, their boun	dary conditions, N	Maxwell's
	equations w	ith respect to electrostatics.			
3	Understand	the magnetic field concepts using E	Biot-Savart law and	d Ampere's law	
4	Analyze the	relation between two or more cond	uctors when subje	ected to magnetic	fields
5	Understand	the concepts of time varying fields	in both electric an	d magnetic fields	and their
	relationship	in evaluating power	-		
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:
Outcome	III Sem	Object Oriented Programming	B18CS50	L/T/P :3/0 /0	3
		& Data Structures			
After learn	ing the conter	tts of this subject, the student must	be able to		
1	Find the diff	ference between structured program	ming and object of	priented programm	ning
	language an	d understanding the features of C+-	 supporting object 	t oriented program	nming.

2	Explain and	apply the major object oriented con	ncepts to impleme	nt object oriented	programs
	in C++.				
3	Build the ba	sic knowledge to handle operations	like insertions, de	eletions, searching	, and
	traversing n	nechanisms in linear data structures			
4	Examine wi	th advanced data structure such as l	hash tables and pri	ority queue data s	tructures.
5	Attain the k	nowledge on trees, balanced trees, g	graphs and develop	ping C++ code for	nonlinear
	data-structu	res and Pattern Matching Algorithn	18.		
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:
Outcome	III Sem	Electrical Circuits Lab	B18EE11	L/T/P :0/0 /3	1.5
After learn	ing the conter	nts of this subject, the student must	be able to		
1	Explain the	concept of circuit laws			
2	Verify netw	ork theorems			
3	Determine 2	Z, Y and ABCD parameters for a given by the second	ven two port netwo	ork.	
4	Evaluate the	e time response and frequency respo	onse characteristic	s of RLC series ci	rcuit and
	their resona	nce conditions.			
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:
Outcome	III Sem	Data Structures Through C++	B18CS08	L/T/P :0/0 /3	1.5
		Lab			
After learn	ing the conter	nts of this subject, the student must	be able to		
1	To be able t	o design and implement Object Ori	ented Programing	concepts.	
2	To select th	e appropriate Data Structure for giv	en problem		
3	To illustrate	e operations like searching, insertior	n, deletion and trav	versing mechanism	n on
	various Dat	a Structures and to gain practical kn	owledge on the ap	plications of Data	a Structure
4	To understa	nd and apply the hashing technique	s and to able to de	sign and impleme	nt Linear
	and Non-Li	near Data Structure.			
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:
Outcome	III Sem	Environmental Sciences	B18MC02	L/T/P :2/0 /0	0
After learn	ing the conter	nts of this subject, the student must	be able to		
1	Recall previ	iously learned ecosystem and find h	ow the biodiversit	y changes went in	the
	environmen	t.			
2	Demonstrat	e outlines of types of pollutions and	related to day-to-	day life.	
3	Organize in	portant seminars on natural resource	ces		
4	Apply mode	els of food chains and energy flow r	nodels to solve the	e identified param	eters.
5	C1 10 1		.1	atainable develor	
	Classify the	types of pollutants and distinguish	the functions of su	istamable develop	ment that
	take part in	types of pollutants and distinguish the environment.	the functions of su	istaillable develop	ment that
Course	Classify the take part in Semester	types of pollutants and distinguish the environment. Subject Name	Subject Code	No. of Hours	Credits:
Course Outcome	Classify thetake part inSemesterIV Sem	types of pollutants and distinguish the environment. Subject Name Pulse Digital And Linear	Subject Code B18EC45	No. of Hours L/T/P :3/0 /0	Credits: 3
Course Outcome	Classify the take part in Semester IV Sem	types of pollutants and distinguish the environment. Subject Name Pulse Digital And Linear Integrated Circuits	the functions of st Subject Code B18EC45	No. of Hours L/T/P :3/0 /0	Credits: 3
Course Outcome After learn	Classify the take part in Semester IV Sem	types of pollutants and distinguish the environment. Subject Name Pulse Digital And Linear Integrated Circuits hts of this subject, the student must	the functions of su Subject Code B18EC45 be able to	No. of Hours L/T/P :3/0 /0	Credits: 3
Course Outcome After learni	Classify the take part in Semester IV Sem ing the conter Understand	types of pollutants and distinguish the environment. Subject Name Pulse Digital And Linear Integrated Circuits nts of this subject, the student must operational amplifiers with linear in	the functions of su Subject Code B18EC45 be able to ntegrated circuits	No. of Hours L/T/P :3/0 /0	Credits: 3
Course Outcome After learni 1 2	Classify the take part inSemesterIVIV SemImage: Semestering the contentUnderstandClassify the	types of pollutants and distinguish the environment. Subject Name Pulse Digital And Linear Integrated Circuits nts of this subject, the student must operational amplifiers with linear in different families of digital integra	Subject Code B18EC45 be able to ntegrated circuits ted circuits and the	No. of Hours L/T/P :3/0 /0	Credits: 3
Course Outcome After learn 1 2 3	Classify the take part in Semester IV Sem ing the conter Understand Classify the Identify the	types of pollutants and distinguish the environment. Subject Name Pulse Digital And Linear Integrated Circuits nts of this subject, the student must operational amplifiers with linear in different families of digital integra applications of diode as integrator,	the functions of su Subject Code B18EC45 be able to ntegrated circuits ted circuits and the differentiator, clip	No. of Hours L/T/P :3/0 /0 eir characteristics.	Credits: 3

5	Explore var	ious A-D and D-A converters and it	ts applications		
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:
Outcome	IV Sem	Electrical Machines-II	B18EE12	L/T/P :3/1 /0	4
After learn	ing the conte	nts of this subject, the student must	be able to		
1	Understand	the concepts and performance of size	ngle phase transfo	ormer.	
2	Test the per	formance of single phase Transform	ner		
3	Choose a su	itable three phase transformer based	d on its application	n and also convert	three
	phase to tw	o phases or vice versa.			
4	Understand	the concepts of Construction, operation	tion characteristic	es, testing (concep	t of circle
	diagram) ar	nd speed.			
5	Analyze sp	eed torque characteristics and control	ol the speed of ind	uction motors	
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:
Outcome	IV Sem	Electrical Measurements and	B18EE13	L/T/P :3/0 /0	3
		Instrumentation			
After learn	ing the conte	nts of this subject, the student must	be able to		
1	Identify Di	fferent types of measuring instrumer	nts and their const	ruction, operation	and
	characterist	ics			
2	Classify Re	sistance, voltage, current measurem	ents through poter	ntiometers, voltag	e and
	current mea	surements through instruments tran	sformers		
3	Find Power	and energy measurements through	watt and energy n	neters with examp	les.
4	Calculate R	esistance measurements through DC	C bridges, capacita	ance and inductan	ce
	measureme	nts through AC bridges and differen	t types of transdu	cers	
5	Gain Know	ledge on Measurement of frequency	and phase throug	h CRO, range ext	ension of
	measuring	nstruments and different types of er	rors & their reduc	tion methods in m	easuring
	instruments			-	
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:
Outcome	IV Sem	Power Systems – II	B18EE14	L/T/P :3/0 /0	3
After learn	ing the conte	nts of this subject, the student must	be able to		
1	Represent p	oower system in P.U values.			
2	Calculate in	inductance and capacitance of single	phase and three pl	hase.	
3	Analyse per	rformance of transmission line			
4	Understand	the transients on transmission line			
5	Compute sa	ag and string efficiency.		-	
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:
Outcome	IV Sem	Control Systems	B18EE15	L/T/P :3/0 /0	3
After learn	ing the conte	nts of this subject, the student must	be able to		
1	Understand	the concept of feedback and analyz	e the control syste	em components by	their
	Mathematic	cal modeling			
2	Estimate th	e time domain specifications and ste	eady state error		
3	Apply vario	ous time domain and frequency dom	ain techniques to	assess the system	
	performanc	e.			
4	Improve the	e system performance by designing	a suitable controll	er and/or a compe	nsator for
	a specific a	pplication			

5	Test system	Controllability and Observability u	sing state space re	presentation and	
	applications	of state space representation to var	ious systems.		
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:
Outcome	IV Sem	Switching Theory and Logic	B18EC05	L/T/P :3/0 /0	3
		Design			
After learn	ing the conter	nts of this subject, the student must l	be able to		
1	Utilize and	explain the functionality of logic ga	tes (AND, NAND	, OR, NOR, XOR	, XNOR,
	NOT).				
2	Design diffe	erent combinational circuits using m	inimization techn	iques.	
3	Explain var	ious flip flops, and design of registe	rs and counters.		
4	Apply the d	esign procedures to design basic sec	quential circuits.		
5	Analyze and	design of small sequential circuits	and to use standar	rd sequential	
	functions/bu	uilding blocks to build more comple	x circuits.		
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:
Outcome	IV Sem	Pulse Digital and Linear	B18EC47	L/T/P :0/0 /3	1.5
		Integrated Circuits Lab			
After learn	ing the conter	nts of this subject, the student must l	be able to		
1	Understand	the applications of diode as integrat	tor, differentiator,	clippers and clam	per
	circuits.				
2	Design circu	uits using operational amplifiers for	various application	ons.	
3	Analyze the	VCO & PLL circuits.			
4	Understand	and implement DAC conversions u	sing OP AMP.		
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:
Outcome	IV Sem	Electrical Machines Lab-I	B18EE16	L/T/P :0/0 /3	1.5
After learn	ing the conter	nts of this subject, the student must l	be able to		
1	Select range	e of apparatus based on the ratings o	f DC Machines.		
2	Determine (Characteristics of DC machines by c	conducting tests		
3			ionaueting tests		
	Evaluate the	efficiency of the machine by analy	zing test results.		
4	Evaluate the Study speed	e efficiency of the machine by analy l control methods for dc machines	zing test results.		
4 Course	Evaluate the Study speed Semester	e efficiency of the machine by analy l control methods for dc machines Subject Name	zing test results. Subject Code	No. of Hours	Credits:
4 Course Outcome	Evaluate the Study speed Semester V Sem	e efficiency of the machine by analy l control methods for dc machines Subject Name Electrical Machines-III	zing test results. Subject Code B18EE17	No. of Hours L/T/P :3/0/0	Credits: 3
4 Course Outcome After learn	Evaluate the Study speed Semester V Sem ing the conten	e efficiency of the machine by analy l control methods for dc machines Subject Name Electrical Machines-III nts of this subject, the student must b	zing test results. Subject Code B18EE17 be able to	No. of Hours L/T/P :3/0/0	Credits: 3
4 Course Outcome After learn 1	Evaluate the Study speed Semester V Sem ing the conter Demonstrate	e efficiency of the machine by analy l control methods for dc machines Subject Name Electrical Machines-III nts of this subject, the student must be basic concepts of AC machines.	zing test results. Subject Code B18EE17 be able to	No. of Hours L/T/P :3/0/0	Credits: 3
4 Course Outcome After learn 1 2	Evaluate the Study speed Semester V Sem ing the conter Demonstrate Analyze the	e efficiency of the machine by analy control methods for dc machines Subject Name Electrical Machines-III nts of this subject, the student must be basic concepts of AC machines. concepts of regulation of synchrone	zing test results. Subject Code B18EE17 be able to ous generators	No. of Hours L/T/P :3/0/0	Credits: 3
4 Course Outcome After learn 1 2 3	Evaluate the Study speed Semester V Sem ing the conter Demonstrate Analyze the Evaluate pe	e efficiency of the machine by analy control methods for dc machines Subject Name Electrical Machines-III nts of this subject, the student must be basic concepts of AC machines. concepts of regulation of synchronor rformance characteristics of synchronor	Subject Code B18EE17 be able to ous generators onous machines.	No. of Hours L/T/P :3/0/0	Credits: 3
4 Course Outcome After learn 1 2 3 4	Evaluate the Study speed Semester V Sem ing the conter Demonstrate Analyze the Evaluate pe Analyze the	e efficiency of the machine by analy control methods for dc machines Subject Name Electrical Machines-III nts of this subject, the student must be basic concepts of AC machines. concepts of regulation of synchrone rformance characteristics of synchrone operating characteristics of synchrone	Subject Code B18EE17 be able to ous generators onous machines. onous motors	No. of Hours L/T/P :3/0/0	Credits: 3
4 Course Outcome After learn 1 2 3 4 5	Evaluate the Study speed Semester V Sem ing the conter Demonstrate Analyze the Evaluate pe Analyze the Identify the	e efficiency of the machine by analy control methods for dc machines Subject Name Electrical Machines-III nts of this subject, the student must le basic concepts of AC machines. concepts of regulation of synchronor formance characteristics of synchronor operating characteristics of synchronor Construction, operation and character	Subject Code B18EE17 be able to ous generators onous machines. onous motors teristics of single	No. of Hours L/T/P :3/0/0 phase motor and s	Credits: 3 pecial
4CourseOutcomeAfter learn12345	Evaluate the Study speed Semester V Sem ing the conter Demonstrate Analyze the Evaluate pe Analyze the Identify the machines	e efficiency of the machine by analy control methods for dc machines Subject Name Electrical Machines-III nts of this subject, the student must l e basic concepts of AC machines. concepts of regulation of synchron rformance characteristics of synchron operating characteristics of synchron	Subject Code B18EE17 be able to ous generators onous machines. onous motors teristics of single-	No. of Hours L/T/P :3/0/0 phase motor and s	Credits: 3 pecial
4 Course Outcome After learn 1 2 3 4 5 Course	Evaluate the Study speed Semester V Sem ing the conter Demonstrate Analyze the Evaluate pe Analyze the Identify the machines Semester	e efficiency of the machine by analy control methods for dc machines Subject Name Electrical Machines-III nts of this subject, the student must l e basic concepts of AC machines. concepts of regulation of synchron rformance characteristics of synchro operating characteristics of synchro Construction, operation and charact Subject Name	zing test results. Subject Code B18EE17 be able to ous generators phous machines. phous motors teristics of single- Subject	No. of Hours L/T/P :3/0/0 phase motor and s No. of Hours	Credits: 3 pecial Credits:
4 Course Outcome After learn 1 2 3 4 5 Course Outcome	Evaluate the Study speed Semester V Sem ing the conter Demonstrate Analyze the Evaluate pe Analyze the Identify the machines Semester	e efficiency of the machine by analy control methods for dc machines Subject Name Electrical Machines-III nts of this subject, the student must l e basic concepts of AC machines. concepts of regulation of synchron rformance characteristics of synchro operating characteristics of synchro Construction, operation and charact Subject Name	Subject Code B18EE17 be able to ous generators onous machines. onous motors teristics of single- Subject Code	No. of Hours L/T/P :3/0/0 phase motor and s No. of Hours	Credits: 3 pecial Credits: 3
4 Course Outcome After learn 1 2 3 4 5 Course Outcome	Evaluate the Study speed Semester V Sem ing the conter Demonstrate Analyze the Evaluate pe Analyze the Identify the machines Semester V Sem	e efficiency of the machine by analy control methods for dc machines Subject Name Electrical Machines-III nts of this subject, the student must l e basic concepts of AC machines. concepts of regulation of synchron rformance characteristics of synchron coperating characteristics of synchron Construction, operation and charact Subject Name Power System Protection	Subject Code B18EE17 be able to ous generators onous machines. onous motors teristics of single- Subject Code B18EE18	No. of Hours L/T/P :3/0/0 phase motor and s No. of Hours L/T/P :3/0 /0	Credits: 3 pecial Credits: 3
4 Course Outcome After learn 1 2 3 4 5 Course Outcome After learn	Evaluate the Study speed Semester V Sem ing the conter Demonstrate Analyze the Evaluate pe Analyze the Identify the machines Semester V Sem	e efficiency of the machine by analy control methods for dc machines Subject Name Electrical Machines-III nts of this subject, the student must l e basic concepts of AC machines. concepts of regulation of synchrom rformance characteristics of synchrom coperating characteristics of synchrom Construction, operation and character Subject Name Power System Protection nts of this subject, the student must l	Subject Code B18EE17 be able to ous generators onous machines. onous motors teristics of single- Subject Code B18EE18 be able to	No. of Hours L/T/P :3/0/0 phase motor and s No. of Hours L/T/P :3/0 /0	Credits: 3 pecial Credits: 3

	types				
2	Understand	the basic principle of electromagne	tic Relay Operation	on and its various	types to
	different ap	plications.			
3	Explore the	various schemes of protecting gene	erator and transform	mers.	
4	Explore var	ious relaying operation in protectin	g the transmission	line and bus bar.	
5	Learn the ne	ecessity of neutral grounding and pr	otection against o	vervoltage.	
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:
Outcome	V Sem	Power Electronics	B18EE19	L/T/P :3/1 /0	4
After learn	ing the conter	nts of this subject, the student must	be able to		
1	Understand	the differences between signal leve	and power level	devices	
2	Examine sir	ngle phase-controlled rectifier circu	its.		
3	Understand	three phase-controlled rectifier circ	cuits.		
4	Learn the op	peration of DC-DC choppers			
5	Study the op	peration of DC-AC converters and	AC-AC voltage re	gulators	
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:
Outcome	V Sem	Electric Machine Design	B18EE20	L/T/P :3/0 /0	3
After learn	ing the conter	nts of this subject, the student must	be able to		
1	Understand	the basic design consideration, star	dards. Study the h	eat dissipation, co	ooling
	characteristi	ics and electrical characteristics of	various dielectric r	naterials.	
2	Understand	the design, choice of materials and	specifications in I	DC machines	
3	Understand	and design the main dimensions of	each parts of a tra	insformers	
4	Design the o	constructional features of induction	motors and estimation	ate their currents a	ınd
	reactance				
5	Design the o	constructional features of synchrono	ous motors		
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:
Outcome	V Sem	Electrical Distribution	B18EE21	L/T/P :3/0 /0	3
		Systems			
After learni	ing the conter	nts of this subject, the student must	be able to		
1	Understand	design of various loads			
2	Analyze the	need of substations and there erect	ion and site select	ion	
3	Understand	protection of distribution system.			
4	Acquire kno	owledge of power factor improvement	ent.		
5	Calculate th	e distribution voltage drop calculat	ions.		
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:
Outcome	V Sem	Signals And Systems	B18EC03	L/T/P :3/0 /0	3
After learn	ing the conter	nts of this subject, the student must	be able to		
1	Apply the k	nowledge of vectors, orthogonal ba	sis to signals. Ana	lyze the spectral	
	characteristi	ics of continuous-time periodic sign	als using Fourier	series.	
2	Demonstrat	e and apply Fourier transform on va	arious signals.		
3	Apply the L	aplace transform and Fourier transf	form for the analys	sis of continuous-	ime
	signals				
4	Analyze sys	stems based on their properties and	determine the resp	onse of LTI syste	m
5	Understand	the concepts of convolution and co	rrelation of signals	s	

Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:
Outcome	V Sem	Database Management	B18CS04	L/T/P :3/0 /0	3
		Systems			
After learn	ing the conter	nts of this subject, the student must	be able to		<u></u>
1	Understand	the fundamental concepts of databa	se management a	nd analyze databa	se models
	& Entity Re	lationship models and to draw the I	E-R diagram for th	e given case stud	у.
2	Apply relati	onal Database Theory, and be able	to write relational	algebra expressio	ns for
	queries and	Utilize the knowledge of basics of	SQL and construc	t queries using SQ	ĮL.
3	Apply Norm	nalization Process to construct the d	latabase. Explain I	Basic Issues of tra	nsaction
	processing				
4	Understand	Concurrency control and Recovery	strategies of DBN	AS.	
5	Compare the	e basic Database storage structures	and access technic	ques: File Organiz	ation,
	indexing me	ethods including B- Tree and Hashi	ng.		
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:
Outcome	V Sem	Computer Organization	B18EC12	L/T/P :3/0 /0	3
After learn	ing the conter	nts of this subject, the student must	be able to		
1	Explain the	I/O and memory organization in de	pth.		
2	Develop ass	embly language programs for vario	ous applications		
3	Estimate the	e basic components of computers ar	nd extend the desig	gn of Digital Logi	c Circuits
	and apply to	Computer Organization.			
4	Analyze the	memory organization and evaluate	the performance	of Computer syste	ms.
5	Understand	the basic chip design and organizat	ion of 8086 with a	assembly language	2
	programmin	ig and Compare RISC and CISC Ai	chitectures.		
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:
Outcome	V Sem	Internet of Things	B18CS40	L/T/P :3/0 /0	3
After learn	ing the conter	nts of this subject, the student must	be able to		
1	Interpret the	e vision of IOT from a global contex	xt.		
2	Perceive bui	ilding blocks of Internet of Things a	and its characterist	tics.	
3	Learn the ba	asic concepts of Python			
4	Implement t	he python programming using Ras	oberry		
5	Design a RE	EST	1	1	
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:
Outcome	V Sem	ELECTRICAL MACHINES –	B18EE22	L/T/P :0/0 /3	1.5
		II LAB			
After learn	ing the conter	nts of this subject, the student must	be able to		
1	Select range	e of apparatus based on the ratings.			
2	Draw the Ec	quivalent circuits and analyze vario	us AC machines		
3	Determine p	performance and Characteristics of	AC machinery		
4	Evaluate the	e efficiency of the machine by analy	zing test results		
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:
Outcome	V Sem	Electrical Measurements &	B18EE23	L/T/P :0/0 /3	1.5
		Instrumentation Lab			
After learn	ing the conter	nts of this subject, the student must	be able to		

1	Compare per	rformance of MC, MI and Dynamo	meter types of me	asurements, Energy	gy meter.
2	Determine the	he circuit parameters using AC and	Dc bridges.		
3	Compute the	e errors CT's and PT's.			
4	Understand	the performance of industrial instru	iments		
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:
Outcome	V Sem	Control Systems Lab	B18EE24	L/T/P :0/0 /2	1
After learn	ing the conten	ts of this subject, the student must	be able to		
1	Analyze the	time & Frequency response of con-	trol systems		
2	Evaluate the	performance of feedback control s	ystems.		
3	Examine the	e response of PID controllers			
4	Identify the	Performance of AC & DC servo me	otors		
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:
Outcome	V Sem	Human Values and	B18MC09	L/T/P :2/0 /0	0
		Professional Ethics			
After learn	ing the conten	ts of this subject, the student must	be able to		
1	Perceive the	importance of ethics and values in	life and society		
2	Develop mo	ral responsibility and mould them a	as best professiona	ıls.	
3	Create ethics	al vision and achieve harmony in li	fe		
4	Provide a cr	itical perspective on the socialization	on of men and wor	men.	
5	Perceive the	important issues related to gender	in contemporary I	ndia.	
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:
Outcome	VI Sem	Power System Operation and	B18EE25	L/T/P :3/0 /0	3
		Control			
After learn	ing the conten	ts of this subject, the student must	be able to		
1	Analyse eco	nomic operation of power system.			
2	Understand	the working of hydrothermal coord	ination.		
3					
1	Analyse load	d frequency control of Single area a	and Two area pow	er system	
4	Analyse load	d frequency control of Single area a power factor and voltage control	and Two area pow	er system	
5	Analyse load Understand Acquire kno	d frequency control of Single area a power factor and voltage control wledge on reactive power control.	and Two area pow	er system	
5 Course	Analyse load Understand Acquire know Semester	d frequency control of Single area a power factor and voltage control wledge on reactive power control. Subject Name	and Two area pow	er system No. of Hours	Credits:
5 Course Outcome	Analyse load Understand Acquire kno Semester VI Sem	d frequency control of Single area a power factor and voltage control wledge on reactive power control. Subject Name Managerial Economics and	and Two area pow Subject Code B18MB01	er system No. of Hours L/T/P :3/0 /0	Credits: 3
5 Course Outcome	Analyse load Understand Acquire kno Semester VI Sem	d frequency control of Single area a power factor and voltage control wledge on reactive power control. Subject Name Managerial Economics and Financial Analysis	nd Two area pow Subject Code B18MB01	No. of Hours L/T/P :3/0 /0	Credits: 3
5 Course Outcome	Analyse load Understand Acquire kno Semester VI Sem	d frequency control of Single area a power factor and voltage control wledge on reactive power control. Subject Name Managerial Economics and Financial Analysis ts of this subject, the student must	nd Two area pow Subject Code B18MB01 be able to	er system No. of Hours L/T/P :3/0 /0	Credits: 3
5 Course Outcome After learn 1	Analyse load Understand Acquire know Semester VI Sem ing the conten Understand	d frequency control of Single area a power factor and voltage control wledge on reactive power control. Subject Name Managerial Economics and Financial Analysis tts of this subject, the student must the nature, scope and importance of	nd Two area pow Subject Code B18MB01 be able to f Managerial Ecor	No. of Hours L/T/P :3/0 /0	Credits: 3
5 Course Outcome After learn 1 2	Analyse load Understand Acquire kno Semester VI Sem ing the conten Understand Know what	d frequency control of Single area a power factor and voltage control wledge on reactive power control. Subject Name Managerial Economics and Financial Analysis tts of this subject, the student must the nature, scope and importance of is demand, analyze demand and ho	Subject Code B18MB01 be able to f Managerial Econ w elasticity of der	er system No. of Hours L/T/P :3/0 /0 nomics. nand is used for p	Credits: 3
5 Course Outcome After learn 1 2	Analyse load Understand Acquire know Semester VI Sem Understand Know what decisions an	d frequency control of Single area a power factor and voltage control wledge on reactive power control. Subject Name Managerial Economics and Financial Analysis its of this subject, the student must the nature, scope and importance of is demand, analyze demand and ho d to evaluate methods for forecastin	subject Code B18MB01 be able to f Managerial Econ w elasticity of der ng demand	er system No. of Hours L/T/P :3/0 /0 nomics. nand is used for p	Credits: 3 ricing
45CourseOutcomeAfter learn123	Analyse load Understand Acquire kno Semester VI Sem Understand Know what decisions an Know how p	d frequency control of Single area a power factor and voltage control wledge on reactive power control. Subject Name Managerial Economics and Financial Analysis ats of this subject, the student must the nature, scope and importance of is demand, analyze demand and ho d to evaluate methods for forecastin production function is carried out to	subject Code B18MB01 be able to f Managerial Econ w elasticity of der ng demand o achieve least cos	er system No. of Hours L/T/P :3/0 /0 nomics. nand is used for p t combination of I	Credits: 3 ricing nputs and
4 5 Course Outcome After learn 1 2 3	Analyse load Understand Acquire know Semester VI Sem Understand Know what decisions an Know how p how to analy	d frequency control of Single area a power factor and voltage control wledge on reactive power control. Subject Name Managerial Economics and Financial Analysis ats of this subject, the student must the nature, scope and importance of is demand, analyze demand and ho d to evaluate methods for forecastin production function is carried out to yze cost.	subject Code B18MB01 be able to f Managerial Econ w elasticity of der ng demand o achieve least cos	er system No. of Hours L/T/P :3/0 /0 nomics. nand is used for p t combination of I	Credits: 3 ricing nputs and
4 5 Course Outcome After learn 1 2 3 4	Analyse load Understand Acquire kno Semester VI Sem Understand Know what decisions an Know how p how to analy Understand	d frequency control of Single area a power factor and voltage control wledge on reactive power control. Subject Name Managerial Economics and Financial Analysis tts of this subject, the student must the nature, scope and importance of is demand, analyze demand and ho d to evaluate methods for forecastin production function is carried out to yze cost.	Subject Code B18MB01 be able to f Managerial Econ w elasticity of der ng demand o achieve least cos	er system No. of Hours L/T/P :3/0 /0 nomics. nand is used for p t combination of I putline different fo	Credits: 3 ricing nputs and rm of
4 5 Course Outcome After learn 1 2 3 4	Analyse load Understand Acquire know Semester VI Sem Understand Know what decisions an Know how p how to analy Understand business org	d frequency control of Single area a power factor and voltage control wledge on reactive power control. Subject Name Managerial Economics and Financial Analysis its of this subject, the student must the nature, scope and importance of is demand, analyze demand and ho d to evaluate methods for forecastin production function is carried out to yze cost. the characteristics of different kind anization and analyze how capital b	Subject Code B18MB01 be able to f Managerial Econ w elasticity of der ng demand o achieve least cos s of markets and o budgeting techniqu	No. of Hours L/T/P :3/0 /0 nomics. nand is used for p t combination of I putline different fo ues are used for in	Credits: 3 ricing nputs and rm of westment
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45CourseOutcomeAfter learn12345	Analyse load Understand Acquire know Semester VI Sem Understand Know what decisions an Know how r how to analy Understand business org decisions. Know how t	d frequency control of Single area a power factor and voltage control wledge on reactive power control. Subject Name Managerial Economics and Financial Analysis its of this subject, the student must the nature, scope and importance of is demand, analyze demand and ho d to evaluate methods for forecastin production function is carried out to yze cost. the characteristics of different kind anization and analyze how capital l o prepare final accounts and how to	Subject Code B18MB01 be able to f Managerial Ecor w elasticity of der ng demand o achieve least cos s of markets and o budgeting technique	er system No. of Hours L/T/P :3/0 /0 nomics. nand is used for p t combination of I putline different fo ues are used for in nalyze and interpr	Credits: 3 ricing nputs and rm of westment et

Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:
Outcome	VI Sem	Power Semiconductor Drives	B18EE26	L/T/P :3/0 /0	3
After learn	ing the conter	ts of this subject, the student must	be able to		I
1	Analyze the	operation of converter fed dc moto	rs and four quadra	ant operations of d	lc motors
	using dual c	onverters			
2	Describe the	e chopper fed dc motors in various	quadrants of opera	tion	
3	Know the co	oncept of speed control of induction	n motor by using A	AC voltage control	llers and
	voltage sour	ce inverters.			
4	Differentiate	e the stator side control and rotor side	de control of three	phase induction i	notor.
5	Explain the	speed control mechanism of synchi	conous motors.		
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:
Outcome	VI Sem	Renewable Energy Systems	B18EE27	L/T/P :3/0 /0	3
After learn	ing the conter	its of this subject, the student must	be able to		I
1	Apply the te	chnology to capture the energy from	m the renewable s	ources like sun, w	ind,
	ocean, biom	ass, geothermal.			
2	Use differen	t renewable energy sources to prod	uce electrical pow	ver.	
3	Minimize th	e use of conventional energy sourc	es to produce elec	trical energy.	
4	Identify the	fact that the conventional energy re	sources are deplet	ted.	
5	Explore the	direct energy sources.			
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:
Outcome	VI Sem	Electrical Engineering Material	s B18EE28	L/T/P :3/0 /0	3
After learn	ing the conter	its of this subject, the student must	be able to		
1	Impart the k	nowledge on electrical engineering	materials classific	cation and their ap	plications
2	Study the pe	erformance characteristics of variou	s semiconducting	, dielectric and ins	sulation
	materials an	d their applications in design of ele	ctrical and electro	nic devices.	
3	Identify vari	ous magnetic materials and their cl	assification		
4	Learn variou	as special purpose of materials			
5	Design vario	ous electronic components			
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:
Outcome	VI Sem	Digital Signal Processing	B18EC16	L/T/P :3/0 /0	3
After learn	ing the conter	ts of this subject, the student must	be able to		I
1	Explain the	time domain and frequency domain	representation of	the signals.	
2	Identify the	different types of the systems and t	heir responses.		
3	Understand	the inter relationship between DFT	and various trans	forms and fast cor	nputation
	of DFT and	appreciate the FFT processing			
4	Classify the	different types of windowing techn	niques		
5	Design a dig	gital filters for a given specification	s and Apply the k	nowledge to real v	vorld
	processing a	pplications.			
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:
Outcome	VI Sem	Advanced Power Electronics	B18EE29	L/T/P :3/0 /0	3
After learn	ing the conter	ts of this subject, the student must	be able to		•
1	Classify driv	ver circuits for various power semic	conductor devices		
2	Analyze the	operation of multi-pulse converter	S		

3	Understand	the operation of resonant converter	s.		
4	Know the di	ifferences between VSI and CSI.			
5	Gain knowl	edge on the operation of multilevel	inverters.		
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:
Outcome	VI Sem	Advanced Control Systems	B18EE30	L/T/P :3/0/0	3
After learn	ing the conter	nts of this subject, the student must	be able to		
1	Understand	different non linearities and their de	escribing function	s.	
2	Describe the	e methods of Phase-plane trajectory	of nonlinear cont	rol systems.	
3	Apply vario	us theorems for stability analysis of	f linear and nonlin	ear systems.	
4	Implement 1	nodal control and calculus of variat	tions.		
5	Formulate a	nd solve optimal control problems.			
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:
Outcome	VI Sem	High Voltage Engineering	B18EE31	L/T/P :3/0 /0	3
After learn	ing the conter	ts of this subject, the student must	be able to		
1	Understand	Transients in power system.			
2	Acquire the	knowledge on breakdown in solid,	Liquid and gaseou	us dielectrics.	
3	Understand	the generation of high voltage and	current.		
4	Identify the	measurement of high voltage and c	urrent.		
5	Analyze pov	wer apparatus and insulation coordi	nation.		
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:
Outcome	VI Sem	Power Electronics Lab	B18EE32	L/T/P :0/0 /2	1
After learn	ing the conter	nts of this subject, the student must	be able to		
1	Study Chara	acteristics of various Power Semico	nductor devices.		
2	Analyze AC	AC and AC/DC Converters.			
3	Analyze the	behavior of various DC/DC and D	C/AC converters		
4	Understand	types of Power Electronic converte	rs and identify the	eir applications	
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:
Outcome	VI Sem	Power Systems Lab	B18EE33	L/T/P :0/0 /2	1
After learn	ing the conter	nts of this subject, the student must	be able to		
1	Calculate Tr	ransmission line parameters, efficie	ncy and regulation	1.	
2	Evaluate the	e Performance analysis of Over/Uno	ler Voltage Relay		
3	Understand	the Analysis and performance testing	ng of Feeder Prote	ection System	
4	Calculate Se	equence Reactances of 3-Ф Transfo	rmer.		
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:
Outcome	VI Sem	Electronics Design Lab	B18EE34	L/T/P :1/0 /2	2
After learn	ing the conter	nts of this subject, the student must	be able to		
1	Design the v	various regulated power supplies fo	r control boards.		
2	Gain knowle	edge on designing of various trigge	ring circuits for So	CR	
3	Develop sca	ling and conditioning circuits for v	arious sensors.		
4	Develop PW	M control and gate driver circuits	for various power	electronic applica	tions.
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:
Outcome	VI Sem	Logical Reasoning and	B18MC05	L/T/P :2/0 /0	0
		Quantitative Aptitude			

After learn	ing the conter	ts of this subject, the student must	be able to		
1	Improve the	ir logical thinking in terms of gener	al and mathemati	cal concepts.	
2	Compete in	academic as well as competitive lev	vels through whicl	n students are able	to solve
	the real wor	ld problems.			
3	Analyze the	number systems			
4	Make quick	decisions to face the critical arithm	etic problems.		
5	Analyze the	mathematical problems.	-		
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:
Outcome	VII Sem	Computer Methods in Power	B18EE35	L/T/P :3/0 /0	3
		Systems			
After learn	ing the conter	ts of this subject, the student must	be able to		
1	Learn to diff	ferentiate the incidence and primitiv	ve matrices of a ne	etwork and form Y	bus for
	network cale	culations			
2	Perform loa	d flow to evaluate the complex volt	age at all nodes in	the power system	1
3	Understand	the faulted power system using Zbu	is of the system		
4	Analyse syn	nmetrical components.			
5	Know the st	ability of the power system for sma	ll and large distur	bance.	
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:
Outcome	VII Sem	Microprocessors and	B18EC20	L/T/P :3/0 /0	3
		Microcontrollers			
After learn	ing the conter	ts of this subject, the student must	be able to		
1	Illustrate the	e internal organization of popular 80	086/8051 micropro	ocessors/microcon	trollers.
2	Contrast har	dware and software interaction and	integration.		
3	Design micr	oprocessors and microcontrollers-b	ased systems and	develop microcor	troller
	based system	ns for real time applications.	2	1	
4	Develop kno	owledge about microcontroller 805	and its program	ning.	
5	Explain the	Memory organization, classification	n and their applica	tions and Assess	
	programmin	g, interfacing etc of various device	s with microproce	ssors and external	world.
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:
Outcome	VII Sem	Soft Computing Techniques	B18EE36	L/T/P :3/0 /0	3
After learn	ing the conter	its of this subject, the student must	be able to		
1	Learn the ba	sic concepts of soft computing and	differentiate it fro	om hard computin	g
2	Explore the	fuzzy logic sets and fuzzy logic con	ntroller application	n to its real time p	roblems
3	Understand	various architecture of ANNs and ϵ	explore its applicat	tions of ANNs to s	solve some
	real-life pro	blems			
4	Learn the ba	sic concepts of GA and its differen	t architecture to so	olve single objecti	ve
	optimizatior	n problem		0 5	
5	Understand	the concept of multi-objective optin	nization problems	(MOOPs) and iss	sues of
	solving it.		I C		
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:
Outcome	VII Sem	Advanced Electrical Drives	B18EE37	L/T/P :3/0 /0	3
After learn	ing the conter	ts of this subject, the student must	be able to		
1	Analyse the	operation of three phase converter	fed dc motors		

2	Describe the	e VSI and CSI fed induction motor	operation.		
3	Know the co	oncept of vector control of induction	n motor drive.		
4	Understand	the concept of direct torque control	for three phase in	duction motor.	
5	Gain knowle	edge on vector control of PMSM dr	rives and introduct	ion to BLDC driv	es.
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:
Outcome	VII Sem	HVDC and FACTS	B18EE38	L/T/P :3/0/0	3
After learn	ing the conten	its of this subject, the student must	be able to		
1	Understand	the basic knowledge on converters	control schemes o	f HVDC system	
2	Apply harm	onics filters for reactive power con	trol.		
3	Analyze pow	ver flow analysis in HVDC systems	s.		
4	Understand	basic concepts and necessity of FA	CTS controllers.		
5	Design varie	ous shunt and series compensators.			
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:
Outcome	VII Sem	Electrical and Hybrid	B18EE39	L/T/P :3/0 /0	3
		Vehicles			
After learn	ing the conten	ts of this subject, the student must	be able to		
1	Gain the know	owledge on basic concepts of Electronic elec	ric Vehicles.		
2	Acquire and	interpret fundamental concepts of	advanced batteries	s and super capaci	tors.
3	Identify vari	ous Motor drives used for Electric	Vehicles.		
4	Understand	various concepts of Electric Train.			
5	Acquire kno	wledge on series and parallel conn	ections of EHV.		
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:
Outcome	VII Sem	Power Quality	B18EE40	L/T/P :3/0 /0	3
After learn	ing the conten	its of this subject, the student must	be able to		
1	Know the te	rminology, and definitions of vario	ous power quality p	problems	
	Tthow the te	057			
2	Define and u	understand the components of curre	ent/power in sinus	oidal/non-sinusoid	lal single
2	Define and u phase supply	understand the components of curre y/load systems	ent/power in sinus	oidal/non-sinusoid	lal single
2 3	Define and u phase supply Define and u	understand the components of curre y/load systems understand the components of curre	ent/power in sinuse	bidal/non-sinusoid bidal/non-sinusoid	al single
2 3	Define and u phase supply Define and u phase supply	y/load systems y/load systems understand the components of curre y/load systems	ent/power in sinuse ent/power in sinuse	bidal/non-sinusoid bidal/non-sinusoid	al single
2 3 4	Define and u phase supply Define and u phase supply Analyze the	y/load systems understand the components of curre understand the components of curre y/load systems e power outages, unbalance, voltage	ent/power in sinuse ent/power in sinuse e sag and distortion	bidal/non-sinusoid bidal/non-sinusoid ns in power syster	lal single lal three
2 3 4 5	Define and u phase supply Define and u phase supply Analyze the Design the p	y/load systems understand the components of curre y/load systems y/load systems e power outages, unbalance, voltage passive shunt/series compensators a	ent/power in sinuse ent/power in sinuse e sag and distortion ind power filters	bidal/non-sinusoid bidal/non-sinusoid ns in power syster	al single al three
2 3 4 5 Course	Define and u phase supply Define and u phase supply Analyze the Design the p Semester	understand the components of curre y/load systems understand the components of curre y/load systems e power outages, unbalance, voltage passive shunt/series compensators a Subject Name	ent/power in sinuse ent/power in sinuse e sag and distortion and power filters Subject Code	bidal/non-sinusoid bidal/non-sinusoid ns in power syster No. of Hours	lal single lal three ns Credits:
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2 3 4 5 Course Outcome After learn	Define and u phase supply Define and u phase supply Analyze the Design the p Semester VII Sem ing the conten	understand the components of curre y/load systems understand the components of curre y/load systems e power outages, unbalance, voltage bassive shunt/series compensators a Subject Name Digital Control Systems ats of this subject, the student must	ent/power in sinuse ent/power in sinuse e sag and distortion and power filters Subject Code B18EE41 be able to	bidal/non-sinusoid bidal/non-sinusoid ns in power syster No. of Hours L/T/P :3/0 /0	lal single lal three ns Credits: 3
2 3 4 5 Course Outcome After learn	Define and u phase supply Define and u phase supply Analyze the Design the p Semester VII Sem ing the content Acquire a str	understand the components of curre y/load systems understand the components of curre y/load systems e power outages, unbalance, voltage passive shunt/series compensators a Subject Name Digital Control Systems its of this subject, the student must rong foundation in sampling and re-	ent/power in sinuse ent/power in sinuse e sag and distortion ind power filters Subject Code B18EE41 be able to construction Z-tra	bidal/non-sinusoid bidal/non-sinusoid ns in power syster No. of Hours L/T/P :3/0 /0 nsforms.	lal single lal three ns Credits: 3
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2 3 4 5 Course Outcome After learn 1 2 3 4 5	Define and u phase supply Define and u phase supply Analyze the Design the p Semester VII Sem ing the conten Acquire a str Apply know Replace the Evaluate and Apply state	understand the components of curre y/load systems inderstand the components of curre y/load systems e power outages, unbalance, voltage passive shunt/series compensators a Subject Name Digital Control Systems its of this subject, the student must rong foundation in sampling and re ledge of Mathematics, Z-plane ana conventional control system with I d apply Z-plane analysis of discretes feedback controllers and observers	ent/power in sinuse ent/power in sinuse e sag and distortion ind power filters Subject Code B18EE41 be able to construction Z-tra lysis to discrete tim Digital control syste time control syste	bidal/non-sinusoid bidal/non-sinusoid ns in power syster No. of Hours L/T/P :3/0 /0 nsforms. me control system em. ems	lal single lal three ns Credits: 3 s.
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2 3 4 5 Course Outcome After learn 1 2 3 4 5 Course Outcome After learn 4 5 Course	Define and u phase supply Define and u phase supply Analyze the Design the p Semester VII Sem ing the content Acquire a str Apply know Replace the Evaluate and Apply state Semester VII Sem ing the content	Inderstand the components of curre y/load systems understand the components of curre y/load systems e power outages, unbalance, voltage passive shunt/series compensators a Subject Name Digital Control Systems its of this subject, the student must rong foundation in sampling and re ledge of Mathematics, Z-plane ana conventional control system with I d apply Z-plane analysis of discrete feedback controllers and observers Subject Name Management Science its of this subject, the student must	ent/power in sinuse ent/power in sinuse e sag and distortion and power filters Subject Code B18EE41 be able to construction Z-tra lysis to discrete tin Digital control syste e time control syste Subject Code B18MB02 be able to	bidal/non-sinusoid bidal/non-sinusoid ns in power syster No. of Hours L/T/P :3/0 /0 nsforms. me control system em. ems No. of Hours L/T/P :3/0 /0	lal single lal three ns Credits: 3 s. S. Credits: 3

	operations th	nrough Work study			
2	Carry out pr	oduction operations through Work	study.		
3	Understand	the markets, customers and compet	ition better and pr	ice the given prod	ucts
	appropriatel	у.			
4	Ensure quality	ity for a given product or service			
5	Plan and con	ntrol the HR function better.			
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:
Outcome	VII Sem	Oops Trough Java	B18CS52	L/T/P :3/0 /0	3
After learn	ing the conter	ts of this subject, the student must	be able to		
1	Describe the	e concepts of Java Programming lar	nguage		
2	Demonstrate	e the concepts of Polymorphism and	d Inheritance		
3	Develop rob	oust applications using Exception ha	andling.		
4	Develop mu	ltithreaded applications with synch	ronization		
5	Design GUI	based applications and Applets for	web applications.		
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:
Outcome	VII Sem	VLSI Design	B18EC21	L/T/P :3/0 /0	3
After learn	ing the conter	its of this subject, the student must	be able to		
1	Understand	IC technology and basic electrical	properties of MOS	and BiCMOS.	
2	Discuss the	design process of VLSI circuit			
3	Develop and	l design the gate level circuits.			
4	Gain the know	owledge to design data path subsyst	tems like Adders,	Shifters, ALUs et	2
5	Illustrate dif	ferent programmable logic devices	and CMOS testin	g	
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:
Outcome	VII Sem	Business Intelligence and Big	B18CS37	L/T/P :3/0/0	3
		Data			
After learn	ing the conter	ts of this subject, the student must	be able to		
1	Learn the ba	sics concepts and fundamentals of	big data analysis a	and examine its va	rious
	types				
2	Understand	the key technologies such as manip	oulating, storing, a	nd analyzing big o	lata.
3	Understand	the concept of map reduce and exp	lore its extensions		
4	Explore vari	ous big data solutions to real world	l problems		
5	Understand	the ethics and practices of big data	analysis in the rea	l world.	
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:
Outcome	VII Sem	Microprocessors and	B18EC29	L/T/P :0/0 /2	1
		Microcontrollers Lab			
After learn	ing the conter	tts of this subject, the student must	be able to		
1	Demonstrate	e experimentally basic programmin	g of Microprocess	or.	
2	Exhibit mici	coprocessor interfacing with various	s peripherals for v	arious application	s.
3	Demonstrate	e experimentally basic programmin	g of microcontroll	er.	
4	Exhibit mici	coprocessor interfacing with variou	s peripherals for v	arious application	8.
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:
Outcome					4
	VII Sem	Electrical Simulation Lab	B18EE42	L/T/P :0/0 /2	1

1	Get the basic	c simulation knowledge	on electric	al subjects				
2	Learn the tir	ne response and frequence	cy respons	e analysis				
3	Conduct loa	d flow analysis						
4	Gain workin	g knowledge on PSPICE	E software					
Course	Semester	Subject Nam	e	Subject (Code	No. of H	Iours	Credits:
Outcome	VII Sem	Advanced Engl	ish	B18EN	N03	L/T/P:	0/0 /2	1
		Communication Sk	ills Lab					
After learn	ing the conten	ts of this subject, the stu	dent must	be able to				
1	Develop sou	nd vocabulary and its pr	oper use c	ontextually				
2	Inculcate fla	ir for Writing and felicit	y in writte	n expression	n.			
3	Enhance job	prospects.						
4	Acquire effe	ctive speaking abilities.						
Course	Semester	Subject Name	5	Subject Co	de	No. of Ho	ours	Credits: 2
Outcome	VII Sem	Mini Project and Sum	nmer H	B18EE43	L	/T/P :0/0 /	/0	
		Internship						
1	Students wil	l be able to practice acqu	uired know	ledge withi	in the c	hosen area	a of tech	nology for
	project deve	lopment						<u> </u>
2	Identify, dis	cuss and justify the techr	nical aspec	ts of the cho	osen pr	oject with	a comp	orehensive
2	and systema	tic approacn.		ta fan anain				
3	Work on on	improve and refine techn	lical aspec	ts for engine	leering	projects	1 Comm	
4	work as an i	factively project related		and finding	inical p	rojects and	1 Comm	lunicate
	and report en	fiectively project related	activities	and midnigs	,5.			
CONTRO	Somostor	Subject Name	Subject	Code	No of	Hours	Cr	adits. 1
Course	Semester VII Som	Subject Name	Subject	Code	No. of T/P	Hours	Cr	edits: 4
Course Outcome	Semester VII Sem	Subject Name Project Stage – I	Subject B18EE44	Code 4 L	No. of _/T/P :(Hours 0/0 /8	Cr	edits: 4
Course Outcome	Semester VII Sem Identify the Ability to p	Subject NameProject Stage – Iproblem by applyinglan and implement an	Subject B18EE44 acquired l	CodeImage:	No. of /T/P :0 e.	Hours D/0 /8	Cr	edits: 4
Course Outcome	Semester VII Sem Identify the Ability to p In-depth sk	Subject NameProject Stage – Iproblem by applyinglan and implement anill to use some laborate	Subject B18EE44 acquired l investigat	CodeII <t< td=""><td>No. of /T/P :0 e. velopm nd tech</td><td>Hours 0/0 /8 ental proj</td><th>Cro</th><td>edits: 4</td></t<>	No. of /T/P :0 e. velopm nd tech	Hours 0/0 /8 ental proj	Cro	edits: 4
Course Outcome	Semester VII Sem Identify the Ability to p In-depth sk Ability to c	Subject NameProject Stage – Iproblem by applyinglan and implement anill to use some laborateommunicate results, communicate	Subject B18EE44 acquired l investigat ory, mode	CodeImage:	No. of L/T/P :0 e. relopm nd tech nd idea:	Hours D/0 /8 ental proj iniques s in writte	Croject.	edits: 4
CourseOutcome1234Course	Semester VII Sem Identify the Ability to p In-depth sk Ability to c Semester	Subject Name Project Stage – I problem by applying lan and implement an ill to use some laborate ommunicate results, co Subject Name	Subject B18EE44 acquired I investigat ory, mode oncepts, a	CodeII <t< td=""><td>No. of //T/P :0 e. relopm nd tech nd idea: Code</td><td>Hours D/0 /8 ental proj iniques s in writte No. of H</td><th>Cropic Cropic Cr</th><td>edits: 4 oral form. Credits:</td></t<>	No. of //T/P :0 e. relopm nd tech nd idea: Code	Hours D/0 /8 ental proj iniques s in writte No. of H	Cropic Cr	edits: 4 oral form. Credits:
Course0utcome1234CourseOutcome	Semester VII Sem Identify the Ability to p In-depth sk Ability to c Semester VIII Sem	Subject Name Project Stage – I problem by applying lan and implement an ill to use some laborate ommunicate results, co Subject Name Neural Networks and	Subject B18EE44 acquired 1 investigat ory, mode oncepts, a d Fuzzy	CodeImage:	No. of //T/P :0 e. velopm nd tech nd tech d ideas Code E45	Hours b/0 /8 ental proj iniques s in writte No. of H L/T/P :	Cru ject. en and o Hours 3/0 /0	edits: 4 oral form. Credits: 3
Course0utcome1234CourseOutcome	Semester VII Sem Identify the Ability to p In-depth sk Ability to c Semester VIII Sem	Subject Name Project Stage – I problem by applying lan and implement an ill to use some laborate ommunicate results, co Subject Name Neural Networks and Systems	Subject B18EE44 acquired 1 investigat ory, mode oncepts, a d Fuzzy	CodeII <t< td=""><td>No. of //T/P :(e. relopm nd tech nd idea: Code E45</td><td>Hours D/0 /8 ental proj aniques s in writte No. of H L/T/P :</td><th>Cr ject. en and Hours 3/0 /0</th><td>edits: 4 oral form. Credits: 3</td></t<>	No. of //T/P :(e. relopm nd tech nd idea: Code E45	Hours D/0 /8 ental proj aniques s in writte No. of H L/T/P :	Cr ject. en and Hours 3/0 /0	edits: 4 oral form. Credits: 3
Course0utcome1234CourseOutcome	Semester VII Sem Identify the Ability to p In-depth sk Ability to c Semester VIII Sem ing the conten	Subject Name Project Stage – I problem by applying lan and implement an ill to use some laborate ommunicate results, co Subject Name Neural Networks and Systems ts of this subject, the stu	Subject B18EE44 acquired 1 investigat ory, mode oncepts, a d Fuzzy dent must	CodeImage:	No. of //T/P :0 e. relopm nd tech nd tech d idea: Code E45	Hours D/0 /8 ental proj iniques s in writte No. of H L/T/P :	Cr ject. en and Hours 3/0 /0	edits: 4 oral form. Credits: 3
Course0utcome1234CourseOutcomeAfter learning1	Semester VII Sem Identify the Ability to p In-depth sk Ability to c Semester VIII Sem ing the conten Understand	Subject Name Project Stage – I a problem by applying lan and implement an ill to use some laborate ommunicate results, co Subject Name Neural Networks and Systems tts of this subject, the stu the concepts of feed forw	Subject B18EE44 acquired 1 investigat ory, mode oncepts, a d Fuzzy dent must vard neura	CodeIIIIIIIIIINetworks	No. of //T/P :(e. relopm nd tech nd idea: Code E45	Hours D/0 /8 ental proj iniques s in writte No. of H L/T/P :	Cro ject. en and o Hours 3/0 /0	edits: 4 oral form. Credits: 3
Course0utcome1234CourseOutcomeAfter learning12	Semester VII Sem Identify the Ability to p In-depth sk Ability to c Semester VIII Sem ing the conten Understand Acquire ade	Subject Name Project Stage – I problem by applying lan and implement an ill to use some laborate ommunicate results, co Subject Name Neural Networks and Systems ts of this subject, the stu the concepts of feed forw quate knowledge about f	Subject B18EE44 acquired 1 investigat ory, mode oncepts, a d Fuzzy dent must vard neura eedback neura	CodeImage:	No. of //T/P :0 e. relopm nd tech nd tech d idea: Code E45	Hours D/0 /8 ental proj iniques s in writte No. of H L/T/P :	Cr ject. en and d Hours 3/0 /0	edits: 4 oral form. Credits: 3
Course0utcome1234CourseOutcomeAfter learning123	Semester VII Sem Identify the Ability to p In-depth sk Ability to c Semester VIII Sem ing the conten Understand Acquire adea Get knowled	Subject Name Project Stage – I a problem by applying lan and implement an ill to use some laborate ommunicate results, co Subject Name Neural Networks and Systems its of this subject, the stu the concepts of feed forw quate knowledge about f lge about the concept of	Subject B18EE44 acquired 1 investigat ory, mode oncepts, a d Fuzzy dent must vard neura ieedback no fuzziness i	Code Image: Code	No. of /T/P :0 e. relopm nd tech nd idea: Code E45 variou	Hours D/0 /8 ental proj iniques s in writte No. of H L/T/P :	Cruin control	edits: 4 oral form. Credits: 3 ut fuzzy
Course0utcome1234CourseOutcomeAfter learning123	Semester VII Sem Identify the Ability to p In-depth sk Ability to c Semester VIII Sem ing the conten Understand Acquire adea Get knowled set theory.	Subject Name Project Stage – I a problem by applying lan and implement an ill to use some laborate ommunicate results, co Subject Name Neural Networks and Systems tts of this subject, the stu the concepts of feed forw quate knowledge about f lge about the concept of	Subject B18EE44 acquired l investigat ory, mode oncepts, a d Fuzzy dent must vard neura eedback no fuzziness i	CodeImage:	No. of /T/P :0 e. relopm nd tech nd idear Code E45 variou	Hours D/0 /8 ental projuniques s in writte No. of H L/T/P : s systems	Cro ject. en and of Hours 3/0 /0 and abo	edits: 4 oral form. Credits: 3 out fuzzy
Course1234CourseOutcomeAfter learning1234	Semester VII Sem Identify the Ability to p In-depth sk Ability to c Semester VIII Sem ing the conten Understand Acquire adea Get knowled set theory.	Subject Name Project Stage – I a problem by applying lan and implement an ill to use some laborate ommunicate results, co Subject Name Neural Networks and Systems its of this subject, the stu the concepts of feed forw quate knowledge about f leg about the concept of	Subject B18EE44 acquired l investigat ory, mode oncepts, a d d Fuzzy dent must vard neural eedback ne fuzziness i ol and ada	CodeImage:	No. of /T/P :0 e. relopm nd tech nd idea: Code E45 variou	Hours D/0 /8 ental proj iniques s in writte No. of H L/T/P : s systems and to desi	Cr ject. en and d Hours 3/0 /0 and abo	edits: 4 oral form. Credits: 3 out fuzzy
Course0utcome1234CourseOutcomeAfter learning1234	Semester VII Sem Identify the Ability to p In-depth sk Ability to c Semester VIII Sem Understand Acquire adea Get knowled set theory. Gain knowled	Subject Name Project Stage – I a problem by applying lan and implement an ill to use some laborate ommunicate results, co Subject Name Neural Networks and Systems tts of this subject, the stu the concepts of feed forw quate knowledge about f lge about the concept of edge of fuzzy logic contr g genetic algorithm.	Subject B18EE44 acquired l investigat ory, mode oncepts, a d Fuzzy dent must vard neura eedback no fuzziness i ol and ada	CodeImage: Anomaly and the second seco	No. of /T/P :0 e. relopm nd tech id idear Code E45 variou	Hours D/0 /8 ental projuniques s in writte No. of H L/T/P : s systems and to desi	Cro ject. en and d Hours 3/0 /0 and abo gn the f	edits: 4 oral form. Credits: 3 out fuzzy
Course1234CourseOutcomeAfter learni12345	Semester VII Sem Identify the Ability to p In-depth sk Ability to c Semester VIII Sem Understand Acquire adea Get knowled set theory. Gain knowled control using Explore kno	Subject Name Project Stage – I e problem by applying lan and implement an ill to use some laborate ommunicate results, co Subject Name Neural Networks and Systems tts of this subject, the stu the concepts of feed forv quate knowledge about f lge about the concept of edge of fuzzy logic contr g genetic algorithm. wledge of application of	Subject B18EE44 acquired l investigat ory, mode oncepts, a d d Fuzzy dent must vard neural eedback m fuzziness i ol and ada	Code Image: Anomalog and a constraint of the second and a constraint of the second and a constraint of the second and the seco	No. of /T/P : (e. relopm nd tech nd idea: Code E45 variou r logic a	Hours D/0 /8 ental proj iniques s in writte No. of H L/T/P : s systems und to desi me system	Cr ject. en and d Hours 3/0 /0 and abo gn the f	edits: 4 oral form. Credits: 3 out fuzzy uzzy gineering.
Course0utcome1234CourseOutcomeAfter learning12345Course	Semester VII Sem Identify the Ability to p In-depth sk Ability to c Semester VIII Sem Understand Acquire adea Get knowled set theory. Gain knowled control using Explore kno	Subject Name Project Stage – I a problem by applying lan and implement an ill to use some laborate ommunicate results, co Subject Name Neural Networks and Systems tts of this subject, the stu the concepts of feed forw quate knowledge about f lge about the concept of edge of fuzzy logic contr g genetic algorithm. wledge of application of Subject Name	Subject B18EE44 acquired l investigat ory, mode oncepts, a d Fuzzy dent must vard neura eedback no fuzziness i ol and ada fuzzy logi e	Code Image: I	No. of //T/P :0 e. relopm nd tech id idear Code E45 · variou · logic a p real ti Code	Hours D/0 /8 ental projuniques s in writter No. of H L/T/P : and to desi me system No. of H	Cr ject. en and d Hours 3/0 /0 and abo gn the f ns in eng Hours	edits: 4 oral form. Credits: 3 out fuzzy fuzzy gineering. Credits:
Course0utcome1234OutcomeAfter learni12345Outcome	Semester VII Sem Identify the Ability to p In-depth sk Ability to c Semester VIII Sem ing the conten Understand Acquire adee Get knowled set theory. Gain knowle control using Explore kno Semester VIII Sem	Subject Name Project Stage – I problem by applying lan and implement an ill to use some laborate ommunicate results, co Subject Name Neural Networks and Systems tts of this subject, the stu the concepts of feed forv quate knowledge about f lge about the concept of edge of fuzzy logic contr g genetic algorithm. wledge of application of Subject Name Utilization of Elect	Subject B18EE44 acquired l investigat ory, mode oncepts, a d d Fuzzy dent must vard neura eedback no fuzziness i ol and ada fuzzy logi e trical	CodeILknowledgeive or deveive or deveive or devein alyses anSubject (Interpretent of the second of the	No. of /T/P :0 e. relopm nd tech nd idea: Code E45 variou rologic a p real ti Code E46	Hours D/0 /8 ental proj iniques s in writte No. of H L/T/P : und to desi me system No. of H L/T/P :	Cr ject. ien and d iours 3/0 /0 and abo gn the f is in eng iours 3/0 /0	edits: 4 oral form. Credits: 3 out fuzzy uzzy gineering. Credits: 3
Course0utcome1234OutcomeAfter learning12345Outcome	Semester VII Sem Identify the Ability to p In-depth sk Ability to c Semester VIII Sem Understand Acquire adea Get knowled set theory. Gain knowled control using Explore kno Semester VIII Sem	Subject Name Project Stage – I a problem by applying lan and implement an ill to use some laborate ommunicate results, co Subject Name Neural Networks and Systems ts of this subject, the stu the concepts of feed forw quate knowledge about f lge about the concept of edge of fuzzy logic contr g genetic algorithm. wledge of application of Subject Name Utilization of Elect Energy	Subject B18EE44 acquired 1 investigat ory, mode oncepts, a d Fuzzy dent must vard neura eedback no fuzziness i ol and ada fuzzy logi e trical	Code Image: Anomalog and a constraint of the constraint o	No. of /T/P : (elopm nd tech id idea: Code E45 Variou variou r logic a p real ti Code E46	Hours D/0 /8 ental projuniques s in writter No. of H L/T/P : und to desi me system No. of H L/T/P :	Cr ject. en and d Hours 3/0 /0 and abo gn the f ns in eng Hours 3/0 /0	edits: 4 oral form. Credits: 3 out fuzzy fuzzy gineering. Credits: 3

1	Choose a rig	Choose a right drive for a particular application				
2	Identify Hea	Identify Heating and welding schemes for given application.				
3	Explain the	basics of lighting and methods of	illumination and it	s parameters		
4	Understand	the different schemes of traction s	ystems, its charact	teristics and its ma	iin	
	components					
5	Analyze ele	ctrical energy consumption for trad	ction system.			
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:	
Outcome	VIII Sem	Smart Grids	B18EE47	L/T/P :3/0 /0	3	
After learni	ing the content	s of this subject, the student must	be able to			
1	Understand t	echnologies for smart grid and fea	tures of Smart Gri	d in the context o	f Indian	
	Grid.					
2	Assess the ro	le of automation in Transmission/	Distribution/subst	ation		
3	Know variou	s communication technologies inv	volved in smart gri	ds and importance	e of	
	PMUs, EMS	, WAMS, SCADA				
4	Classify vari	ous Smart Distribution Technolog	ies			
5	Clarify the re	egulations and market models for s	smart grid and vari	ious tariffs		
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:	
Outcome	VIII Sem	Entrepreneurship	B18MB03	L/T/P :3/0 /0	3	
		Development				
After learni	After learning the contents of this subject, the student must be able to					
1	Understand t	he qualities and skills of entrepren	eurship			
2	Explore varie	ous aspects that promotes entrepret	neur in the society			
3	Understand t	he necessity of ethical guidelines i	n business			
4	Understand t	he basics of corporate governance	and its mechanism	n		
5	Understand t	he impact of social responsibility of	of a entrepreneur			
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:	
Outcome	VIII Sem	Embedded Systems	B18EC31	L/T/P :3/0 /0	3	
After learni	ing the content	s of this subject, the student must	be able to			
1	Understand t	he basics of an embedded system				
2	Learn the me	thod of designing an embedded sy	stem for any type	of applications.		
3	Understand t	he operating systems concepts, typ	es and choosing F	RTOS.		
4	Understand t	ypes of memory and interacting to	external world.			
5	Learn embed	ded firmware design approaches.				
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:	
Outcome	VIII Sem	Power Plant Engineering	B18ME36	L/T/P :3/0 /0	3	
After learni	ing the content	s of this subject, the student must	be able to			
1	Understand t	he layout of power generation unit	s for different ene	rgy sectors.		
2	Identify diffe	rent subsystem and systems of po-	wer generation sec	ctor.		
3	Compare exi	sting and emerging alternative ene	rgy sources			
4	Analyze the	opportunities in contributing toward	rds the solving of o	energy crisis.		
5	Discuss gene	ral arrangement of power distribut	ion.	r		
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:	
Outcome	VIII Sem	Intellectual Property Rights	B18MB06	L/T/P :3/0/0	3	

After learning the contents of this subject, the student must be able to								
1	Understand t	he basics and importance	ce of intel	llectual pro	operty	rights		
2	Explore the l	Purpose and function of	trade ma	rks and rel	ated p	rocesses		
3	Understand t	he importance of copy i	right and	the issues	involv	ed in its viola	ation	
4	Analyze the	trade secrets and its asso	ociated la	WS				
5	Explore the I	new developments in IP	'R					
Course	Semester	Subject Name		Subject (Code	No. of Ho	ours	Credits: 1
Outcome	VII Sem	Technical Seminar		B18EE48	5	L/T/P :0/0	/0	
1	Identify and	l analyze the real time	Electric	al Engine	ering	problems		
2	Acquire aw	areness on latest techn	nology a	nd current	t trend	ls in the fiel	d of E	lectrical
	Engineering	5.						
3	Participate i	in discussions for enha	ancemen	t of know	ledge			
4	Apply com	munication skills and	Docume	nt and pre	esent t	echnical rep	orts fo	ollowing
	professiona	l ethics.						
Course	Semester	Subject Name	Subjee	ct Code	No.	of Hours	C	redits: 8
Outcome	VII Sem	Project Stage – II	B18EE 4	49	L/T/]	P :0/0 /16		
1	Identify the	problem by applying	acquired	l knowled	lge.			
2	Ability to plan and implement an investigative or developmental project.							
3	In-depth ski	ill to use some laborat	ory, moc	dern tools	and to	echniques		
4	Ability to co	ommunicate results, c	oncepts,	analyses	and ic	leas in writt	en and	oral form.

VAAGDEVI COLLEGE OF ENGINEERING AUTONOMOUS DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING M.TECH. (Software Engineering)

COURSE STRUCTURE

(R18 Regulations applicable for the batches admitted from Academic Year 2018-19 onwards)

I-SEMESTER

Course	Year/Semes	Subject Name (Subject Code)	No. of HoursL:3	Credits: 3		
Outcome	terl Sem	Data Structures and Algorithms(M18CS01)	T:0 P:0	ci cuitor c		
S.No						
1	Understand the basi	cs of Algorithms and Analyze the performance	e and complexity of	Algorithms		
2	Explain the concept	s of basic data structures: Linear and Non Line	ear and compare ho	w the		
	storageand retrieval	of data is done on these data structures.				
3	Gain knowledge ab	out applications of data structures including cr	reating, inserting, d	eleting,		
	searching and sortin	g of data for each data structure.				
4	Experiment with us applications.	ing linear data structures like stacks, queues an	d linked list for rea	time		
5	Distinguish between	Trees and Graphs and the areas where best ap	pplicable.			
6	Be able to decide ar	appropriate data structure for any specific pro	oblem.			
Course	Year/SemesterI	Subject Name (Subject Code)	No. of Hours	Credits: 3		
Outcome	Sem	Software Development Methodologies	L:3 T:0 P:0			
		(M18SW01)				
1						
1	Review the basics of software engineering, processes, models and practices.					
2	Understand software requirement engineering and its application using various models.					
3	Understand design thinking at varied levels i.e architectural and component level and to also user					
	interface					
4	Understand testing and its theoretical background along with metrics to test source code,					
	applications and ma	intenance of application				
5	Develop understand	d on risks, risk identification, risk projection,	Risk refinement, r	isk		
	management and de	aling with change management, survey few too	ols for configuration	1		
	management.		Γ			
Course	Year/SemesterI	Subject Name (Subject Code)	No. of Hours	Credits: 3		
Outcome	Sem	Cloud Computing (M18CS05)	L:3 T:0 P:0			
1	Discuss main conce	pts key strengths, and limitations for cloud cor	nputing			
2	Develop the archited	cture along with specific infrastructure on cloud	computing including	ng SaaS,		
	PaaS, public cloud,	private cloud, hybrid cloud, etc				
3	Explain the issues on cloud computing along with security, privacy, and interoperability					
4	Choose and use the appropriate technology, methods on these issues					
5	Identify problems, a	and explain, analyze, and evaluate various clou	d computing solution	ons.		
6	Provide the appropriate solutions on cloud computing based on the application.					
Course	Year/SemesterI	Subject Name (Subject Code)	No. of Hours	Credits: 3		
Outcome	Sem	Component Based Software Engineering (M18SW02)	L:3 T:0 P:0			

Department of Computer Science & Engg., -VCE

M.Tech-S	<u>W</u>		R18-Re	gulations	
1	Understand compo	nent based software development, models and	approaches		
2	Demonstrate the ro	ble of team in building component based softwa	re development.		
3	Identify the proces	Identify the processes involved in Design of Software Component Infrastructures and study			
	existing models.		0.0		
4	Demonstrate the le	earnt principles in effective reuse and maintenar	ice of software		
5	Survey technologie	es that support implementation of component ba	ased software devel	opment	
Course	Year/SemesterI	Subject Name (Subject Code)	No. of Hours	Credits: 3	
Outcome	Sem	internet reenhologies and services (iviros ivos)	L:3 T:0 P:0		
1	Survey client side	technologies for web development.			
2	Understand life cy	cle of a java servlet and apply it to a develop so	ftware.		
3	Develop understan	ding on JSP and enhance the solution using JSI	P program.		
4	Create awareness	on Struts framework and its application, develo	op complex solution	n using this	
	framework.			-	
5	Introduce web serv	vices and service oriented architecture to develor	o seamless applicati	ons that are	
	portable and highly	v interoperable.	, seemess approve		
Course	Year/SemesterI	Subject Name (Subject Code)	No. of Hours	Credits: 3	
Outcome	Sem	Software requirements and Estimation (M18SW04)	L:3 T:0 P:0		
1	To develop an und	lerstanding of software requirements and asses t	heir nature.		
2	To analyze software requirement management.				
3	To be able to estimate the cost of software development by understanding various methods.				
4	To be able to draw	conclusions on effort, schedule and cost estima	tion		
5	Survey tools for re	equirements management, software estimation to	pols.		
Course	Year/SemesterI	Subject Name (Subject Code)	No. of Hours	Credits: 3	
Outcome	Sem	Object Oriented Software Engineering (M18SW05)	L:3 T:0 P:0		
1	To understand Sco Software Process.	ppe of Object-Oriented Software Engineering, S	oftware Life-Cycle	Models,	
2	To analyze role of	teams, tools for the trade, testing.			
3	To be able to creat	e reusable and portable applications.			
4	To be able to draw	conclusions from requirement workflow.			
5	Design and implem	nent workflow and maintain post delivery.			
Course	Year/SemesterI	Subject Name (Subject Code)	No. of Hours	Credits: 3	
Outcome	Sem	Information Theory and Coding (M18SW06)	L:3 T:0 P:0		
1	Ability to learn ab	out information and entropy			
2	Ability to learn ab	out Hamming weight, minimum distance decod	ing and different ty	vpes of	
	codes. They also lea	arn about syndrome calculation and design of an	encoder and decod	ler.	
3	Understanding the	sequential search and Viterbi algorithm			
4	Apply knowledge	on text compression techniques. They also learn	about speech and	audio coding	
5	Apply knowledge standards.	on image compression, graphics interchange for	rmat, JPEG and MI	PEG	
Course	Year/SemesterI	Subject Name (Subject Code)	No. of Hours	Credits: 2	
Outcome	Sem	Research Methodology(M18MC01)	L:2 T:0 P:0		
1	Acquire knowledge	e on Research Design and statistical methods in	research		
2	Analyze the variou	is methods in Data Collection Data Organization	on and different apr	proaches	
2	ofData Representation.				

M.Tech-S	W		R18-Re	gulations	
3	Understand all the a. R b. D c. W	basic concepts required to prepare esearch synopsis issertation /riting a good research proposal		-	
4	Interpret the Scope	of Patent Rights and Administration of Patent	System.		
Course Outcome	Year/SemesterI Sem	Subject Name (Subject Code) English for Research Paper Writing(M18AC01)	No. of Hours L:2 T:0 P:0	Credits: 0	
1	Obtain complete ki paper, its Scope ar	nowledge on Definition of a research paper, Pure ad Benefits.	rpose of writing an	y research	
2	Understand the stat	ndard English formats .for scripting the best res	earch paper.		
3	Analyze all the Qualitative and Quantitative Research Methodologies and the ethics of plagiarism.				
4	Explain the detailed process of writing and publishing any research paper and perform a case study on paper writing.				
Course Outcome	Year/SemesterI Sem	Subject Name (Subject Code) Software Development Methodologies Lab (M18SW07)	No. of Hours L:0 T:0 P:4	Credits: 2	
1	Review the basics	of software engineering, processes, models and	practices.		
2	Understand softwa	are requirement engineering and its application	using various mod	els.	
3	Understand design userinterface.	thinking at varied levels i.e architectural and	component level ar	nd to also	
4	Understand testing applications and m	and its theoretical background along with metric aintenance of application	cs to test source c	ode,	
5	Develop an understand on risks, risk identification, risk projection, Risk refinement, risk management and dealing with change management, survey few tools for configuration management.				
Course	Year/SemesterI	Subject Name (Subject Code)	No. of Hours	Credits: 2	
Outcome	Sem	Cloud Computing Lab (M18CS10)	L:0 T:0 P:4		
1	Develop the archite PaaS, IaaS, public	ecture along with specific infrastructure on clou cloud, private cloud, hybrid cloud, etc.	id computing, inclu	ding SaaS,	
2	Explain the issues	on cloud computing along with security, privac	y, and interoperabi	lity.	
3	Identify problems,	and explain, analyze, and evaluate various clou	d computing soluti	ons.	
4	Provide the approp	Provide the appropriate solutions on cloud computing based on the application.			

II - SEMESTER

Course Outcome	Year/Semes terII Sem	Subject Name (Subject Code)	No. of Hours	Credits: 3	
S.No		(M18SW08)			
1	Apply modern software testing processes in relation to software development and project management.				
2	Create test strategies and plans, design test cases, prioritize and execute them.				
3	Ability to learn and manage incidents using software testing tools.				
4	Contribute to efficient delivery of software solutions and implement improvements in the software				
	development processes.				
5	To gain expertise in designing, implementation and development of computer based systems and IT				
	processes.				

M.Tech-S	W		R18-Re	gulations		
Course	Voor/SomostorII	Subject Name (Subject Code)	No of Hours	Credits: 3		
Outcome	Sem	Software Project and Project Management (M18CS18)	L:3 T:0 P:0			
1	Discuss and plan to	execute projects based on required standards.		1		
2	Understand the ran	ge of tools used on project management.				
3	Analyze the concept	pts related on project governance and methodol	ogies.			
4	Apply critical analy	ysis on solving problems and planning process.				
5	Describe planning,	bescribe planning, Risk and issues management.				
6	Plan process, pragi	natic planning service delivery and quality assu	irance			
Course Outcome	Year/SemesterII Sem	Subject Name (Subject Code) Software Architecture and Design Patterns (M18SW09)	No. of Hours L:3 T:0 P:0	Credits: 3		
1	To understand the	concept of patterns and the Catalog.				
2	To discuss the Presvalidation and cons	sentation tier design patterns and their affect on sistency.	to the Business and	ccess,		
3	tiers.	tiers.				
4	To highlight the ev	Γο highlight the evolution of patterns.				
5	To learn how to ad	ld functionality to designs while minimizing co	mplexity			
Course	Year/SemesterII	Subject Name (Subject Code)	No. of Hours	Credits: 3		
Outcome	Sem	Agile Software Development(M18SW10)	L:3 T:0 P:0			
1	Understand the archi	tecture creating it and moving from one to any dif	ferent structural patte	erns		
2	Analyze the exclusion and build the system from the components					
3	Design creational an	d structural patterns.				
4	Learn about behavior	ral patterns.				
5	Do a case study in u	tilizing architectural structures				
Course	Year/Semester	Subject Name (Subject Code)	No. of Hours	Credits: 3		
Outcome	IISem	Bigdata Analytics (M18SW11)	L:3 T:0 P:0			
1	Understand what	Big Data is and why classical data analysis tech	hniques are no long	ger adequate		
2	Understand the ber	nefits that Big Data can offer to businesses and	organizations			
3	Understand concep	tually how Big Data is stored	6			
4	Understand how B	ig Data can be analysed to extract knowledge				
5	Communicate with	data scientists				
Course	Year/Semester	Subject Name (Subject Code)	No. of Hours	Credits: 3		
Outcome	II Sem	Software Security Engineering (M18SW12)	L:3 T:0 P:0			
1	An ability to analy	ze security and privacy and properties of system	ns.			
2	An ability to condu	ict user-cantered design for security engineering	g.			
3	An ability to under	stand programming constraints with systems se	curity.			
4	An understanding	of limitations and advantages of security proto	cols, functional and	attacker		
	perspectives, passw	vord authentication and various alternative syste	ems.			
5	Discussing the Sec	urity adopting considerations and limitations				
6						
Course	Year/SemesterI	Subject Name (Subject Code) Business Process Management (M18SW13)	No. of Hours	Credits: 3		

Department of Computer Science & Engg., -VCE

M.Tech-S	W		R18-Re;	gulations	
Outcome	Sem		L:3 T:0 P:0		
1	Develop new or in	nproved innovative business processes from gap	analysis through	process	
	design in support of	design in support of a company's strategic objectives in a socially responsible manner.			
2	Develop business i	models that support a company's strategic objec	tives.		
3	Articulate the inter	dependence between financial and operational n	netrics used in value	e chain	
	analysis to key dec	ision makers.			
4	Appraise the	impact on financial and operation	al performance	of specific	
5	Evaluate the oppo	rtunities for business process and supply chair	improvement base	ed on	
	currentbest practice	es across industries, as well as new breakthrough	n thinking.		
6	Analyze the key b	usiness processes that drive the value chain of	f an organization th	roughout	
	theentire product li	fe cycle.	C	U	
Course	Year/Semester	Subject Name (Subject Code)	No. of Hours	Credits: 3	
Outcome		Cyber Security(M18CN12)	I .3 T.0 P.0		
outcome			L.5 1.01.0		
1	Define a internetw	The first security attacks			
3		ork security model and identify the TCF	•		
5	Identify and classifial algorithms to be ap	by the different types of attacks and suggest approphied.	opriate conventiona	lencryption	
4	Gain complete kno	owledge in number system and areas of applicat	tions in public key	cryptography	
	algorithms.				
5	Interpret the importance of digital signatures, digital Certificates, Certificate Authority for				
6	Demonstrate IP se	curity architecture and explain how Pretty Good	l Privacy (PGP) and	1 S/MIME	
	provides Email privacy.				
Course	Year/Semester	Subject Name (Subject Code)	No. of Hours	Credits: 0	
Outcome	II Sem	Stress Management (M18AC02)	L:2 T:0 P:0		
1	Maintain a stress a	wareness log Include identification of causes s	vmptoms and anal	vsis of	
1	effects.		Jinpromo, una una	9515 01	
2	Gather information	n on current stress management techniques and	evaluate personal re	elevance.	
3	Practice specific te	echniques, track effectiveness, and revise to mee	et personal preferen	ces.	
4	Create an adaptab	le stress management plan for academic succ	ess incorporating s	selected	
	techniques.		No of House	C P A	
Course	Year/Semester	Subject Name (Subject Code)	L:0 T:0 P:4	Credits: 2	
Outcome	II Sem	Software resulig Lab(W185 W14)			
1	Understanding Sal	anium tool to perform testing			
2	Understanding Selenium tool to perform testing				
3	Construct and test simple programs				
4	Understanding the	use of bug tracking and testing tool			
5	Ability to learn any	y open source Testing tool			
Course	Year/Semester	Subject Name (Subject Code)	No. of Hours	Credits: 2	
Outcome	II Sem	Bigdata Analytics Lab (M18SW15)	L:0 T:0 P:4		
1	Understand what H	Big Data is and why classical data analysis techn	niques are no longe	r adequate	
2	Understand the ber	nefits that Big Data can offer to businesses and	organizations	4	
3	Understand concer	bually how Big Data is stored	<u> </u>		
4	Understand how B	ig Data can be analysed to extract knowledge			
5	Communicate with data scientists				

Department of Computer Science & Engg., -VCE

M.Tech-SV	V		R18-Re	gulations		
Course Outcome	Year/SemesterII Sem	Subject Name (Subject Code) Mini Project(M18SW16)	No. of Hours L:0 T:0 P:2	Credits: 2		
1	Enhance students	Enhance students' knowledge in current technology				
2	Develop leadership ability and responsibility to execute the given task					
3	Enhance their employability skills along with real corporate exposure					
4	Elaborate the completed task and compile the report.					

III-SEMESTER

Course	Year/Semester	Subject Name (Subject Code)	No. of Hours	Credits: 3	
Outcome	IIISem	Information Retrieval Systems (M18SW17)	L:3 T:0 P:0		
1	Define Vector space	Define Vector space model, understand various similarity coefficient and measures.			
2	Develop an Unders Analysis, Thesauri	Develop an Understanding on Relevance feedback, , Clustering, Regression Analysis, Thesauri.			
3	Apply various Retr	rieval Utilities for Information Retrieval.			
4	Develop an Unders	standing about Signature files, Duplicate docume	nt detection.		
5	Apply IR principle	s to locate relevant information large collection of	of data.		
Course Outcome	Year/Semester III Sem	Subject Name (Subject Code) Principles of Information Security (M18SW18)	No. of Hours L:3 T:0 P:0	Credits: 3	
1	Understand the im	portance of Information Security.			
2	Describe the need	and role of network security.			
3	Deploy the security	Technologies and adapt various firewalls and Ir	trusion detection s	ystems.	
4	Implement the tech	iniques used in cryptography.		·	
5	Plan methods for in	nformation security and demonstrate it with Real	Time problems.		
Course	Year/Semester	Subject Name (Subject Code)	No. of Hours	Credits: 3	
Outcome	III Sem	Computer Foreinsics (M18SW19)	L:3 T:0 P:0		
1	Understand the concepts of E-Commerce consumer application.				
2	Demonstrate Electronic payment systems using smart cards & amp; Analyze broad view of Work flow and corporate Data warehouses				
3	Customize the supply chain management and digital documents & amp; Adapt advertise and Marketing based information				
4	Discover new meth	nods and strategy for E-commerce infrastructure.			
5	Discuss issues on p processing	privacy and legal E-commerce & amp; Develop el	ectronic and deskto	op video	
Course	Year/Semester	Subject Name (Subject Code)	No. of Hours	Credits: 3	
Outcome	III Sem	Advanced Optimization Techniques (M18MA01)	L:3 T:0 P:0		
1	Describe problem clearly, identify and analyze the individual functions.				
2	Analyze study on s	solving optimization problem.			
3	Translate verbal for	rmula on optimization problem.			
4	Design algorithms, reliably to find an approximate solution.				
5	Evaluate and compare the performance of an algorithm.				
6	Discovery, study, a	understand and solve optimization techniques us	sing algorithms.		
Course	Year/Semester	Subject Name (Subject Code)	No. of Hours	Credits: 3	
Outcome	III Sem	Waste Management (M18SE27)	L:3 T:0 P:0		
1	Evaluate the subject	ct from the technical, legal and economical poin	ts.		
2	Learn solid waste management.				

M.Tech-SV	W		R18-Re	gulations	
3	Describe environn	Describe environment for sound management.			
4	Understand a mun	icipal solid waste management system.			
5	Plan a solid waste	management system for decision makers.			
6	Design an incinera	tion facility.			
Course	Year/Semester	Subject Name (Subject Code)	No. of Hours	Credits: 3	
Outcome	IIISem	Embedded System Design (M18VL07)	L:3 T:0 P:0		
1	Explain the differed designing them.	Explain the different embedded system design techniques and the metrics or challenges in designing them.			
2	Understand the co	mplete architecture of 8051 and Advanced Proc	essor.		
3	Demonstrate Softw	Demonstrate Software programming in Assembly language and High Level Language.			
4	Develop code for object oriented Programming, Embedded Programming using Macros and				
5	Classify the differe	ent Real Time Operating System (RTOS), RTOS	S Vx Works, Wind	ows CE.	
6	Understand the Er	nbedded Software Development Process and To	ols.		
Course	Year/Semester	Subject Name (Subject Code)	No. of Hours	Credits:	
Outcome	III Sem	Dissertation Phase-I (M18SW20)	L:0 T:0 P:20	10	
1	Identify the	problem by applying acquired knowledge.			
2	Analyze and	d categorize executable project modules.			
3	Choose effi	Choose efficient tools for designing project modules.			
4	Combine al	l the modules through effective team work at	fter efficient testir	ıg	
5	Elaborate th	Elaborate the completed task and compile the project report.			

IV-SEMESTER

Course Outcome	Year/Semester IV Sem	Subject Name (Subject Code) Dissertation Phase-II (M18SW21)	No. of Hours L:0 T:0 P:32	Credits: 16		
1	Identify the problem by applying acquired knowledge.					
2	Analyze and	Analyze and categorize executable project modules.				
3	Choose effi	Choose efficient tools for designing project modules.				
4	Combine all the modules through effective team work after efficient testing					
5	Elaborate the completed task and compile the project report.					

M.Tech-SW

NAAGDEVI COLLEGE		VAAGDEVI COLLEGE OF ENGINEERING			
		Autonomous			
		Bollikunta, Warangal Urban-506 005 (T.S)			
Vis	WAMBHARA LOUCHISIN	DEPARTMENT OF CIVIL ENGINEERING			
COURSE OUTCOMES (CO's) FOR B.TECH – CIVIL ENGINEERING (R18)					
Course Outcome	Year / Semester : I / I-Sem	Subject Name (Code): Linear Algebra and Calculus(B18MA01)	No. of Hours : L: 3 T: 1 P: 0	Credits: 4	
After the co	mpletion of this cou	rse, the students should be a	ble to		
1	Write the matrix representation of a set of linear equations and to analyze the solution of the system of equations.				
2	Find the Eigen values and Eigen vectors and Reduce the quadratic form to canonical form using orthogonal transformations.				
3	Analyze the nature of	of sequence and series.			
4	Solve the applications on the mean value theorems and Evaluate the improper integrals using Beta and Gamma functions.				
5	Find the extreme val	lues of functions of two variable	les with/ without constr	aints.	
Course Outcome	Year / Semester : I / I-Sem	Subject Name (Code): English (B18EN01)	No. of Hours : L: 2 T: 0 P: 0	Credits: 2	
After the co	mpletion of this cou	rse, the students should be a	ble to		
1	Use English Langua	Use English Language effectively in spoken and written forms.			
2	Comprehend the given texts and respond appropriately.				
3	Communicate confidently in various contexts and different cultures.				
4	Acquire basic proficiency in English including reading and listening comprehension, writing and speaking skills.				
5	Develops and Communicates by stating main ideas relevantly and coherently in speaking & writing				
Course Outcome	Year / Semester : I / I-Sem	Subject Name (Code): Engineering Chemistry (B18CH01)	No. of Hours : L: 3 T: 1 P: 0	Credits: 4	
After the completion of this course, the students should be able to					
1	1 Recall previous knowledge regarding atomic and molecular structure.				
2	The knowledge of organic reaction mechanisms and polymers.				
3	The required principles and concepts of electro chemistry and batteries.				
4	The knowledge of water treatment and corrosion.				
5	Apply phase rule and absorption to construct the materials by analyzing their compositions.				
Course Outcome	Year / Semester : I / I-Sem	Subject Name (Code): Engineering Graphics (B18ME01)	No. of Hours : L: 1 T: 0 P: 4	Credits: 3	

After the co	mpletion of this cou	rse, the students should be a	ble to			
1	Learn the principles	Learn the principles of Engineering graphics and their significance.				
2	Perform projection of	of lines inclined to one or two	planes.			
3	Perform the projecti	Perform the projections and views on the planes and solids.				
4	Development of sur	Development of surfaces on solids and draw different sections.				
5	Convert orthographic views into isometric views and explore various computer technologies.					
Course Outcome	Year / Semester : I / I-Sem	Subject Name (Code): Programming for Problem Solving (B18CS01)	No. of Hours : L: 4 T: 0 P: 0	Credits: 4		
After the co	mpletion of this cou	rse, the students should be a	ble to			
1	Understanding how problems are posed and how they can be analyzed for obtaining solutions.					
2	Understanding the f	Understanding the fundamentals of C programming.				
3	Learning of sequencing, branching, looping and decision making statements to solve scientific and engineering problems.					
4	Implementing different operations on arrays and creating and using of functions to solve problems.					
5	Ability to design and implement different types of file structures using standard methodology.					
Course Outcome	Year / Semester : I / I-Sem	Subject Name (Code): English Language Communication Skills Lab (B18EN02)	No. of Hours : L: 0 T:0 P: 2	Credits: 1		
After the co	mpletion of this cou	rse, the students should be a	ble to			
1	Better understanding of nuances of English language through audio- visual experience and group activities					
2	Speaking with clarity and confidence which in turn enhances their employability skills					
Course Outcome	Year / Semester : I / I-Sem	Subject Name (Code): Programming for Problem Solving Lab (B18CS02)	No. of Hours : L: 0 T:0 P: 2	Credits: 1		
After the co	mpletion of this cou	rse, the students should be a	ble to			
1	Design the fundame	Design the fundamentals of C programming.				
2	Write C programs using operators					
3	Learning of sequencing, branching, looping and decision making statements to solve scientific and engineering problems.					
4	Implementing different operations on arrays and creating and using of functions to solve problems.					
Course Outcome	Year / Semester : I / II-Sem	Subject Name (Code): Differential Equation and Vector Calculus (B18MA02)	No. of Hours : L: 3 T: 1 P: 0	Credits: 4		

After the co	ompletion of this cou	urse, the students should be a	ble to		
1	Identify whether the	given differential equation of	first order is exact or no	ot	
2	Solve higher differential equation and apply the concept of differential equation to real world problems				
3	Evaluate the multiple integrals and apply the concept to find areas, volumes, centre of mass and gravity for cubes, sphere and rectangular parallel piped.				
4	Evaluate the Gradient, Divergence and Curl of vector field to predict areas and volumes.				
5	Evaluate the line, surface and volume integrals and converting them from one to another				
Course Outcome	Year / Semester : I / II-Sem	Subject Name (Code): Engineering Physics (B18PH03)	No. of Hours : L: 4 T: 0 P: 0	Credits: 4	
After the co	ompletion of this cou	urse, the students should be a	ble to		
1	The student learns about transformation concept.				
2	The student gains knowledge on basics of rigid body dynamics.				
3	Learns about basics of quantum mechanics.				
4	Characterization and study of properties of optodevices helps the students to prepare new materials for various engineering applications.				
5	Gain knowledge about lasers which leads to new innovations and improvements.				
Course Outcome	Year / Semester : I / II-Sem	Subject Name (Code): Engineering Mechanics (B18CE01)	No. of Hours : L: 3 T: 1 P: 0	Credits: 4	
After the co	ompletion of this cou	urse, the students should be a	ble to		
1	Understand the force system and Degree of freedom				
2	Understand the special force system				
3	Develop algebraic relationships among Key physical parameters and variables based on analysis of a specifiedsystem				
4	Apply the principles of mechanics for solving practical problems related to equilibrium of rigid bodies and particle inmotion.				
5	Apply the dynamic ,motion principles in engineering field				
Course Outcome	Year / Semester : I / II-Sem	Subject Name (Code): OOP's and Data Structures (B18CS50)	No. of Hours : L: 3 T: 0 P: 0	Credits: 3	
After the co	ompletion of this cou	urse, the students should be a	ble to		
1	To find the difference between structured programming and object oriented programming language and understanding the features of C++ supporting object oriented programming.				

2	To explain and apply the major object oriented concepts to implement object oriented programs in C++.				
3	To build the basic knowledge to handle operations like insertions, deletions, searching, and traversing mechanisms in linear data structures.				
4	Examine with advar	Examine with advanced data structure such as hash tables and priority queue data structures.			
5	Ability to have knowledge on trees, balanced trees, graphs and developing C++ code for non- linear data structures, and different sorting techniques.				
Course Outcome	Year / Semester : I / II-Sem	Subject Name (Code): Engineering Workshop & IT Workshop (B18ME02)	No. of Hours : L:0T:0P: 3	Credits: 1.5	
After the co	mpletion of this cou	urse, the students should be a	ble to		
1	Know the fundament	tal knowledge of various trade	s and their usage in real	l time Applications.	
2	Gain knowledge of	Foundry, Welding, Black smith	ny, Fitting, Machine sho	op and house wiring.	
3	Understand the basis for analyzing power tools in construction and wood working, electrical engineering and mechanical engineering.				
4	Use basic concepts of computer hardware for assembly and disassembly.				
Course Outcome	Year / Semester : I / II-Sem	Subject Name (Code): Engineering Physics Lab (B18PH04)	No. of Hours : L:0T:0P: 3	Credits: 1.5	
After the co	mpletion of this cou	urse, the students should be a	ble to		
1	The laboratory course helps the student how to operate different equipments related to engineering.				
2	It also allows the student to develop experimental skills to design new experiments in engineering.				
3	The course enlightens the student about modern equipment like solar cell, optical fibre etc.,				
4	With the exposure to these experiments, the student can compare the theory and correlate with experiment.				
Course Outcome	Year / Semester : I / II-Sem	Subject Name (Code): OOP's and Data Structures Lab (B18CS51)	No. of Hours : L:0T:0P: 2	Credits: 1	
After the completion of this course, the students should be able to					
1	Apply the oops concepts like inheritance, polymorphism, abstraction and many more to solve probles using c++.				
2	Understand basic data structures such as arrays, linked lists, stacks and queues.				
3	Able to write programs on hash functions and concepts of collision and its resolution methods , graphs, trees and heaps.				
4	Apply Algorithm for solving problems like sorting, searching, insertion and deletion of data.				
Course Outcome	Year / Semester : II / III-Sem	Subject Name (Code): Probability and Statistics (B18MA04)	No. of Hours : L: 3 T: 1 P: 0	Credits: 4	
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After the co	mpletion of this cou	rse, the students should be a	ble to		
1	Use probability theo probability, in order	bry and deals with modelling ur to evaluate the probability of r	ncertainty and apply dis- real world events.	crete and continuous	
2	Develop discrete pro generate data from H	bability distributions and its a Binomial and Poisson Distribut	pplications, and use the ions.	se techniques to	
3	Develop continuous generate data from N	probability distributions and it Normal Distribution.	ts applications, and use	these techniques to	
4	Perform correlation relationship that may estimate the magnitu	analysis, in order to estimate th y exist between two variables o ide of change in one variable d	ne nature and the streng of interest, Perform regr ue to a given change in	th of the linear ession analysis to the other variable.	
5	Construct confidenc tests concerning pop data. And also perfo	e interval estimates for population parameters, for single a principal student T-test, F-test and X	tion parameters and con and multiple population X2- test (chi-square).	duct hypothesis s based on sample	
Course Outcome	Year / Semester : II /III-Sem	Subject Name (Code): Strength of Materials–I (B18CE02)	No. of Hours : L: 3 T: 0 P: 0	Credits: 3	
After the co	ompletion of this cou	rse, the students should be a	ble to		
1	Outline the various	stresses and strains.			
2	Draw the shear force	e and Bending moment diagram	n for different beams.		
3	Evaluate the flexura	l and shear stresses for various	sections.		
4	Calculate the slope a	and deflection of determinant b	eams.		
5	dentify the concepts	of torsion and spring subjected	d to loading.		
Course Outcome	Year / Semester : II / III-Sem	Subject Name (Code): Fluid Mechanics (B18CE03)	No. of Hours : L: 3 T: 0 P: 0	Credits: 3	
After the co	ompletion of this cou	rse, the students should be a	ble to		
1	Demonstrate the bas	ic properties of fluids and the	principles of manometer	r.	
2	Compute dimension	al flows of a pipe applying con	tinuity equation.		
3	Calculate measurem	ent of flow by Eulers and Bern	oulli's equation.		
4	Differentiate lamina	r and turbulent flow and variou	is losses in pipe flow.		
5	Determine drag forc	e and lift force of hydraulic str	ucture.		
Course Outcome	Year / Semester : II / III-Sem	Subject Name (Code): Surveying (B18CE04)	No. of Hours : L: 3 T: 0 P: 0	Credits: 3	
After the co	mpletion of this cou	rse, the students should be a	ble to		
1	Identify the classific	ation of surveying and its instr	ruments.		
2	Calculate the horizo	ntal and vertical angle using Ta	acheometric surveying.		

3	Understand the proc	ess of control surveying and ac	djustments.	
4	Know the concept of Hydrographic and Astronomical surveying.			
5	Understand the prin-	ciple of Total station and GPS	surveying.	
Course Outcome	Year / Semester : II / III-Sem	Subject Name (Code): Basic Electrical and Electronics Engineering (B18EE02)	No. of Hours : L: 3 T: 0 P: 0	Credits: 3
After the co	mpletion of this cou	irse, the students should be a	ble to	
1		NA		
2		NA		
3		NA		
4		NA		
Course Outcome	Year / Semester : II / III-Sem	Subject Name (Code): Strength of Materials Lab (B18CE05)	No. of Hours : L: 0 T: 0 P: 2	Credits: 1
After the completion of this course, the students should be able to				
1	Identify the bending behavior of beams using bending test.			
2	Determine the behavior of material under torsion.			
3	Determine the hardness of materials using different test.			
4	Find out the characteristic of material using compression, impact and shear test.			
Course Outcome	Year / Semester : II / III-Sem	Subject Name (Code): Surveying Lab (B18CE06)	No. of Hours : L: 0 T: 0 P: 3	Credits: 1.5
After the co	mpletion of this cou	irse, the students should be a	ble to	
1	Calculate area of give	ven plot/points using chain surv	vey.	
2	Determine the angle	/distance of given points using	compass survey.	
3	Find out the angle, c surveying	listance and height of the given	n points using theodolite	:
4	Determine the distar	nce of the given points using To	otal station	
Course Outcome	Year / Semester : II / III-Sem	Subject Name (Code): Basic Electrical and Electronics Engineering Lab (B18EE03)	No. of Hours : L: 0 T: 0 P: 3	Credits: 1.5
After the co	mpletion of this cou	rse, the students should be a	ble to	
1	Learn to simplify co KCL laws.	mplex electric and electronic c	ircuits by applying the I	KVL and
2	Identify the optimal	loading on the system.		
3	Analyze the perform	nance of DC machines.		
4	Identify and analyze the performance and operation of semi conducting devices.			

Course Outcome	Year / Semester : II / III-Sem	Subject Name (Code): Environmental Sciences (B18MC02)	No. of Hours : L: 2 T: 0 P: 0	Credits: 0
After the completion of this course, the students should be able to				
1	1 Recall previously learned ecosystem and find how the biodiversity changes went in the environment.			
2	Demonstrate outline	s of types of pollutions and rel	ated to day-to-day life.	
3	Organize important	seminars on natural resources.		
4	Apply models of foo parameters.	od chains and energy flow mod	els to solve the identifie	ed
5	Classify the types of development that tal	pollutants and distinguish the ke part in the environment.	functions of sustainable	e
Course Outcome	Year / Semester : II / IV-Sem	Subject Name (Code): Building Materials and Construction Planning (B18CE0)	No. of Hours : L: 3 T: 0 P: 0	Credits: 3
After the co	mpletion of this cou	rse, the students should be a	ble to	
1 Categorize stone and brick material with their properties				
2	Contrast the importance of concrete and its properties			
3	Outline the different building components			
4	Explain different building services and NBS/IS norms			
5	Build knowledge ab	out masonry and finishing wor	k	
Course Outcome	Year / Semester : II / IV-Sem	Subject Name (Code): Strength of Materials – II (B18CE08)	No. of Hours : L: 3 T: 0 P: 0	Credits: 3
After the co	mpletion of this cou	rse, the students should be a	ble to	
1	Analysis the fixed an	nd continuous beams.		
2	Evaluate the direct a	nd bending stresses of differer	nt structures.	
3	Determine the critica cylinders.	al load of columns and stresses	developed in thick and	thin
4	Understand the conc	cept of principal stresses and st	rain energy.	
5	Analyze the unsymmetry section.	netrical bending of beams and	shear centre for differer	ıt
Course Outcome	Year / Semester : II / IV-Sem	Subject Name (Code): Hydraulics & Hydraulic Machinery (B18CE09)	No. of Hours : L: 3 T: 0 P: 0	Credits: 3
After the co	After the completion of this course, the students should be able to			
1	Apply fundamental	knowledge in open-channel hy	draulics in Civil Engine	ering.
2	Describe dimensiona	al analysis and similarity to dev	velop hydraulic model.	
3	Describe dimension	al analysis and similarity to dev	velop hydraulic model.	
4	Gain knowledge of l	hydraulic turbines and their op	erational design.	
5	Evaluate the perform	nance of centrifugal pumps and	l hydropower plants.	

Course Outcome	Year / Semester : II / IV-Sem	Subject Name (Code): Structural Analysis – I (B18CE10)	No. of Hours : L: 3 T: 0 P: 0	Credits: 3	
After the co	mpletion of this cou	rse, the students should be a	ble to		
1	Build knowledge ab	out energy principles and comp	puting deflection of bea	ums.	
2	Analyze the differen	t types of arches.			
3	Gain knowledge about cables and suspension bridges.				
4	Analyses the proppe	d cantilever and continuous be	eam.		
5	Contrast the concept	t of plastic analysis of structure	es.		
Course Outcome	Year / Semester : II / IV-Sem	Subject Name (Code): Engineering Geology (B18CE11)	No. of Hours : L: 3 T: 0 P: 0	Credits: 3	
After the co	mpletion of this cou	rse, the students should be a	ble to		
1	¹ Understand properties of rocks within the framework of fundamental concepts of basic sciences and with emphasis on their practical utility in civil engineering.				
2	Model physical and mechanical properties of rocks and rock mass through quantification.				
3	Justify importance or redistribution of stree	f residual stresses in rock mass esses during.	s and to model the		
4	Identify subsurface i geophysical investig	information and groundwater p ation.	ootential sites through		
5	Apply geological pridams and tunnels.	inciples for mitigation of natur	al hazards and select sit	tes for	
Course Outcome	Year / Semester : II / IV-Sem	Subject Name (Code): Basic Mechanical Engineering (B18ME52)	No. of Hours : L: 3 T: 0 P: 0	Credits: 3	
After the co	mpletion of this cou	rse, the students should be a	ble to		
1	Identify the Various	Energy sources and IC engine	s systems.		
2	Apply the Metal ren	noval process using Lathe, drill	ing and Milling operation	ons.	
3	Compare the application	ation and usage of various engi	neering Materials.		
4	Discuss the importa	nce of engineering materials	reaction turbine.		
Course Outcome	Year / Semester : II / IV-Sem	Subject Name (Code): Fluid Mechanics & Hydraulic Machinery Lab (B18CE12)	No. of Hours : L: 0 T: 0 P: 2	Credits: 1	
After the co	mpletion of this cou	rse, the students should be a	ble to		
1	Calibrate flow meas	uring devices used in pipes, ch	annels and tank		
2	Demonstrate practical understanding of the minor and friction losses in pipe flows and characterize laminar and turbulent flows.				
3	Demonstrate a pract Turbines, Pumps, an	ical working of Hydraulic mac ad other miscellaneous hydraul	hines- different types of ics machines.	f	
4	Compare the results behavior of real fluid	of analytical models introduce d flows and draw correct and s	d in a lecture to the acture to the acture ustainable conclusions.	ual	

Course Outcome	Year / Semester : II / IV-Sem	Subject Name (Code): Engineering Geology Lab (B18CE13)	No. of Hours : L: 0 T: 0 P: 2	Credits: 1
After the co	mpletion of this cou	rse, the students should be a	ble to	
1	Learn about the ground surface features based on map patterns of contour within the framework of fundamental concepts of basic sciences with emphasis on practical application in civil engineering.			
2	Identify physical and engineering uses.	d mechanical properties of rock	ts and minerals and its a	application in civil
3	Measure strike and o	dip of the bedding planes.		
4	Interpret and draw the vertical beds, incline	he sections for geological maps ed beds, folds, faults.	s showing horizontal be	ds,
Course Outcome	Year / Semester : II / IV-Sem	Subject Name (Code): Building Drawing Lab – CAD (B18CE14)	No. of Hours : L: 0 T: 1 P: 2	Credits: 2
After the co	mpletion of this cou	rse, the students should be a	ble to	
1	Use the usage of Au	toCAD commands.		
2	Draw the plan and e	levation of the building structu	res.	
3	Draw the 2D & 3D	building elements.		
4	Detail the building c	components in Auto CAD draw	vings.	
Course Outcome	Year / Semester : II / IV-Sem	Subject Name (Code): Gender Sensitization (B18MC07)	No. of Hours : L: 2 T: 0 P: 0	Credits: 0
After the co	After the completion of this course, the students should be able to			
1	Define the need and importance of women empowerment			
1	Extend the levels of	understanding and classification	on of gender disparities	
2				
3	Identify the need of	equal distribution of work in the	he entire sector irrespec	tive of gender.
4	Construct the emerg	ency needs of saving girl child		
5	Improves thinking le realization in the soc	evels to find solution to the mis ciety.	sing women and bring	
Course Outcome	Year / Semester : III / V-Sem	Subject Name (Code): Design of Steel Structures (B18CE15)	No. of Hours : L: 3 T: 0 P: 0	Credits: 3
After the co	mpletion of this cou	rse, the students should be a	ble to	
1	Explain and Design	the connections.	_	
2	Analyse and Design	the tension, compression mem	bers.	
3	Design the beams or	n plastic moment and the eccen	tric connections.	
4	Design the plate gire	ler and various stiffeners.		
5	Analyse and Design	the components of roof trusses	s.	
Course Outcome	Year / Semester : III / V-Sem	Subject Name (Code): Geotechnical Engineering	No. of Hours : L: 3 T: 0 P: 0	Credits: 3
A fton the co	mulation of this cou	(BIOCEIO)	bla ta	
After the co	Identify the problem	irse, the students should be a	ole to	
1	solutions through sy	stematic analysis.	st economically reasing	2
2	Analyse the water fl pressures.	ow and providing solutions to	counter the hydraulic	
3	Awareness of the classical concepts of soil mechanics and its necessity.			

4	Ability to analyze the consolidation settlements.			
5	Understand the principles of compaction to improve the soil stratum.			
Course Outcome	Year / Semester : III / V-Sem	Subject Name (Code): Concrete Technology (B18CE17)	No. of Hours : L: 3 T: 0 P: 0	Credits: 3
After the co	mpletion of this course, the students should be able to			
1	Gain knowledge of a	cement materials and types of a	admixtures.	
2	Learn about types of	f aggregates, properties and its	test.	
3	Design the mix prop	ortion of concrete and learn fro	esh properties of concre	ete.
4	Gain knowledge of l	hardened and durability proper	ties of concrete.	
5	Obtain knowledge o	f special concretes and its appl	lication.	
Course Outcome	Year / Semester : III / V-Sem	Subject Name (Code): Engineering Hydrology (B18CE18)	No. of Hours : L: 3 T: 0 P: 0	Credits: 3
After the co	mpletion of this cou	rse, the students should be a	ble to	
1	Determine the quant	ity of precipitation available for	or a given catchment are	ea.
2	Apply different methods to formulate the velocity of stream flow.			
3	Discuss the importance of estimation of runoff, analysis of rainfall data and various hydrographs such as unit hydrograph, flood hydrograph and synthetic unit hydrograph.			
4	Make use of Techniques of the Hydrograph to forecast Flood discharge at various duration.			
5	Build the necessary theoretical background of ground water hydrology, types of aquifers and their yields.			
Course Outcome	Year / Semester : III / V-Sem	Subject Name (Code): Engineering Hydrology (B18CE18)	No. of Hours : L: 3 T: 0 P: 0	Credits: 3
After the co	mpletion of this cou	rse, the students should be a	ble to	
1	Determine the quant	ity of precipitation available for	or a given catchment are	ea.
2	Apply different method	hods to formulate the velocity of	of stream flow.	
3	Discuss the importan hydrographs such as	nce of estimation of runoff, and unit hydrograph, flood hydrog	alysis of rainfall data an graph and synthetic unit	d various hydrograph.
4	Make use of Technic	ques of the Hydrograph to fore	ecast Flood discharge at	various duration.
5	Build the necessary their yields.	theoretical background of grou	ınd water hydrology, typ	pes of aquifers and
Course Outcome	Year / Semester : III / V-Sem	Subject Name (Code): Structural Analysis-II (B18CE33)	No. of Hours : L: 3 T: 0 P: 0	Credits: 3
After the co	mpletion of this cou	rse, the students should be a	ble to	
1	Analysis the portal frames by slope deflection method and learn to draw the shear force and bending moments diagram for frames.			
2	Apply the method of	f approach to analysis of portal	I frame by moment distr	ibution method.
3	Able to analysis bea	ms and frames by Kani's meth	od and Approximation	method.
4	Analyze the continu	ous beam, Pin jointed plane fra	ame using the flexibility	of stiffness method.
5	Gain knowledge to calculate the Shear force and bending moment on the			

Course Outcome	Year / Semester : III / V-Sem	Subject Name (Code): Remote Sensing (B18CE34)	No. of Hours : L: 3 T: 0 P: 0	Credits: 3
After the co	mpletion of this cou	rse, the students should be a	ble to	
1	Understand the term	inology,concept of remote sen	sing, types of radiation.	
	Understand different characteristics of platforms, types of data acquisition			
2	systems.			
3	Able to understand the image formations, analyse the corrections.			
4	Apply the linear and	non-linera techniques in imag	e enhacements.	
5	Apply the remote set	nsing in engineering and scien	ce streams.	
G	N. / C.	Subject Name (Code):		
Course	Year / Semester	Environmental Impact	No. of Hours :	Credits: 3
Outcome	: 111 / V-Sem	Assessment (B18CE35)	L: 3 T: 0 P: 0	
After the co	mpletion of this cou	rse, the students should be a	ble to	
1	Acquire the knowled	lge of Environmental impacts,	control and regulations	
2	Understand environ	mental clearances and guidelin	es.	
3	Understands enviror	ment laws and regulations.		
4	Acquire Knowledge to prepare an audit report.			
5	Prepare EIA reports	and environmental manageme	nt plans.	
		Subject Name (Code):	*	
Course	Year / Semester	Managerial Economics and	No. of Hours :	
Outcome	: III / V-Sem	Financial Analysis	L: 3 T: 0 P: 0	Credits: 3
		(B18MB01)		
After the co	mpletion of this cou	rse, the students should be a	ble to	
1	Understand the natu	re, scope and importance of M	anagerial Economics.	
1	Know what is domain	nd analyza demand and how a	lesticity of domand is u	and for priving
2	decisions and to eva	luate methods for forecasting of	lemand	sed for pricing
3	Know how production	on function is carried out to ac	hieve least cost combin	ation of Inputs and
	now to analyze cost.			
	Understand the char	acteristics of different kinds of	markets and outline di	fferent form of
4	business organizatio	n and analyze how capital bud	geting techniques are us	sed for investment
	decisions.			
5	Know how to prepar	re final accounts and how to in	terpret them, analyze ar	nd interpret financial
5	statements using rati	o analysis.		
Course	Vaar / Samaatan	Subject Name (Code):	No. of Hours	
Outcome	I ear / Semester	Concrete Technology Lab		Credits: 1
Outcome	. III / v-Selli	(B18CE19)	L:01:0F:2	
After the co	mpletion of this cou	rse, the students should be a	ble to	
1	Understand about th	e test on cement and aggregate		
2	Evaluate the workab	ility of fresh the Concrete.		
3	Determine the streng	gth characteristics of harden co	ncrete.	
4	Gain knowledge of 1	non-destructive test on concret	Э.	
Course Outcome	Year / Semester : III / V-Sem	Subject Name (Code): Geo Technical Engineering Lab (B18CE20)	No. of Hours : L: 0 T: 0 P: 2	Credits: 1

After the co	mpletion of this cou	irse, the students should be a	ble to	
1	Classify soils and ap	ppropriately designate them.		
2	Calculate the permeability value of soil.			
3	Determine engineer	ing properties of soil and sugge	est suitable field improv	ements.
4	Determine the shear	strength properties of soil.		
Course	Year / Semester	Subject Name (Code): Indian Constitution	No. of Hours :	Credits: 0
Outcome	: III / V-Sem	(B18MC04)	L: 2 T: 0 P: 0	ci cuitor o
After the co	mpletion of this cou	rse, the students should be a	ble to	
	Have general knowl	edge and legal literacy about In	ndian Constitution and t	here by it helps to
1	take up competitive	examinations & to manage/fac	e complex societal issue	es in society.
2	Understand state and	d central policies(Union and S	tate Excutive), fundame	ental Rights & their
2	duties.			
3	Understand Electora	al Process and special provision	ns in Constitution.	
4	Understand the Ame	endments in Indian Constitution	n.	
	Understand powers	and functions of Municipalitie	s, Panchayats and Coop	erative
5	Societies, with Hum	an Rights and NHRC.		
Course	Voor / Comostor	Subject Name (Code):	No. of Hours	
Outcome	· III / VI-Sem	Design of RC Structures		Credits: 3
Outcome		(B18CE21)	L. 5 1. 01. 0	
After the co	fter the completion of this course, the students should be able to			
1	Design the singly reinforced, doubly reinforced and flange sections.			
2	Design the RC beams under flexure, shear and torsion.			
3	Design the one-way slab, two-way slab and staircase.			
4	Design the axially lo	paded, uniaxial and biaxial ben	ding columns.	
5	Design the isolated	square, rectangular and circula	r footings	
Course	Voor / Comoston	Subject Name (Code):	No. of Hours	
Course	Year / Semester	Irrigation Engineering	NO. OF HOURS :	Credits: 3
Outcome	. III / VI-Selli	(B18CE22)	L: 5 1: 0 P: 0	
After the co	mpletion of this cou	irse, the students should be a	ble to	
1	List out the concept	s, techniques and modernizatio	n of Irrigation and Lear	n about irrigation
1	water management of	on-farm development and comm	nand area development.	
2	Distribution systems	s for canal irrigation and the ba	sics of design.	
3	Unlined and lined ir	rigation canal design		
4	Analyze gravity and	earth dams.		
5	Plan and design dive	ersion Headworks.		
Course	Veen / Comentan	Subject Name (Code):	No. of House	
Course	Year / Semester	Highway Engineering	NO. OF HOURS :	Credits: 3
Outcome	· III / VI-Selli	(B18CE23)	L: 5 1: 0 P: 0	
After the co	mpletion of this cou	irse, the students should be a	ble to	
1	Analyze the plannin	g process required for highway	ys and design the geome	etric
2	Describe design eler	ment: sight distance, horizontal	curvature, super elevat	ion,
3	Know the concept o	f traffic volume and importanc	e of road markings.	
4	Recommend suitable	e highway materials and desigr	n of flexible, rigid paver	nent
5	Design overlay, ana	lyze the causes for failure of flo	exible and rigid paveme	ent
G	W / C	Subject Name (Code):		
Course	Year / Semester	Foundation Engineering	No. of Hours :	Credits: 3
Outcome	: 111 / VI-Sem	(B18CE36)	L: 3 T: 0 P: 0	
After the co	mpletion of this cou	urse, the students should be a	ble to	•

1	Understand soil exp	Understand soil exploration methods and calculate the bearing capacity of soils.		
2	Detect the failures in	n slopes and suggest appropriate	te improvement method	s.
3	Determine the earth	pressures and provide sustaina	ble retaining structures.	
4	Analyze and design	shallow foundations.		
5	Analyze and design	deep foundations.		
Course	Year / Semester	Subject Name (Code):	No. of Hours :	
Outcome	: III / VI-Sem	(B18CE37)	L: 3 T: 0 P: 0	Credits: 3
After the co	mpletion of this cou	rse, the students should be a	ble to	
1	Understand the traia	ngulation method, system, base	line measurements and	
2	Apply different met	nods to find locations		
3	Understand the basic	c principles of theodolite, photo	ogrammetric	
4	Understand the term	inology and concepts of astron	omical surveying, diffe	rent
5	Apply the knowledg	e of Total Station and GPS in	surveying.	
_		Subject Name (Code):	, ,	
Course	Year / Semester	Ground Improvement	No. of Hours :	Credits: 3
Outcome	: III / VI-Sem	Techniques (B18CE38)	L: 3 T: 0 P: 0	
After the co	I muletion of this cou	rse the students should be a	hle to	
1	Select the ground in	provement technique which is	suitable and economica	al for
2	Select different tech	niques based on the various ty	pes of soils in-situ	
2	Design reinforced earth structures			
3	Design reinforced earth structures.			
4	Apply the knowledg	e of geo-synthetic material for	usage.	
5	Apply the knowledg	Subject Name (Code):	ent.	
Course Outcome	Year / Semester : III / VI-Sem	Rehabilitation & Retrofitting of Structures (B18CE39)	No. of Hours : L: 3 T: 0 P: 0	Credits: 3
After the co	 mnletion of this cou	rse the students should be a	ble to	
1	Understand about di	stress & damage of structures		
2	Understand about of	section and NDT		
2	Understand about pr	resion of staal rainforcement		
3	Understand about di	forant techniques of ranging of	f Structuros	
4	Understand the Heel	th Monitoring of Structures by	· Sancora	
5	Understand the Heal	In Monitoring of Structures by	/ Sensors.	
Course Outcome	Year / Semester : III / VI-Sem	Subject Name (Code): Geographical Information System (B18CE40)	No. of Hours : L: 3 T: 0 P: 0	Credits: 3
After the co	mpletion of this cou	rse, the students should be a	ble to	
1	Understand The Cor	ncept Of Cadastral Maps.		
2	Able To Identify Gr	ound Points, Different Sources	Of Map Information.	
3	Able To Coordinate	The Points Through Digital.		
4	Understand The Bas	ics Of Open Source Software.		
5	Applying The GIS I	n The Maps With Alignemts.		
Course Outcome	Year / Semester : III / VI-Sem	Subject Name (Code): Construction Management (B18CE41)	No. of Hours : L: 3 T: 0 P: 0	Credits: 3
After the co	mpletion of this cou	rse, the students should be a	ble to	
1 Understand the management theories, roles, decision making techniques.				

2	Understand network techniques, management and its applications CPM & PERT.			
3	Able to get knowledge on resource planning, methods of budgets.			
4	Understand the concepts of contract, types of contract.			
5	Learn about legal an	d financial aspects, safety syst	ems.	
Course Outcome	Year / Semester : III / VI-Sem	Subject Name (Code): Human Values and Professional Ethics (B18EN04)	No. of Hours : L: 3 T: 0 P: 0	Credits: 3
After the co	mpletion of this cou	rse, the students should be a	ble to	
1	It ensures students sustained happiness through identifying the essentials of human values and skills.			
2	It facilitates a correct	et understanding between profe	ssion and happiness.	
3	It helps students und behavior and enrich	lerstand practically the importa ing interaction with nature.	nce of trust, mutually s	atisfying human
4	Ability to develop a	ppropriate technologies and ma	anagement patterns to cr	reate
5	Learn ethichs in Glo	bal Issues and problems in ext	ortion.	
Course Outcome	Year / Semester : III / VI-Sem	Subject Name (Code): Database Management System (B18CS04)	No. of Hours : L: 3 T: 0 P: 0	Credits: 3
After the co	mpletion of this cou	rse, the students should be a	ble to	
1	Ability to understan	d the fundamental concepts of	database management.	
2	Ability to analyze database models & Entity Relationship models and to draw the E-R diagram for the given case study.			
3	Apply relational Database Theory, and be able to write relational algebra expressions for queries.			
4	Utilize the knowledge	ge of basics of SQL and constr	uct queries using SQL.	
5	Apply Normalizatio transaction processing	n Process to construct the datal ng.	base. Explain Basic Issu	ues of
Course Outcome	Year / Semester : III / VI-Sem	Subject Name (Code): Power Plant Engineering (B18ME36)	No. of Hours : L: 3 T: 0 P: 0	Credits: 3
After the co	mpletion of this cou	rse, the students should be a	ble to	
1	Understand the layo	ut of power generation units for	or different energy secto	rs.
2	Identify different su	bsystem and systems of power	generation sector.	
3	Compare existing ar	nd emerging alternative energy	sources	
4	Analyze the opportu	inities in contributing towards	the solving of energy cr	isis.
5	Discuss general arra	ngement of power distribution		
Course Outcome	Year / Semester : III / VI-Sem	Subject Name (Code): Advanced English Communications Skills Lab (B18EN03)	No. of Hours : L:0T:0P: 3	Credits: 1.5
After the co	mpletion of this cou	rse, the students should be a	ble to	
1	Developing effective	ely and appropriate vocabulary	to be used contextually	
2	Inculcating flair for	Writing and felicity in written	expression.	
3	Enhancing job prosp	pects.		
4	Acquiring effective	speaking abilities		
Course Outcome	Year / Semester : III / VI-Sem	Subject Name (Code): Highway Engineering Lab (B18CE24)	No. of Hours : L: 0 T: 0 P: 2	Credits: 1

After the co	mpletion of this cou	rse, the students should be a	ble to		
1	Characterize the pay	vement materials based on prop	perties.		
2	Perform quality control tests on pavement materials.				
3	Gain knowledge on basic understanding of mix design.				
4	Understand the salie	ent features of traffic studies.			
Course Outcome	Year / Semester : III / VI-Sem	Subject Name (Code): Structural Design and Detailing Lab (B18CE25)	No. of Hours : L: 0 T: 0 P: 3	Credits: 1.5	
After the co	mpletion of this cou	rse, the students should be a	ble to		
1	Draw and show the detailing of reinforcement in footings.				
2	Draw and show the	detailing of reinforcement of d	ifferent types of columr	18	
3	Draw and show the	detailing of reinforcement of d	ifferent types of beams		
4	Draw the steel struc	tures.			
Course Outcome	Year / Semester : III / VI-Sem	Subject Name (Code): Logical Reasoning and Quantitative Aptitude (B18MC05)	No. of Hours : L: 2 T: 0 P: 0	Credits: 0	
After the co	mpletion of this cou	rse, the students should be a	ble to		
1	To improve their logical thinking in terms of general and mathematical concepts.				
2	To improve students to compete in academic as well as competitive levels through which students are able to solve the real world problems.				
3	To make quick decisions to face the critical problems.				
4	Improve their mather problems.	matical skills in various genera	al aspects to solve real w	vorld	
Course Outcome	Year / Semester : IV / VII-Sem	Subject Name (Code): Estimation and Valuation Practice (B18CE26)	No. of Hours : L: 3 T: 1 P: 0	Credits: 4	
After the co	mpletion of this cou	rse, the students should be a	ble to		
1	Evaluate the detailed	d estimate of RC building.			
2	Evaluate the rate for	construction activities.			
3	Prepare the report an	nd tender for the contact works	5.		
4	Understands what ty	pe of contract is used for a spe	ecific work.		
5	Understands the imp	portance of valuation.			
Course Outcome	Year / Semester : IV / VII-Sem	Subject Name (Code): Environmental Engineering (B18CE27)	No. of Hours : L: 3 T: 0 P: 0	Credits: 3	
After the co	mpletion of this cou	rse, the students should be a	ble to		
1	Acquire the knowledge of the water borne diseases and Serve the community by making people aware with the different pollution related problems.				
2	Demonstrate the step	ps involved in water filtering.			
3	Acquire the knowled	dge of water distribution syster	n and their fittings.		
4	Explain wastewater	collection systems & design se	ewers.		
5	Gain knowledge of able to assist in the	the different processes of wate design of the water treatment p	r treatment and would b lants.	e	

Course Outcome	Year / Semester : IV / VII-Sem	Subject Name (Code): Watershed Management (B18CE42)	No. of Hours : L: 3 T: 0 P: 0	Credits: 3
After the co	mpletion of this cou	rse, the students should be a	ble to	interrolations within
1	a watershed.	ysical, biological and environm	iental aspects and then	
2	Identify the causes of	of soil erosion.		
3	Plan and design wat	er harvesting and groundwater	recharging structures.	
4	Choose and apply available system tools for systematic intervention.			
5	Formulate a vision a integrated approach and economic availa	nd design a sustainable waters towards the multiple use of lar bility.	hed management plan t nd- and water resources	hat shows an and social equity
		Subject Name (Code):		
Course Outcome	Year / Semester : IV / VII-Sem	Transportation Engineering (B18CE43)	No. of Hours : L: 3 T: 0 P: 0	Credits: 3
After the co	e completion of this course, the students should be able to			
1	Understand various	components and characteristics	s of traffic.	
2	Conduct different tra	affic studies and analyze the da	ata.	
3	Analyze and determine the LOS of highway.			
4	Analyze and design	the intersections.		
5	To know various tra	ffic control devices and princip	ples of highway safety.	
Course Outcome	Year / Semester : IV / VII-Sem	Subject Name (Code): Bridge Engineering (B18CE44)	No. of Hours : L: 3 T: 0 P: 0	Credits: 3
After the co	mpletion of this cou	rse, the students should be a	ble to	
1	Obtain knowledge o	f bridges and its loading.		
2	Design the deck slat	o and T-Beam bridges.		
3	Contrast component	s and design of plate girder and	d steel truss bridges.	
4	Identify the types of	bearing and design of piers an	d abutments in bridges.	
5	Show the importance	e of bridge inspection and main	ntenance.	
		Subject Name (Code):		
Course	Year / Semester	Pre stressed Concrete	No. of Hours :	Credits: 3
Outcome	: IV / VII-Sem	(B18CE45)	L: 3 T: 0 P: 0	
After the co	 mnletion of this cou	rse, the students should be a	hle to	
1	Understand the prin	ciples and types of prestressing		
2	Know the methods of	of prestressing and losses of pre-	estress.	
3	Gain knowledge ana	lvze of beams in flexure and sl	hear.	
4	Outline the transfer	of prestresses force in member	S.	
5	Analyze the compos	ite beam and deflection.		
_		Subject Name (Code):		
Course Outcome	Year / Semester : IV / VII-Sem	Earthquake Engineering (B18CE46)	No. of Hours : L: 3 T: 0 P: 0	Credits: 3
After the co	mpletion of this cou	rse, the students should be a	ble to	
1	Discuss and explain	causes of earthquake, Theory	of vibration.	
2	Discuss and explain	the load path, ductility and ear	thquake design require	ments.
3	Analyze and design of earthquake resistant RC structures.			

4	Anaalye and design of earthquake resistant masonry structures.					
5	Discuss the design r	nethodology of structural and r	non-structural elements.			
Course Outcome	Year / Semester : IV / VII-Sem	Subject Name (Code): Reinforced Earth and Geotextiles (B18CE47)	No. of Hours : L: 3 T: 0 P: 0	Credits: 3		
After the co	the completion of this course, the students should be able to					
1	Understand the histo	ory and mechanism of reinforce	ed soil.			
2	Become aware abou	t situations where geosynthetic	es can be used.			
3	Know about various	types of geosynthetics and the	ir functions.			
4	Be able to do dimple earth beds.	e design of reinforced soil retai	ning walls and reinforce	ed		
5	Able to apply differ	ent types of analysis in simple	problems.			
Course Outcome	Year / Semester : IV / VII-Sem	Entrepreneur Development (B18MB03)	No. of Hours : L: 3 T: 0 P: 0	Credits: 3		
After the co	mpletion of this cou	rse, the students should be a	ble to			
1	Define the nature of	entrepreneur and relate the ski	ills and qualities of			
2	Classify SWOT and	summarize the sources of fina	nce			
3	Apply the ethical gu	idelines for business				
4	Identify the shadow	economy and political issues				
5	Assess the issues of	corporate governance and Imp	rove the professional et	hics.		
Course Outcome	Year / Semester : IV / VII-Sem	Industrial Management (B18MB05)	No. of Hours : L: 3 T: 0 P: 0	Credits: 3		
After the co	mpletion of this cou	rse, the students should be a	ble to			
1	Define Entrepreneurship and Organization.					
2	Design Organizational structures and its uses.					
3	Estimate the cost an	d time for projects with the hel	p of PERT and CPM.			
4	Explain the work an	d make use of work study tech	niques.			
5	Solve the various pr	oblems in operation manageme	ent.			
Course Outcome	Year / Semester : IV / VII-Sem	Subject Name (Code): Digital Image Processing (B18EC24)	No. of Hours : L: 3 T: 0 P: 0	Credits: 3		
After the co	mpletion of this cou	rse, the students should be a	ble to			
1	Gain the knowledge	of digital image fundamentals	and image transforms.			
2	Discuss the analysis	of image enhancement in spat	ial and frequency domai	n.		
3	Understand the diffe	erent methods to restore an ima	ge.			
4	Inspect different image	age segmentation techniques ar	nd understand morpholo	gical		
5	Analyze the differen	t image compression technique	es.			
Course Outcome	Year / Semester : IV / VII-Sem	Subject Name (Code): Environmental Engineering Lab (B18CE28)	No. of Hours : L: 0 T: 0 P: 2	Credits: 1		
After the co	mpletion of this cou	rse, the students should be a	ble to			
1	Test water and wast	ewater samples to determine pl	H and conductivity.			
2	Determine BOD and	l COD of water.				
3	Determine chloride content in water.					

		Subject Name (Code):			
Course	Year / Semester	Pavement Design	No. of Hours :		
Outcome	: IV / VIII-Sem	(B18CE48)	L: 3 T: 0 P: 0	Credits: 3	
		`````			
After the co	mpletion of this cou	rse, the students should be a	ble to		
1	Contrast the factors	effecting the pavements.			
2	Expose to the analys	sis concepts and procedures for	stresses, strains and		
3	Understand the cond	cept of soil modification and its	s suitability as ground		
4	Obtain the knowledg	ge of design of flexible and rig	id pavements by differe	nt	
5	Illustrate the design	of pavement for low volume re-	oads and overlays		
~		Subject Name (Code):			
Course	Year / Semester	Solid Waste Management	No. of Hours :	Credits: 3	
Outcome	: IV / VIII-Sem	(B18CE49)	L: 3 T: 0 P: 0		
After the co	mpletion of this cou	rse the students should be a	hle to		
	Acquire the knowled	dge of solid waste management			
2	Explain solid waste	disposal techniques			
2	Acquire the knowled	disposar teeninques.	al tachniquas		
5	Select the opproprie	to mothed for solid waste aslle	sai techniques.		
4	redistribution and di	sposal	ction, transportation,		
5	Acquire the knowled	dge of e- waste disposal technic	ques.	<b></b>	
Course	Year / Semester	Subject Name (Code):	No. of Hours :		
Outcome	: IV / VIII-Sem	Finite Element Method	L: 3 T: 0 P: 0	Credits: 3	
0 000 0000		(B18CE50)			
After the co	mpletion of this cou	rse, the students should be a	ble to		
1	Introduction to finite	e element method and define st	ress strain equation.		
2	Derive equations in finite element methods for 1Dand 2Dproblems.				
3	Formulate and solve basic problems in structural mechanics using different elements.				
	Identify and formula	ate mathematical models for so	lution of simple and con	mmon engineering	
4	problems into finite	element.			
5	Appreciate the impo	rtance of ethical issues pertain	ing to the effective utili	zation of FEA.	
5	· ·pp· · · · · · · · · · · · · · · · ·	Subject Name (Code):			
Course	Year / Semester	Intellectual Property Rights	No. of Hours :		
Outcome	: IV / VIII-Sem	(B18MB06)	L: 3 T: 0 P: 0	Credits: 3	
		``´`			
After the co	mpletion of this cou	rse, the students should be a	ble to		
1	Outline the increasing	ng importance of intellectual pr	operty rights		
2	Utilize post registrat	tion procedures and trade mark	registration process		
3	Explain the copyright	nt principles and rights			
4	Prioritize the law of patents and patent ownership.				
5	Develop the trade secret and maintenance.				
C	V / C	Subject Name (Code):	N. CHARA		
Course	1 ear / Semester	Nanotecnnology (B18ME25)	NO. OI HOURS :	Credits: 3	
Outcome	: 1 v / v III-Sem		L: 3 1: 0 P: 0		
After the co	mpletion of this cou	rse, the students should be a	ble to		
1	Understand the fund	lamentals of Nanotechnology.			
2	Analyze the different classes of nano materials.				
3	Differentiate techniques involved in Nanotechnology				
4	Compare nanotechn	ology potentialities			
	Compare nanotechnology potentianties.				

5	Estimate oxidation and metallization Mask and its application.				
Course Outcome	Year / Semester : IV / VIII-Sem	Subject Name (Code): Non-Conventional Energy Sources (B18ME42)	No. of Hours : L: 3 T: 0 P: 0	Credits: 3	
After the co	mpletion of this cou	rse, the students should be a	ble to		
1	Apply the technology to capture the energy from the renewable sources like sun,				
2	Compare different renewable energy sources to produce electrical power minimize the use of conventional energy sources to produce electrical energy.				
3	Identify the fact that the conventional energy resources are depleted.				
4	Understand direct energy conversion.				
5	Differentiate limitations and principles of direct energy conversion.				



#### Course Outcomes for B.Tech – ECE-R18 for the academic year 2018-19 onwards

Course	Year/Semester	Subject Name (Subject Code)	L: 3 T: 1 P: 0 C: 4		
Outcome	I/I Sem	LINEAR ALGEBRA AND CALCULUS			
		(B18MA01)			
After the c	ompletion of this co	urse, the students should be able to	•		
1	Write the matrix repr system of equations	esentation of a set of linear equations and to an	alyse the solution of the		
2	Find the Eigen value using orthogonal tra	s and Eigen vectors and Reduce the quadratic ansformations.	form to canonical form		
3	Analyse the nature o	f sequence and series.			
4	Solve the applications on the mean value theorems and Evaluate the improper integrals using Beta and Gamma functions.				
5	Find the extreme valu	nes of functions of two variables with/ without o	constraints.		
Course	Year / semesterSubject Name (Subject Code)L: 4 T: 0 P: 0 C: 4				
Outcome	I/I Sem	PROGRAMMING FOR PROBLEM SOLVING (B18CS01)			
After the co	mpletion of this cours	e, the students should be able to	•		
1	Understand how problems are posed and how they can be analyzed for obtaining solutions.				
2	Jnderstanding the fundamentals of C programming.				
3	Learn the sequencin scientific and engin	ng, branching, looping and decision makin eering problems.	g statements to solve		



4	mplement different operations on arrays and creating and using of functions to solve problems.				
5	Design and implemen	nt different types of file structures using standar	d methodology.		
Course	Year / semester	Subject Name (Subject Code)	L:4 T: 0 P: 0 C: 4		
Outcome	I/I Sem	APPLIED PHYSICS (B18PH01)			
After the co	mpletion of this cours	e the students should be able to			
Alter the co		e, the students should be able to			
1	llustrate fabrication of semi conductors, photo detectors, design basis of quantum mechanics				
2	Recall facts of wave optics extend & construct basics of wave optics.				
3	nterpret about lasers, which leads to new innovations and improvements				
4	Elaborate and formulate the study of characterization properties of opto-devices, organize the students to prepare new materials for various engineering applications				
5	Apply basic knowledge on principles and recalls facts of light properties, and motivate for new innovations. analyze applications of optical fibers				
Course	Year / semester	Subject Name (Subject Code)	L: 2 T: 0 P: 0 C: 2		
Outcome	I/I Sem				
		ENGLISH (B18EN01)			
After the co	After the completion of this course, the students should be able to				
1	Recall the enrichment of comprehension and fluency will be adaptable.				



2	Gain confidence in using language in varied situations			
3	Develops neutralization	n of accent for intelligibility.		
4	Adapt effective speakir	ng abilities.		
5	Develops and Commur	nicates by stating main ideas relevantly and cohere	ently in speaking & writing.	
Course	Year / semester	Subject Name (Subject Code)	L: 0 T: 0 P: 3 C: 1.5	
Outcome	I/I Sem	APPLIED PHYSICS LAB (B18PH02)		
After the co	mpletion of this cours	e, the students should be able to		
1	Dperate different equip	ments related to light & electronics.		
2	Develop experimental s	skills to design new experiments & circuit design.		
3	Jnderstand about modern equipment like solar cell, optical fiber etc.,			
4	Have Exposure to deve	lop novel semi conductor devices.		
Course	Year / semester	Subject Name (Subject Code)	L: 0 T: 0 P: 3 C: 1.5	
Outcome	I/I Som	FNCINFFRING WORKSHOP & IT		
Outcome	1/1 Sem			
A 64 41		WORKSHOI (BI8ME02)		
After the co	ompletion of this cours	e, the students should be able to		
1	Know the usage of various tools and their applications in carpentry, tin smithy.			
2	Understand the usage of various tools and their application in black smithy, foundry, welding and house wiring.			
3	Make lap joint and dov	e tail joint in carpentry, scoope, funnel and tray it	ems in tin smithy.	



Course Outcome	Year / semester I/I Sem	Subject Name (Subject Code) PROGRAMING FOR PROBLEM	L: 0 T: 0 P: 2 C: 1		
		SOLVING LAB (B18CS02)			
After the co	mpletion of this cours	e, the students should be able to			
1	Understand how prob	plems are posed and how they can be analyzed	l for obtaining solutions		
2	Understand basic stru	acture of the C programming, declaration and	usage of variables.		
3	Write C programs us and using of function	sing operators. Implement different operation ons to solve problems.	ns on arrays and creating		
4	Learn the sequencing, branching, looping and implement different types of file structures and decision making statements to solve scientific and engineering problems.				
Course	Year / semester	Subject Name (Subject Code)	L: 3 T: 1 P: 0 C: 4		
Outcome	I/II Sem	DIFFERENTIAL EQUATIONS ANI VECTOR CALCULUS (B18MA02)			
After the c	ompletion of this co	urse, the students should be able to			
1	dentify whether the given differential equation of first order is exact or not				
2	Solve higher order differential equation and apply the concept of differential equation to real world problems				
3	Evaluate the multiple integrals and apply the concept to find areas, volumes, centre of mass and Gravity for cubes, sphere and rectangular parallelopiped				
4	Utilize the concept of gradient divergence and curl of a vector field to predict area and volumes.				
5	Evaluate the line, sur	face and volume integrals and converting the	n from one to another.		



Course	Year / semester	Subject Name (Subject Code)	L: 3 T: 1 P: 0 C: 4		
Outcome	I/II Sem	ENGINEERING CHEMISTRY (B18CH01)			
After the co	mpletion of this cours	e, the students should be able to			
1	Recall previous know	vledge regarding atomic and molecular structure			
2	Design polymeric en	gineering materials. Recall basic organic reaction	ns		
3	Construct batteries a e.t.chelp them to	nd classify different electronics and electrical construct different electrical/ electronic parts.	like cells, electrodes,		
4	Examine which type explain the corrosic	of impurities is present in water, specification on behavior/ activity of metals.	of drinking water and		
5	Apply phase rule and	adsorption to construct the materials by analyzing	ing their compositions.		
Course	Year / semester	Subject Name (Subject Code)	L: 1 T: 0 P: 4 C: 3		
Outcome	I/II Sem	ENGINEERING GRAPHICS (B18ME01)			
After the co	mpletion of this cours	e, the students should be able to			
1	Learn the development of surfaces.				
2	Jnderstand the projections of solids				
3	Jnderstand the isometric projections.				
4	Jnderstand the orthographic projections.				
5	Make the use of drawings, dimensioning, scales and conic sections.				
Course Outcome	Year / semester I/II Sem	Subject Name (Subject Code) ELECTRICAL CIRCUITS(B18EE04)	L: 3 T: 0 P: 0 C: 3		



After the co	mpletion of this cours	e, the students should be a	able to		
1	Learn basic concepts of electrical circuits, electrical parameters etc				
2	Relate the learned ba	sics to understand the AC	and DC circui	ts	
3	Analyse and solve the	e electric and magnetic c	ircuits		
4	Learn to demonstrate	various network theorem	and resonanc	e condit	tion
5	Apply various network theorems to solve real time application				
6	Assess various above	concepts in real world p	roblems		
Course	Year / semester	Subject Name (Subject C	Code)		L: 3 T: 0 P: 0 C: 3
Outcome	I/II Sem	ELECTRONIC D CIRCUITS(B18EC01)	EVICES	AND	
After the co	mpletion of this cours	e, the students should be a	able to		
1.	Explain the semiconductor theory and characteristics of the PN junction diode and Zener diode.				
2.	Compare and contrast the rectifiers with and without filters.				
3.	Understand the const illustrate the differe	ruction and voltage- curr nt configurations of trans	ent characteris	tics of J	unction Transistor and
4.	Design and analyze t	he different biasing circui	ts and amplifie	r circuit	s.

5.	Acquire knowledge MOSFET.	e about the construction, theory and charact	eristic	s of FET and
Course	Year / semester	Subject Name (Subject Code)	L: 0 T	: 0 P: 2 C: 1
Outcome	I/II Sem	ELECTRONIC DEVICES AND		
		CIRCUITS LAB (B18EC02)		
After the co	mpletion of this cour	rse, the students should be able to		
1	dentify and find the	e values of resistors, capacitors and inductors.		
2	Measure voltage, fre	equency and phase of any waveform using CRO		
3	Demonstrate the cha	aracteristics and operation of electronic devices.		
4	Demonstrate various	s amplifier circuits.		
Course	Year / semester S	Year / semesterSubject Name (Subject Code)L: 0 T: 0 P: 2		
Outcome	I/II Sem 1	ENGLISH LANGUAGE & COMMUNICATIONS C: 1		C: 1
	SKILLS LAB (B18EN02)			
After the co	ompletion of this cour	rse, the students should be able to		
1	Capable in Better Understanding of nuances of language through audio-visual experience and group activities.			
2	Able to develop Neutralization of accent for intelligibility.			
3	Capable to Speak out with clarity and confidence thereby enhances the employability skills of the students by acquiring knowledge and techniques.			
4	Extends to speak fluent English, through advanced vocabulary to improve quality in speaking.			
Course	Year / semester	Subject Name (Subject Code)		L: 0 T: 0 P: 2
				<b>C</b> . <b>A</b>



### VAAGDEVI COLLEGE OF ENGINEERING

#### **UGC-Autonomous**

	ENVIRONMENTAL SCIENCE (B18MC02)				
After the co	mpletion of this course, the students should be able to				
1	Recall previously learned ecosystem and find how the biodiversity changes went in the environment.				
2	Demonstrate outlines of types of pollutions and explain in related to day to day life.				
3	Apply models of food chains and energy flow models to solve the identified parameters.				
4	Classify the types of pollutants and distinguish the functions of sustainable development that take part in the environment.				
5	Design the experiments with BOD,COD, OD and estimate the micro organisms which cause contamination and can propose solutions.				



#### VISWAMDHATA Educational Society VAAGDEVI COLLEGE OF ENGINEERING UGC-Autonomous Department of Electronics and Communication Engineering

# Systems Course Outcomes for M.Tech – VLSI SYSTEM DESIGN (R18) for the year 2018-19 onwards

Course	Year/Semester	Subject Name (Subject Code)	L: 3 T: 0 P: 0 C: 3			
Outcome	I/I Sem	CMOS DIGITAL INTEGRATED				
		CIRCUIT DESIGN (M18VL01)				
After the comp	oletion of this cours	se, the students should be able to	I			
1	Relate, compare, i	nterpret and make the use of the best CMOS	design techniques for			
	implementation, and	nalysis & design of Combinational MOS logi	c circuits.			
2	Relate, compare, i	nterpret and make the use of the best CMOS	design techniques for			
	implementation, and	nalysis & design of Sequential MOS logic cir	cuits.			
3	Know & tell differ	ent types of memories and compare performa-	ance evaluation of			
	each memory mod	ules so they can be able to think & justify ho	w to improve			
	performance by ta	king different structures.				
4	Define, simplify &	z justify which dynamic logic circuit can be u	sed investigate			
	CMOS circuits.					
5	Recommend various CMOS techniques and also other device technologies based on					
	circuit constraints	requirement.				
Course	Year / semester	Subject Name (Subject Code)	L: 3 T: 0 P: 0 C: 3			
Outcome	I/I Sem	CMOS ANALOG INTEGRATED				
		CIRCUIT DESIGN (M18VL02)				
After the comp	After the completion of this course, the students should be able to					
1	Define the parame	ters of MOS Devices & can predict the perfo	rmance or behavior			
	of Analog VLSI circuit.					
2	Use mathematical models of MOS transistors to evaluate their behavior in analog					
	requirements					
3	Analyze & charact	erize analog devices and systems & Designing	ng CMOS analog			
	circuits to achieve	performance specifications				



4	Understand design issues related to analog VLSI system 7&working of MOS based			
	data converter circuits.			
5	Make the significa	nt use of knowledge of subject in research or	on project in VLSI	
	domain.			
Course	Year / semester	Subject Name (Subject Code)	L: 3 T: 0 P: 0 C: 3	
Outcome	I/I Sem	DIGITAL SYSTEM DESIGN USING		
		HDL(M18VL03)		
After the comp	pletion of this cours	se, the students should be able to		
1	Design and analyz	e combinational, sequential and arithmetic ci	rcuits using HDL.	
2	Understand digital	system design flow, timing, synthesis and FI	PGA implementation	
	issues.			
3	Solve engineering	problems in the area of digital system design	& Examine or	
	Inspect for an optimum layout for IC layout at VLSI backend design.			
4	Design, analyze & can predict the performance characteristics of logic gates using			
	NMOS, PMOS & CMOS technology at VLSI backend design.			
5	Tell an optimum trade with respect to three basic parameters of VLSI design for			
	VLSI circuit at frontend or backend VLSI design			
Course	Year / semester	Subject Name (Subject Code)	L: 3 T: 0 P: 0 C: 3	
Outcome	I/I Sem	VLSI SIGNAL PROCESSING		
		(M18VL04)		
After the comp	oletion of this cours	se, the students should be able to		
1	Apply the concept	s of pipelining, parallel processing, retiming,	folding and	
	unfolding to optim	ize digital signal processing architectures		
2	Use of proper tech	niques for parallel processing design for scali	ng and round off	
3	Apply all techniqu	es to improve implementations of several DS	P algorithms using	
5	both ASICs and of	f –the -shelf programmable digital signal pro	cessors	
4	Design high-speed	, low-area, and low-power VLSI systems for	a broad range of	
	DSP applications			



5	Minimize the com	putational complexity using fast convolution	algorithms & Make	
	the significant use of knowledge of subject in research or on project in VLSI domain			
Course	Year / semester	Subject Name (Subject Code)	L: 3 T: 0 P: 0 C: 3	
Outcome	I/I Sem	VLSI TECHNOLOGY (M18VL05)		
After the comp	pletion of this cours	se, the students should be able to		
1	Build circuits usin	g IC's.		
2	In depth knowledg	ge of applying the concepts in real time applied	cations.	
3	Understand the m	ain elements of hierarchical IC design nam	ely interested circuit	
	technology, appro	aches to system design, architectural issues.		
4	Design implement	tation and layout & Use of tools for efficient	designing.	
5	Make the signification	ant use of knowledge of subject in research of	or on project in VLSI	
	domain.			
Course	Year / semester	Subject Name (Subject Code)	L: 3 T: 0 P: 0 C: 3	
Outcome	I/I Sem	ALGORITHM FOR VLSI DESIGN		
		AUTOMATION(M18VL06)		
After the comp	pletion of this cours	se, the students should be able to		
1	Describe and formulate the flow of VLSI Design for any application.			
2	Explain the algorithms for partitioning, floor planning, placement and routing the			
	digital designs at f	rontend level & at backend VLSI Design leve	el.	
3	Compare the vario	us scheduling algorithms & Analyze & solve	the issues related to	
	logic synthesis &	verification		
4	Explain the algorit MCM modules	hms for partitioning, floor planning, placeme	ent and routing the	
5	Make significant c	ontribution in the research in based on design	n of CAD tool for	
	VLSI design			
Course	Year / semester	Subject Name (Subject Code)	L: 3 T: 0 P: 0 C: 3	
Outcome	I/I Sem	EMBEDDED SYSTEM DESIGN		
		(M18VL07)		
After the comp	pletion of this cours	e, the students should be able to	1	



1	Know the Basic Concept of Embedded Systems.			
2	Interpret the difference between Microcontrollers and Microprocessors.			
3	Apply the Software for Embedded System Design & concepts of Embedded OS.			
4	Explain and apply	the concept of Embedded Firmware, RTC	OS Based Embedded	
	System Design and	d Task function.		
5	Make significant	contribution in the research in applications	based on embedded	
	system design.			
Course	Year / semester	Subject Name (Subject Code)	L: 3 T: 0 P: 0 C: 3	
Outcome	I/I Sem	DEVICE MODELING (M18VL08)		
After the comp	letion of this cours	se, the students should be able to		
1	Understand the ph	ysics of and design elements of silicon MOSI	FETs.	
2	Explain the equation	ons, approximations and techniques available	for deriving a model	
	with specified pro	perties, for a general device characteristic w	ith known qualitative	
2	theory			
3	Analyze the performance issues & innerent trade off involved in system design Offer alues to qualitative understanding of the physics of a new device and			
	conversion of this understanding into equations			
4	Utilize semiconductor models to analyze carrier densities and carrier transport &			
	Simulate characteristics of a simple device using MATLAB. SPICE and			
	SYNOPSYS			
5	Understand and analyze the inner working of semiconductor p-n diodes, Schottky			
	barrier diodes and	advanced MOSFET technology		
Course	Year / semester	Subject Name (Subject Code)	L: 2 T: 0 P: 0 C: 0	
Outcome	I/I Sem	ENGLISH FOR RESEARCH PAPER		
		WRITING (M18AC01)		
After the comp	oletion of this cours	se, the students should be able to		
1	Understand the nu	ances of language and vocabulary in writing a	a Research Paper	
2	Develop the content, structure and format of writing a research paper			
3	Analyze and pract	ice writing a Research Paper		
4	Enable the students to plan for original research papers without subjected to			



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	plagiarism				
Course	Year / semester	Subject Name (Subject Code)	L: 2	2 T: 0 P: 0 C: 2	
Outcome	I/I Sem	RESEARCH METHODOLOGY			
		(M18MC01)			
After the comp	oletion of this cours	e, the students should be able to	I		
1	Develop an understanding of IPR/ research methodology in the process of				
	creation of patents	through research			
2	Develop further	research capabilities			
3	Design Important	Concepts Related to Research Design			
4	Learn better repo	ort writing skills and Patenting			
Course	Year / semester	Subject Name (Subject Code)	L: (	) T: 0 P: 4 C: 2	
Outcome	I/I Sem	HDL PROGRAMMING LABORATORY			
		(M18VL09)			
After the comp	oletion of this cours	e, the students should be able to			
1	Apply the knowled	lge in Simulation and Synthesis of Digital Cir	rcuits		
2	Design Various Combinational and Sequential circuits using Verilog HDL & HDL				
3	Explain the System Modeling with Tasks and Functions.				
4	Design of digital c	ircuits using FPGA/CPLD boards.			
Course	Year / semester	Subject Name (Subject Code)	L: (	) T: 0 P: 4 C: 2	
Outcome	I/I Sem	Digital IC Design Laboratory (M18VL10)			
After the comp	eletion of this cours	e, the students should be able to	1		
1	Design CMOS inv	erters, logic circuits and transmission gates to	o spec	cifications.	
2	Design latches and	flip-flops asthe basic circuit for Random-Ac	cess-	Memory	
	(RAM) and Read-	Only-Memory (ROM) cells.			
3	Understand the Design of Bi-CMOS Inverter, logic circuits.				
4	Design post Layout of Different logic circuits.				
Course	Year / semester	Subject Name (Subject Code)		L: 3 T: 0 P: 0	



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Outcome	I/II Sem	CMOS Mixed Signal Circuit Design	C: 3	
		(M18VL11)		
After the comp	oletion of this cours	se, the students should be able to		
1	Build mixed signa	al circuits like DAC, ADC, PLL etc &Gain	knowledge on filter	
	design in mixed	signal mode &To acquire knowledge	on design different	
	architectures in mi	xed signal mode.		
2	Analyze digital tes	t and linear test engineers to the mixed signal	l world by teaching	
	the basics of analo	g and mixed signal test methods. Sampling T	heory, Frequency	
-	Domain Testing, a	nd Digital Signal Processing		
3	Apply these funda	mental concepts to different test methods ar	nd data validation for	
	mixed signal par	ameters together with debugging, noise re	eduction and device	
4	interface technique		c : :	
4	Deal with the theo	ry and design skills of CMOS op-amps, volta	age reference circuits, $D \in D/A$ accurately	
	switched capacito	munication systems and consumer electron	$D \propto D/A$ converters	
5	Design of core mi	ved signal IC blocks: comparators and data	converters & System	
5	level design flow:	ton-down and bottom-up design methodologi		
	Veen (semigrand Subject Name (Subject Code)			
Course	Vear / semester	Subject Name (Subject Code)	$\mathbf{I} \cdot 3 \mathbf{T} \cdot 0 \mathbf{P} \cdot 0 \mathbf{C} \cdot 3$	
Course	Year / semester I/II Sem	<b>Subject Name (Subject Code)</b> VLSI Design Verification and Testing	L: 3 T: 0 P: 0 C: 3	
Course Outcome	Year / semester I/II Sem	Subject Name (Subject Code) VLSI Design Verification and Testing (M18VL12)	L: 3 T: 0 P: 0 C: 3	
Course Outcome After the comp	Year / semester I/II Sem Detion of this cours	Subject Name (Subject Code) VLSI Design Verification and Testing (M18VL12) se, the students should be able to	L: 3 T: 0 P: 0 C: 3	
Course Outcome After the comp	Year / semester I/II Sem Detion of this cours Gain knowledge of	Subject Name (Subject Code) VLSI Design Verification and Testing (M18VL12) se, the students should be able to on digital testing as applied to VLSI design of	L: 3 T: 0 P: 0 C: 3	
Course Outcome After the comp	Year / semester I/II Sem Detion of this cours Gain knowledge of on testing of algor	Subject Name (Subject Code) VLSI Design Verification and Testing (M18VL12) Se, the students should be able to on digital testing as applied to VLSI design a ithms for digital circuits.	L: 3 T: 0 P: 0 C: 3 &Acquire knowledge	
Course Outcome After the comp 1 2	Year / semester I/II Sem Detion of this course Gain knowledge of on testing of algor Learn various testi	Subject Name (Subject Code) VLSI Design Verification and Testing (M18VL12) se, the students should be able to on digital testing as applied to VLSI design a ithms for digital circuits.	L: 3 T: 0 P: 0 C: 3 &Acquire knowledge modern VLSI design,	
Course Outcome After the comp 1 2	Year / semester I/II Sem Detion of this cours Gain knowledge of on testing of algor Learn various testiverification, and testing	Subject Name (Subject Code) VLSI Design Verification and Testing (M18VL12) se, the students should be able to on digital testing as applied to VLSI design d ithms for digital circuits. ing methods for digital circuits & process of test.	L: 3 T: 0 P: 0 C: 3 &Acquire knowledge modern VLSI design,	
Course Outcome After the comp 1 2 3	Year / semester I/II Sem Detion of this cours Gain knowledge of on testing of algor Learn various testiverification, and te Develop and und	Subject Name (Subject Code) VLSI Design Verification and Testing (M18VL12) Se, the students should be able to on digital testing as applied to VLSI design of ithms for digital circuits. Ing methods for digital circuits & process of rest. erstanding for the advanced design concept	L: 3 T: 0 P: 0 C: 3 &Acquire knowledge modern VLSI design, pts in modern VLSI	
Course Outcome After the comp 1 2 3	Year / semester I/II Sem Detion of this course Gain knowledge of on testing of algor Learn various testiverification, and technologies & Learn	Subject Name (Subject Code) VLSI Design Verification and Testing (M18VL12) se, the students should be able to on digital testing as applied to VLSI design of ithms for digital circuits. ing methods for digital circuits & process of rest. erstanding for the advanced design concep- earn self-checking circuits where faults are d	L: 3 T: 0 P: 0 C: 3 &Acquire knowledge modern VLSI design, ots in modern VLSI letected by subcircuit	
Course Outcome After the comp 1 2 3	Year / semester I/II Sem Detion of this cours Gain knowledge of on testing of algor Learn various testiverification, and technologies & Learn called checker	Subject Name (Subject Code) VLSI Design Verification and Testing (M18VL12) se, the students should be able to on digital testing as applied to VLSI design d ithms for digital circuits. ing methods for digital circuits & process of test. erstanding for the advanced design concep- earn self-checking circuits where faults are d	L: 3 T: 0 P: 0 C: 3 &Acquire knowledge modern VLSI design, ots in modern VLSI letected by subcircuit	
Course Outcome After the comp 1 2 3 4	Year / semester I/II Sem Detion of this course Gain knowledge of on testing of algor Learn various testiverification, and technologies & Le called checker Gain the knowledge	Subject Name (Subject Code) VLSI Design Verification and Testing (M18VL12) se, the students should be able to on digital testing as applied to VLSI design of ithms for digital circuits. Ing methods for digital circuits & process of test. erstanding for the advanced design concep- earn self-checking circuits where faults are de- lge of testing and verification in VLSI de-	L: 3 T: 0 P: 0 C: 3 &Acquire knowledge modern VLSI design, ots in modern VLSI letected by subcircuit	
Course Outcome After the comp 1 2 3 4	Year / semester I/II Sem Detion of this cours Gain knowledge of on testing of algor Learn various testiverification, and te Develop and und technologies & Le called checker Gain the knowled concepts for comb	Subject Name (Subject Code) VLSI Design Verification and Testing (M18VL12) se, the students should be able to on digital testing as applied to VLSI design of ithms for digital circuits. ing methods for digital circuits & process of rest. erstanding for the advanced design concep- earn self-checking circuits where faults are de- lige of testing and verification in VLSI de- inational and sequential circuits	L: 3 T: 0 P: 0 C: 3 &Acquire knowledge modern VLSI design, ots in modern VLSI letected by subcircuit sign process, ATPG	
CourseOutcomeAfter the comp12345	Year / semester I/II Sem Detion of this cours Gain knowledge of on testing of algor Learn various testiverification, and te Develop and und technologies & Lear called checker Gain the knowled concepts for comb Specific technique	Subject Name (Subject Code) VLSI Design Verification and Testing (M18VL12) se, the students should be able to on digital testing as applied to VLSI design of ithms for digital circuits. Ing methods for digital circuits & process of test. erstanding for the advanced design concep- earn self-checking circuits where faults are design and verification in VLSI design lge of testing and verification in VLSI design and sequential circuits s for designing high-speed, low-power, and e	L: 3 T: 0 P: 0 C: 3 &Acquire knowledge modern VLSI design, ots in modern VLSI letected by subcircuit sign process, ATPG easily-testable circuits	
CourseOutcomeAfter the comp12345Course	Year / semester I/II Sem Detion of this course Gain knowledge of on testing of algor Learn various testiverification, and technologies & Lechnologies & Lechnologies & Lechnologies for comb Specific technique Year / semester	Subject Name (Subject Code) VLSI Design Verification and Testing (M18VL12) se, the students should be able to on digital testing as applied to VLSI design of ithms for digital circuits. Ing methods for digital circuits & process of test. erstanding for the advanced design concept earn self-checking circuits where faults are design and verification in VLSI design lge of testing and verification in VLSI design and sequential circuits s for designing high-speed, low-power, and estimational and sequential circuits Subject Name (Subject Code)	L: 3 T: 0 P: 0 C: 3 &Acquire knowledge modern VLSI design, ots in modern VLSI letected by subcircuit sign process, ATPG easily-testable circuits L: 3 T: 0 P: 0 C: 3	
CourseOutcomeAfter the comp12345CourseOutcome	Year / semester I/II Sem Detion of this cours Gain knowledge of on testing of algor Learn various testiverification, and technologies & Lechnologies & Lechnologies & Lechnologies & Lechnologies for comb Specific technique Year / semester I/II Sem	Subject Name (Subject Code) VLSI Design Verification and Testing (M18VL12) se, the students should be able to on digital testing as applied to VLSI design of ithms for digital circuits. Ing methods for digital circuits & process of test. erstanding for the advanced design concept earn self-checking circuits where faults are design and verification in VLSI design lge of testing and verification in VLSI design and sequential circuits s for designing high-speed, low-power, and e Subject Name (Subject Code) Low Power VLSI Design (M18VL13)	L: 3 T: 0 P: 0 C: 3 &Acquire knowledge modern VLSI design, ots in modern VLSI letected by subcircuit sign process, ATPG easily-testable circuits L: 3 T: 0 P: 0 C: 3	



1	Design Low powe	er CMOS designs, for digital circuits & Gair	ns knowledge on low	
	power circuit design styles for VLSI circuits.			
2	Understand power	estimation and optimization methods for VI	LSI circuits & causes	
	of the power dissig	pation in digital ICs.		
3	Exploring the low	power circuits and architectures for VLSI sys	stem.	
4	Understand the co	ncept of VLSI circuit of low power operation	& case study of low	
	power design			
5	Design various cir	cuits for optimize power		
Course	Year / semester	Subject Name (Subject Code)	L: 3 T: 0 P: 0 C: 3	
Outcome	I/II Sem	Optimization Technique In VLSI Design		
		(M18VL14)		
After the comp	oletion of this cours	se, the students should be able to		
1	Gain knowledge o	n Optimization techniques involved in VLSI	circuits.	
2	Analyze methods of optimization to engineering students, including linear			
	programming, nonlinear programming, and heuristic methods			
3	Understand balan	ce between theory, numerical computation, pr	roblem setup for	
	solution by optimization software, and applications to engineering systems.			
4	Studies General optimization algorithm; necessary and sufficient conditions for			
	optimality			
5	Demonstrate the Concept of Genetic Algorithms and Routing Procedures			
Course	Year / semester	Subject Name (Subject Code)	L: 3 T: 0 P: 0 C: 3	
Outcome	I/II Sem	High Speed VLSI Design (M18VL15)		
After the comr	letion of this cours	se the students should be able to		
1	Gain knowledge o	n circuits and techniques involved in high spe	ed VLSI circuits	
2	Employee a			
2	Explore various d	esign strategies to be followed for designing	g a high speed VLSI	
2	Circuits.	ais styles for designing a high around VI SI	increase of the second the	
5	Understand the lo	gic styles for designing a high speed VLSI	circuit & Learn the	
	Apply matheda	for logical offerts logic styles latching	stratagiog interface	
4	toobniquos and rol	ated issues	suategies, interface	
5	Acquire knowledge	alcu Issues.	r Loorn the basics of	
5	VI SI design for b	e about fight speed vLSI Circuits Design c	x Learn the dasies of	
Course	Voor / somester	Subject Nome (Subject Code)	I.3T.0D.0C.2	
Course	rear / semester	Subject Maine (Subject Code)		



## VAAGDEVI COLLEGE OF ENGINEERING UGC-Autonomous

Outcome	I/II Sem	ASIC Design (M18VL16)			
After the completion of this course, the students should be able to					
1	To learn the fundation	umentals of ASIC and its design methods			
2	To gain knowledg	ge on programmable architectures for ASICs	& physical design of		
	ASIC				
3	To prepare the stu	dent to be an entry level industrial standard ce	Il ASIC or FPGA		
4	designer				
4	design.	ent an understanding of issues and tools rel	ated to ASIC/FPGA		
5	Prepare the studer	nt for implementation, including timing, perfor	mance and power		
	optimization, veri	fication and manufacturing test			
Course	Year / semester	Subject Name (Subject Code)	L: 3 T: 0 P: 0 C: 3		
Outcome	I/II Sem	System On Chip Architecture (M18VL17)			
After the comp	pletion of this cour	se, the students should be able to			
1	Learn System on chip fundamentals, their applications				
2	Gain knowledge o	on SOC design & computation models of SOC	s.		
3	Learn the basic concepts of NoC design by studying the topologies, router design				
	and MPSoC styles & sample routing algorithms on a NoC with deadlock and				
	livelock avoidance				
4	Understand the role of system-level design and performance metrics in choosing a				
5	NoC design				
5	understand the	relationship between semiconductor tec	munication network		
	for a MPSoC or a	many-core design	indification network		
Course	Year /	Subject Name (Subject Code)	L: 3 T: 0 P: 0		
Outcome	semester	Semiconductor Memory Design & Testing	C: 3		
	I/II Sem	(M18VL18)			
After the comp	oletion of this cour	se, the students should be able to			
	Know the design	of MOS memories and the various precautiona	ary methods to be		
	used in their desig	'n			
2	Loorn overview	of momory ohin design DDAM singuits	voltago gonoratora		
2	Learn overview	of memory chip design, DRAM circuits,	voltage generators,		



	performance analysis and design issues of ultra-low voltage memory circuits			
2	Acquire knowled	ge about High-Performance Subsystem M	lemories & Analyse	
3	RAM and DRAM	Design		
	Demonstrate Advanced Memory Technologies and High-density Memory Packing			
4	Technologies & Gains knowledge on various testing methods of semiconductor			
	memories			
5	Get an overview o	n reliability of semiconductors and their testin	ng	
Course	Year / semester	Subject Name (Subject Code)	L: 2 T: 0 P: 0 C: 0	
Outcome	I/II Sem	Stress Management (M18AC02)		
After the comp	oletion of this cours	se, the students should be able to		
1	Enhance of Physical strength and flexibility.			
2	Learn to relax and focus.			
3	Relieve physical and mental tension			
4	Improve work performance/ efficiency.			
Course	Year / semester	Subject Name (Subject Code)	L: 0 T: 0 P: 4	
Outcome	I/II Sem	Analog IC Design Laboratory (M18VL19)	C: 2	
After the completion of this course, the students should be able to				
1	Design Various Characteristics of MOS Logic			
2	Design Various A	mplifier circuits using CMOS Logic		
3	Design Various cir	rcuits using Different Logic Styles		
4	Design Layout of	Different logic circuits		
Course	Year / semester	Subject Name (Subject Code)	L: 2 T: 0 P: 0 C: 2	
Outcome	I/II Sem	Mini Project (M18VL21)		
After the comp	oletion of this cours	se, the students should be able to		
1	Demonstrate a sound technical knowledge of their selected project topic.			
2	Identify and summ	narize an appropriate list of literature review,	analyze previous	
	researchers' work and relate them to current project.			



3	Present the project outlining the approach and expected results using good oral and written presentation skills.			
4	Apply critical and creative thinking in the design of engineering projects not only			
	limited to electron	ics and communication engineering domain b	but if possible to	
	other interdisciplin	ary domains as well	I	
5	Design and develo	n a functional product prototype while worki	ng in a taam	
5		b a functional product prototype while work		
6	Communicate with	n engineers and the community at large in wri	tten and oral forms.	
7	Consider the busin	ness context and commercial positioning of de	esigned devices or	
	systems			
Course	Year / semester	Subject Name (Subject Code)	L: 0 T: 0 P: 4 C: 2	
Outcome	I/II Sem	Mixed Signal VLSI Laboratory		
		(M18VL20)		
After the comp	oletion of this cours	se, the students should be able to		
1	Design Various Amplifier circuits using CMOS Logic			
2	Design Various Complex circuits using Different Logic Styles			
3	Design Layout of Different logic circuits			
4	Digital/analog circ	uits are to be designed and implemented usin	g CAD tools.	
Course	Year / semester	Subject Name (Subject Code)	L: 3 T: 0 P: 0 C: 3	
Outcome	II/I Sem	High Speed VLSI Architectures for DSP		
		Applications (M18VL22)		
After the comp	oletion of this cours	se, the students should be able to		
1	Know about the gr	raph representations of DSP algorithms, Conv	olution algorithms	
	and the concept of	parallel recursive and adaptive filters		
2	Analyze The graph	n representations of DSP algorithms, Convolu	tion algorithms &	
2	concept of parallel	recursive and adaptive filters	ttiga filtar structuras	
3				
4	Contribute the kno	owledge in the design of parallel recursive and	a adaptive filters	
5	Demonstrate varia	ble description of digital filters and digital lat	tice filter structures	



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Course	e Year / semester	Subject Name (Subject Code)	L: 3 T: 0 P: 0 C:3		
Outcom	ne II/I Sem	Nano materials & Nano Technology			
		(M18VL23)			
After the	completion of this cours	se, the students should be able to			
1	Understand the fundar	Understand the fundamental function of cells, and how nanotechnologies interact &			
	Describe the various a	pplications of nanotechnology in biotechnology	egy & medicine.with		
	cells.				
2	Explain the process of	self-assembly – from single molecules into r	nanoparticles		
3	Describe and explain l	now nanoparticles are fabricated and characte	erized & principles of		
	loading small molecul	e drugs, proteins or nucleic acids (DNA/RNA	A) into nanoparticles		
4	Describe and explain t	he scientific basis and medical benefits for us	sing nanotechnology		
	for treating diseases				
5	Demonstrate how nand	otechnology-based innovation can drive bette	er medicine and a		
<b>C</b>	stronger economy				
Course	Year / semester	Subject Name (Subject Code)	L: 3 1: 0 P: 0 C: 3		
Outcome	II/I Sem	RF Circuit Design (M18VL24)			
After the	completion of this cours	se, the students should be able to			
1	Understand important and unique engineering issues at microwave and millimeter wave				
	frequencies.				
2	Learn microwave netwo	rk theory and the use of scattering matrix			
3	Learn design criteria for	waveguide and coaxial microwave compone	ents.		
4	Learn the application of	these components in the design of useful sy	stems such as radars,		
	receivers, etc.				
5	Work in small teams a	nd design, fabricate and test a useful micro	owave component or		
	device, which may be de	esigned using microstripline technology.			
Course	Year / semester	Subject Name (Subject Code)	L: 3 T: 0 P: 0 C: 3		
Outcom	II/I Sem	Soft Computing Techniques (M18CS12)			
e					
After the	completion of this cours	se, the students should be able to	1		



1	Identify and describe soft computing techniques and their roles in building intelligent				
	machines				
2	Reco	ognize the feasibili	ity of applying a soft computing methodology fo	or a particular	
	prob	olem			
3	App	ly fuzzy logic and	reasoning to handle uncertainty and solve engin	eering problems .	
4	App	ly genetic algorith	ms to combinatorial optimization problems & n	eural networks to	
	patte	ern classification a	nd regression problems		
5	Effe	ctively use existin	g software tools to solve real problems using a s	oft computing	
	appr	oach.			
Course	Yea	r / semester	Subject Name (Subject Code)	L: 3 T: 0 P: 0	
Outcom	II/I	Sem	Graph Theory & Optimization Techniques	C: 3	
e			(M18MA02)		
After the	comp	etion of this cou	rse, the students should be able to		
1		Understand the c	oncepts of probability & statics		
2		Identify the strength and weakness of different theories			
3		Design and empl	oy appropriate method for solving computing pr	oblems	
4		Analyze and com	npare the methods.		
5		Solve computing	problems independently.		
Cours	e	Year / semester	Subject Name (Subject Code)	L: 3 T: 0 P: 0 C: 3	
Outcon	ne	II/I Sem	Waste Management(M18CE27)		
After the	After the completion of this course, the students should be able to				
1	Ac	Acquire the knowledge of waste management			
2	Ex	Explain solid waste disposal techniques			
3	Ac	quire the knowled	ge of Bio medical waste disposal techniques		
4	Ac	quire the knowled	ge of e- waste disposal techniques		



5	Select the appropriate method for solid waste collection, transportation, redistribution and disposal			
Course	Year / semester	Subject Name (Subject Code)	L: 0 T: 0 P: 20 C:10	
Outcome	II/I Sem	Dissertation Phase-I (M18VL25)		
After the co	ompletion of this cours	e, the students should be able to		
1	Demonstrate a sound t	echnical knowledge of their selected project	et topic.	
2	Identify and summariz	e an appropriate list of literature review, an	nalyze previous	
	researchers' work and	relate them to current project.		
3	Formulate clearly a we	ork plan and procedures.		
4	Present the project out	lining the approach and expected results us	sing good oral and	
	written presentation sl	cills.		
5	Undertake problem ide	entification, formulation and solution.		
Course	Year / semester	Subject Name (Subject Code)	L: 0 T: 0 P: 32 C:16	
Outcome	II/II Sem	Dissertation Phase-II (M18VL26)		
After the co	ompletion of this cours	se, the students should be able to		
1	Apply critical and crea	ative thinking in the design of engineering J	projects not only	
	limited to electronics a	and communication engineering domain bu	t if possible to other	
	interdisciplinary doma	ins as well.		
2	Demonstrate the know	ledge, skills and attitudes of a professional	engineer when	
	working in a team			
3	Design and develop a	functional product prototype while working	g in a team	
4	Communicate with en	gineers and the community at large in writt	en and oral forms.	
5	Consider the busines	s context and commercial positioning o	f designed devices or	
	systems			


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## DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

## <u>Course Outcomes for M.Tech – Power Electronics (43) for</u> <u>the year 2015-16</u>

Course	Year/Semester	Subject Name (Subject Code)	L: 4 T: 0 P: 0	Credits: 4
Outcome	I/I Sem	Machine Modelling and	Total: 4	
		Analysis(A943101)		
After the completio	Identify the metho	is should be able to	nachinas	
1	Pocogniza the diff	forant frames for modeling of AC me	abinas	
2	Illustrate the volte	as and torque equations in state spee	cillies.	t machina
3	Develop the moth	ge and torque equations in state space	e lorin for differen	the transfor
4	function of the D	rematical models of various DC ma	chines and derive	the transfer
5	Study vorious tran	- III0101.	inco and avalors	to starting
5	methods	istormations adopted in 5 phase mach	intes and explore	its starting
6	Analyze the devel	oped models in various reference fra	mes through simu	lation study
7	Assess the machin	e dynamics in various operating con	ditions	
8	Perform short circ	uits analysis with d-q model of mach	ines.	
Course	Year / semester	Subject Name (Subject Code)	L: 4 T: 0 P: 0	Credits: 4
Outcome	I/I Sem	Modern Control Theory (A943102)	Total: 4	
After the completio	n of this course, the student	s should be able to		
1	Learn various ter	ms of basic and modern control syst	tem for the real ti	me analysis
	and design of con	trol systems.		
2	Learn the basic m	athematical preliminaries for modeli	ng a control system	n
3	Perform state vari	ables analysis for any real time syste	m	
4	Linearize the non	-linear system model using various te	echniques	
5	Apply the concep	t of optimal control to any system.		
6	Examine a system	n for its stability, controllability and c	bservability.	
7	Implement basic	principles and techniques in designin	g linear control sy	stems.
8	Formulate and	solve deterministic optimal cont	rol problems in	terms of
	performance indic	ces.	1	
Course	Year / semester	Subject Name (Subject Code)	L: 4 T: 0 P: 0	Credits: 4
Outcome	I/I Sem	Circuits (A042102)	Total: 4	
After the completio	n of this course, the student	s should be able to		
1	Understand the ch	aracteristics and principle of operation	on of modern pow	er
-	electronics device	s.		•••
2	Compare the feature	res of various power electronic devic	ces	
3	Comprehend the	concepts of different power converte	rs and their applic	ation
4	Explore various d	river circuits and its heat manageme	ent system	
5	Study the effect of	f source and load inductance on the	controller operatio	n
6	Analyse and desig	gn the switched mode regulator for v	arious industrial a	pplication
7	Explore various p	ower factor improvement controllers		
8	Use power electro	nic simulation packages for analysin	g and designing p	ower
	converters	Pachages for analysin	6	/ ••
Course	Year / semester	Subject Name (Subject Code)	L: 4 T: 0 P: 0	Credits: 4



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Outcome	I/I Sem	Special Machines (A943104)	Total: 4	
After the completio	n of this course, the student	s should be able to		·
1	Learn the construct	ctional features, principle of operation	and methods of	control of
-	stepper motor.			
2	Realize the need f	or stepper motors and the various app	lications in indus	tries.
	Explore various h	ybrid stepping motor		
3	Get a clear picture	of the operational characteristics and	the applications	of Switched
5	Reluctance Motor			
4	Know the various	types of PMBLDC motors, rotor pos	ition sensors, me	thods of
•	control and their a	pplications		
5	Get a clear idea of	the features, control and the application	ions of PMSM	
6	Explore the concept of linear induction motor and develop a double sided LIM from			
•	rotory induction n	notor		
7	Study the construct	ctional details of permanent magnet as	kial flux machine	s (PMAF)
8	Explore the applic	ations of various special machines in	day to day applic	cations
Course	Year / semester	Subject Name (Subject Code)	L: 4 T: 0 P:	Credits: 4
Outcome	I/I Sem	HVDC Transmission (A943105)	0 Total: 4	
After the completio	n of this course, the student	s should be able to	11	
1	Study the basic po	ower handling capabilities of HVDC	lines	
2	Explore various	configurations and conversion	principles of s	static power
	converters			
3	Learn the rectifi	er and inverter operations, commu	itation process a	at converter
	stations.			
4	Apply AC/DC file	ters for harmonic elimination in HVD	C link	
5	Explore various c	ontrols adapted in HVDC converters		
6	Identify various in	nstability problems in HV AC and DC	C system	
7	Study various ove	er voltage problems in multi-terminal	DC system	
8	Comprehend varie	ous converter faults and protection cir	cuits .	1
Course	Year / semester	Subject Name (Subject Code)	L: 4 T: 0 P:	Credits: 4
Outcome	I/I Sem	Programmable Logic Controllers	0 Total: 4	
After the completie	n of this course, the student	and their Applications (A943106)		
1	Gain Comprehens	ive knowledge of using advanced con	trollers in measu	rement and
1	control instrument	ation		
2	Illustrate about da	ata acquisition - process of collecting	information from	field
_	instruments	and acquisition process of concerning		
3	Analyze Program	mable Logic Controller (PLC). IO Mo	dules and interna	al features
4	Comprehend Prog	ramming in Ladder Logic addressing	r of I/O	<u></u>
5	Apply PID and its	Tuning in Lucael Logie, addressing	, 011/01	
6	Develop ladder lo	gic programming for simple process		
7	Execute debug a	ad test programs developed for digital	and analog oper	ations
8	Reproduce block	liagram representation on industrial a	nulications using	PLC
Course	Vear / semester	Subject Name (Subject Code)	<b>I</b> • <b>4 T</b> • <b>0 P</b>	Credits A
Outcome	I/I Sem	Microcontrollers and Applications	0 Total· 4	
Guicome		(A943107)	v 10141. T	
After the completio	n of this course. the student	s should be able to	1	J



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1	Relate the basic ar	chitecture and addressing modes of a	microcontroller.	
2	Distinguish types	of computers & microcontrollers and e	explain the princ	iples of top
	down design to mi	crocontroller software development		
3	Demonstrate asser	nbly language programs for the 8-bit,	16-bit and 32-b	it
	Microcontroller, a	assembly language code for high-level	language struct	ures such as
	IF-THENELSE ar	nd DO-WHILE		
4	Analyze a typical	I/O interface and to discuss timing issued	ues	
5	Develop Real time	e Applications of Microcontrollers & I	Demonstrate RT	OS for
	Microcontrollers.			
6	Translate Hardwar	re applications using Microcontrollers.		
7	Gain working kno	wledge of ports and interrupts		
8	Introduce the need	l and use of interrupt structure, timers	in respective ap	plications
Course	Year / semester	Subject Name (Subject Code)	L: 4 T: 0 P:	Credits: 4
Outcome	I/I Sem	Embedded Systems (A943108)	0 Total: 4	
After the completio	n of this course, the student	s should be able to		
1	Understand the ba	sics of an embedded system		
2	Explore various is	sues in embedded software developme	ent and application	ons
3	Learn the method	of designing an embedded system for	any type of appl	ications
4	Understand the op	erating systems concepts, types and cl	hoosing RTOS	
5	Design, implemen	t and test an embedded system		
6	Understand types	of memory and interacting to external	world	
7	Learn embedded f	ïrmware design approaches		
8	Use ICE and softw	vare tools to address the issues in emb	addad avatama	
			edded systems	
Course	Year / semester	Subject Name (Subject Code)	L: 4 T: 0 P:	Credits: 4
Course Outcome	Year / semester I/I Sem	Subject Name (Subject Code) Digital Control Systems (A943109)	L: 4 T: 0 P: 0 Total: 4	Credits: 4
Course Outcome After the completio	Year / semester I/I Sem n of this course, the student	Subject Name (Subject Code) Digital Control Systems (A943109) s should be able to	L: 4 T: 0 P: 0 Total: 4	Credits: 4
Course Outcome After the completio	Year / semester I/I Sem n of this course, the student Deduce the contro	Subject Name (Subject Code) Digital Control Systems (A943109) s should be able to l system to block diagram for various	L: 4 T: 0 P: 0 Total: 4 analysis	Credits: 4
Course Outcome After the completio	Year / semester I/I Sem n of this course, the student Deduce the contro Acquire a strong for	Subject Name (Subject Code) Digital Control Systems (A943109) s should be able to I system to block diagram for various oundation in sampling and reconstruct	L: 4 T: 0 P: 0 Total: 4 analysis tion Z-transform	Credits: 4
Course Outcome After the completio 1 2 3	Year / semester I/I Sem n of this course, the student Deduce the contro Acquire a strong for Apply knowledge	Subject Name (Subject Code) Digital Control Systems (A943109) s should be able to l system to block diagram for various oundation in sampling and reconstruct of mathematics, Z-plane analysis to c	L: 4 T: 0 P: 0 Total: 4 analysis tion Z-transform liscrete time con	Credits: 4 s. trol
Course Outcome After the completio 1 2 3	Year / semester I/I Sem n of this course, the student Deduce the contro Acquire a strong for Apply knowledge systems.	Subject Name (Subject Code) Digital Control Systems (A943109) s should be able to l system to block diagram for various oundation in sampling and reconstruct of mathematics, Z-plane analysis to c	L: 4 T: 0 P: 0 Total: 4 analysis tion Z-transform liscrete time con	Credits: 4 s. trol
Course Outcome After the completio 1 2 3 4	Year / semester I/I Sem n of this course, the student Deduce the contro Acquire a strong for Apply knowledge systems. Know sampling an Deaploce the course	Subject Name (Subject Code) Digital Control Systems (A943109) s should be able to l system to block diagram for various oundation in sampling and reconstruct of mathematics, Z-plane analysis to c and reconstruction, Z -transforms.	L: 4 T: 0 P: 0 Total: 4 analysis tion Z-transform liscrete time con	Credits: 4 s. trol
Course Outcome After the completio 1 2 3 4 5 6	Year / semester I/I Sem n of this course, the student Deduce the contro Acquire a strong fr Apply knowledge systems. Know sampling an Replace the conve Evaluate to Apply	Subject Name (Subject Code) Digital Control Systems (A943109) s should be able to I system to block diagram for various oundation in sampling and reconstruct of mathematics, Z-plane analysis to cond reconstruction, Z -transforms. Intional control system with Digital cond Z plane analysis of diagrate time control	L: 4 T: 0 P: 0 Total: 4 analysis tion Z-transform discrete time con	Credits: 4 s. trol
Course Outcome After the completio 1 2 3 4 5 6 7	Year / semester I/I Sem n of this course, the student Deduce the contro Acquire a strong for Apply knowledge systems. Know sampling an Replace the conve Evaluate to Apply	Subject Name (Subject Code) Digital Control Systems (A943109) s should be able to l system to block diagram for various oundation in sampling and reconstruct of mathematics, Z-plane analysis to conditional control system with Digital con Z-plane analysis of discrete time control system with Digital control system system system control system system system control system	L: 4 T: 0 P: 0 Total: 4 analysis tion Z-transform liscrete time con ntrol system. trol systems	Credits: 4 s. trol
Course Outcome After the completio 1 2 3 3 4 5 6 7 9	Year / semester I/I Sem n of this course, the student Deduce the contro Acquire a strong fr Apply knowledge systems. Know sampling an Replace the conve Evaluate to Apply Apply state feedba	Subject Name (Subject Code) Digital Control Systems (A943109) s should be able to l system to block diagram for various oundation in sampling and reconstruct of mathematics, Z-plane analysis to c and reconstruction, Z -transforms. ntional control system with Digital co Z-plane analysis of discrete time cont ack controllers and observers	L: 4 T: 0 P: 0 Total: 4 analysis tion Z-transform liscrete time con ntrol system. trol systems	Credits: 4 s. trol
Course Outcome After the completio 1 2 3 3 4 5 6 7 8 8	Year / semester I/I Sem n of this course, the student Deduce the contro Acquire a strong fr Apply knowledge systems. Know sampling an Replace the conve Evaluate to Apply Apply state feedba Analyse the system	Subject Name (Subject Code) Digital Control Systems (A943109) s should be able to l system to block diagram for various oundation in sampling and reconstruct e of mathematics, Z-plane analysis to c and reconstruction, Z -transforms. Intional control system with Digital co Z-plane analysis of discrete time cont ack controllers and observers in stability using root locus, bode and Subject Name (Subject Code)	L: 4 T: 0 P: 0 Total: 4 analysis tion Z-transform liscrete time con ntrol system. trol systems	Credits: 4 s. trol
Course Outcome After the completio 1 2 3 3 4 5 6 7 8 Course Outcome	Year / semester I/I Sem n of this course, the student Deduce the contro Acquire a strong for Apply knowledge systems. Know sampling an Replace the conve Evaluate to Apply Apply state feedba Analyse the system Year / semester	Subject Name (Subject Code) Digital Control Systems (A943109) s should be able to l system to block diagram for various oundation in sampling and reconstruct of mathematics, Z-plane analysis to c nd reconstruction, Z -transforms. ntional control system with Digital co Z-plane analysis of discrete time cont ack controllers and observers n stability using root locus , bode and Subject Name (Subject Code) Optimization Techniques	L: 4 T: 0 P: 0 Total: 4 analysis tion Z-transform liscrete time con ntrol system. trol systems Nyquist plots L: 4 T: 0 P: 0 Total: 4	Credits: 4 s. trol Credits: 4
Course Outcome After the completio 1 2 3 3 4 4 5 6 7 8 Course Outcome	Year / semester I/I Sem n of this course, the student Deduce the contro Acquire a strong fr Apply knowledge systems. Know sampling an Replace the conve Evaluate to Apply Apply state feedba Analyse the system Year / semester I/I Sem	Subject Name (Subject Code) Digital Control Systems (A943109) s should be able to l system to block diagram for various oundation in sampling and reconstruct of mathematics, Z-plane analysis to conditional control system with Digital conditional control system conditional conditional control system conditional control system conditional condition	L: 4 T: 0 P: 0 Total: 4 analysis tion Z-transform liscrete time con ntrol system. rrol systems Nyquist plots L: 4 T: 0 P: 0 Total: 4	Credits: 4 S. trol Credits: 4
Course Outcome After the completio 1 2 3 4 5 6 7 8 Course Outcome After the completio	Year / semester I/I Sem n of this course, the student Deduce the contro Acquire a strong fr Apply knowledge systems. Know sampling ar Replace the conve Evaluate to Apply Apply state feedba Analyse the syster Year / semester I/I Sem n of this course, the student	Subject Name (Subject Code) Digital Control Systems (A943109) s should be able to l system to block diagram for various oundation in sampling and reconstruct e of mathematics, Z-plane analysis to c and reconstruction, Z -transforms. ntional control system with Digital co Z-plane analysis of discrete time cont ack controllers and observers n stability using root locus , bode and Subject Name (Subject Code) Optimization Techniques (A943110) s should be able to	L: 4 T: 0 P: 0 Total: 4 analysis tion Z-transform liscrete time con ntrol system. trol systems Nyquist plots L: 4 T: 0 P: 0 Total: 4	Credits: 4 s. trol Credits: 4
Course Outcome After the completio 1 2 3 3 4 4 5 6 7 8 Course Outcome After the completio 1	Year / semester I/I Sem n of this course, the student Deduce the contro Acquire a strong fr Apply knowledge systems. Know sampling an Replace the conve Evaluate to Apply Apply state feedba Analyse the system Year / semester I/I Sem n of this course, the student Study the need of	Subject Name (Subject Code) Digital Control Systems (A943109) s should be able to l system to block diagram for various oundation in sampling and reconstruct of mathematics, Z-plane analysis to c and reconstruction, Z -transforms. ntional control system with Digital co Z-plane analysis of discrete time cont ack controllers and observers n stability using root locus , bode and Subject Name (Subject Code) Optimization Techniques (A943110) s should be able to optimisation in electrical engineering	L: 4 T: 0 P: 0 Total: 4 analysis tion Z-transform liscrete time con ntrol system. trol systems Nyquist plots L: 4 T: 0 P: 0 Total: 4 problems	Credits: 4 s. trol Credits: 4
Course Outcome After the completio 1 2 3 4 5 6 7 8 Course Outcome After the completio 1 2	Year / semester I/I Sem n of this course, the student Deduce the contro Acquire a strong fr Apply knowledge systems. Know sampling an Replace the conve Evaluate to Apply Apply state feedba Analyse the system Year / semester I/I Sem n of this course, the student Study the need of Learn the convent	Subject Name (Subject Code) Digital Control Systems (A943109) s should be able to l system to block diagram for various oundation in sampling and reconstruct e of mathematics, Z-plane analysis to c and reconstruction, Z -transforms. Intional control system with Digital co Z-plane analysis of discrete time cont ack controllers and observers n stability using root locus , bode and Subject Name (Subject Code) Optimization Techniques (A943110) s should be able to optimisation in electrical engineering ional or classical optimisation technique	L: 4 T: 0 P: 0 Total: 4 analysis tion Z-transform discrete time con ntrol system. trol systems Nyquist plots L: 4 T: 0 P: 0 Total: 4 problems ues	Credits: 4 s. trol Credits: 4
Course Outcome After the completio 1 2 3 4 5 6 7 8 Course Outcome After the completio 1 2 3	Year / semester I/I Sem n of this course, the student Deduce the contro Acquire a strong for Apply knowledge systems. Know sampling an Replace the conve Evaluate to Apply Apply state feedba Analyse the system Year / semester I/I Sem n of this course, the student Study the need of Learn the convent Learn to formulate	Subject Name (Subject Code) Digital Control Systems (A943109) s should be able to l system to block diagram for various oundation in sampling and reconstruct of mathematics, Z-plane analysis to c nd reconstruction, Z -transforms. ntional control system with Digital co Z-plane analysis of discrete time cont ack controllers and observers n stability using root locus , bode and Subject Name (Subject Code) Optimization Techniques (A943110) s should be able to optimisation in electrical engineering ional or classical optimisation technique e the problem with constrained and un-	L: 4 T: 0 P: 0 Total: 4 analysis tion Z-transform liscrete time con ntrol system. trol systems Nyquist plots L: 4 T: 0 P: 0 Total: 4 problems ues constrained case	Credits: 4 S. trol Credits: 4
Course Outcome After the completio 1 2 3 4 4 5 6 7 8 Course Outcome After the completio 1 2 3 4	Year / semester I/I Sem n of this course, the student Deduce the contro Acquire a strong fr Apply knowledge systems. Know sampling an Replace the conve Evaluate to Apply Apply state feedba Analyse the system Year / semester I/I Sem n of this course, the student Study the need of Learn the convent Learn to formulate Explore various m	Subject Name (Subject Code) Digital Control Systems (A943109) s should be able to l system to block diagram for various oundation in sampling and reconstruct of mathematics, Z-plane analysis to c and reconstruction, Z -transforms. Intional control system with Digital co Z-plane analysis of discrete time cont ack controllers and observers in stability using root locus , bode and Subject Name (Subject Code) Optimization Techniques (A943110) s should be able to optimisation in electrical engineering ional or classical optimisation technique e the problem with constrained and un- odern intelligent optimisation technique	L: 4 T: 0 P: 0 Total: 4 analysis tion Z-transform liscrete time con ntrol system. trol systems Nyquist plots L: 4 T: 0 P: 0 Total: 4 problems ues constrained case ues	Credits: 4 S. Credits: 4 Credits: 4
Course Outcome After the completio 1 2 3 4 5 6 7 8 Course Outcome After the completio 1 2 3 4 4 5	Year / semester I/I Sem n of this course, the student Deduce the contro Acquire a strong fr Apply knowledge systems. Know sampling an Replace the conve Evaluate to Apply Apply state feedba Analyse the system Year / semester I/I Sem n of this course, the student Study the need of Learn the convent Learn to formulate Explore various m Apply these technic	Subject Name (Subject Code) Digital Control Systems (A943109) s should be able to l system to block diagram for various oundation in sampling and reconstruct e of mathematics, Z-plane analysis to c and reconstruction, Z -transforms. Intional control system with Digital co Z-plane analysis of discrete time contrack controllers and observers in stability using root locus , bode and Subject Name (Subject Code) Optimization Techniques (A943110) s should be able to optimisation in electrical engineering ional or classical optimisation technique e the problem with constrained and un- odern intelligent optimisation technique iques to real world problems such as t	L: 4 T: 0 P: 0 Total: 4 analysis tion Z-transform liscrete time con ntrol system. trol systems Nyquist plots L: 4 T: 0 P: 0 Total: 4 problems ues constrained case ues ransportation pro	Credits: 4 S. Credits: 4 Credits: 4 S. Credits: 4
Course OutcomeAfter the completio12345678Course OutcomeAfter the completio12345	Year / semester I/I Sem n of this course, the student Deduce the contro Acquire a strong fo Apply knowledge systems. Know sampling an Replace the conve Evaluate to Apply Apply state feedba Analyse the system Year / semester I/I Sem n of this course, the student Study the need of Learn the convent Learn the convent Learn to formulate Explore various m Apply these techny travelling salesma	Subject Name (Subject Code) Digital Control Systems (A943109) s should be able to l system to block diagram for various oundation in sampling and reconstruct of mathematics, Z-plane analysis to c nd reconstruction, Z -transforms. ntional control system with Digital co Z-plane analysis of discrete time cont ack controllers and observers n stability using root locus , bode and Subject Name (Subject Code) Optimization Techniques (A943110) s should be able to optimisation in electrical engineering ional or classical optimisation technique e the problem with constrained and uncodern intelligent optimisation technique iques to real world problems such as to n problem	L: 4 T: 0 P: 0 Total: 4 analysis tion Z-transform liscrete time con ntrol system. trol systems L: 4 T: 0 P: 0 Total: 4 problems ues constrained case ues ransportation pro	Credits: 4 S. trol Credits: 4 Credits: 4



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7	Apply methods of sensitivity analysis and validate post processing results			
8	Explore various re	eal time optimization problems.		
Course	Year / semester	Subject Name (Subject Code)	L: 4 T: 0 P:	Credits: 4
Outcome	I/I Sem	Digital control systems (A943111)	0 Total: 4	
After the completio	n of this course, the student	s should be able to		-
1	Deduce the control	I system to block diagram for various	analysis	
2	Acquire a strong f	oundation in sampling and reconstruc	ction Z-transform	s.
3	Apply knowledge	e of mathematics, Z-plane analysis to	discrete time con	trol
	systems.			
4	Know sampling an	nd reconstruction, Z -transforms.		
5	Replace the conve	entional control system with Digital co	ontrol system.	
6	Evaluate to Apply	Z-plane analysis of discrete time con	itrol systems	
7	Apply state feedba	ack controllers and observers		
8	Analyse the system	m stability using root locus, bode and	d Nyquist plots	
Course	Year / semester	Subject Name (Subject Code)	L: 4 T: 0 P:	Credits: 4
Outcome	I/I Sem	Renewable energy systems	0 Total: 4	
		(A943112)		
After the completio	Explore various re	s should be able to	lectrical energy	
2	Study the characte	pristics of PV cell_ photo voltaic mod	ules and its applic	ations
2	Learn the basies of	f wind operate conversion systems on	d bio mass appre	v gonoration
3	Explore various W	Vave apergy conversion machines	<u>1 010-111ass ellerg</u>	y generation
4	conversion schem	ave energy conversion machines - O		ergy
5	Know the need of	bybrid energy systems such as geoth	armal and fuel ca	110
5	Study the impact	fuerious repeatelle energy systems	en anvironment	115
7	Arrange storage of	norgy and to avoid the anyironmental	nellution	
/	Arrange storage e	nergy and to avoid the environmental	ponution	
<u> </u>	Detect the environ	Subject Name (Subject Code)	I. 4 T. 0 D.	Care dittant 4
Course	Year / semester	HVDC Transmission (A943113)	L: 4 1: 0 P:	Creans: 4
After the completion	I/I Sem n of this course the student	s should be able to	0 10tal: 4	
1	Study the basic po	ower handling capabilities of HVDC	lines	
2	Explore various	configurations and conversion	principles of s	static power
_	converters	comigurations and conversion	principies of s	power
3	Learn the rectifi	er and inverter operations, comm	itation process	at converter
C	stations.		Process .	
4	Apply AC/DC filt	ters for harmonic elimination in HVD	C link	
5	Explore various c	ontrols adapted in HVDC converters		
6	Identify various in	nstability problems in HV AC and DC	² system	
7	Study various over	er voltage problems in multi-terminal	DC system	
8	Comprehend vari	ous converter faults and protection cit	rcuits.	
Course	Vear / semester	Subject Name (Subject Code)	L: 4 T: 0 P: 0	Credits: 4
Outcome	I/I Sem	Analysis of Power Electronic	Total: 4	creation 1
		Converters (A943114)		
After the completio	n of this course, the student	s should be able to		-
1	Understand the	characteristics and principle of o	peration of mo	dern power
	semiconductor de	vices.		



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2	Comprehend the c	oncepts of different power converter	s and their	applica	tions
3	Describe the impo	ortance of AC voltage controllers and	ł cyclo-co	nverters	s for various
	industrial applicat	ions			
4	Analyze and desig	n switched mode power electronic co	onverters f	or varic	ous
	industrial applicat	ions			
5	Analyze pulse wid	th modulated inverters which are use	ed in varial	ble spee	ed drives
6	Choose appropriat	e device for a particular converter to	pology.		
7	Use power electr	conic simulation packages for ana	lyzing and	l desig	ning power
	converters.	i c		U	01
8	Choose appropria	te power converter topologies and	design the	power	stage and
	feedback controlle	ers for various applications	U	1	C
Course	Year / semester	Subject Name (Subject Code)	L: 4 T: 0	P: 0	Credits: 4
Outcome	I/I Sem	Embedded Systems (A943115)	Total: 4		
After the completio	n of this course, the student	s should be able to			
1	Understand the ba	sics of an embedded system			
2	Explore various is	sues in embedded software developn	nent and ap	oplicatio	ons
3	Learn the method	of designing an embedded system for	r any type	of appl	ications
4	Understand the op	erating systems concepts, types and	choosing R	RTOS	
5	Design, implemen	t and test an embedded system			
6	Understand types	of memory and interacting to externa	l world		
7	Learn embedded f	irmware design approaches			
8	Use ICE and softw	vare tools to address the issues in em	bedded sys	stems	
Course	Year / semester	Subject Name (Subject Code)	L: 0 T: 0	P: 4	Credits:4
Outcome	I/I Sem	Power Converters Simulation Lab	Total:4		
		(A943116)			
After the completio	n of this course, the student	s should be able to	a of loadin	~	
1	Able to simulate 1	an converter circuits for various type	dunamia	in state	
2	Acquire programm	ning knowledge to study the systems	aynamics	in state	space
2	Able to access the	frequency response of the system			
3	Able to assess the	n stability and DID controller applies	tion for at	a dru ata	to avatam
4	Analyse the system	in stability and PID controller applica	tion for ste	eady sta	ite system
Course	Vegn / gemester	Subject Name (Subject Code)	Ι.Ο.Τ.Ο	D. 4	Credita.1
Course	I ear / semester	Seminar-I (A943117)	L: U I: U Totol: 4	<b>r: 4</b>	Creans:4
Course	1/1 Selli Voor/Somostor	Subject Name (Subject Code)	10181.4	1.47	
Outcome	I cal/Semester	Power Electronic Converters (A943	201)	L; 4 1	
After the completio			/		
	n of this course the student	s should be able to		•	
1	n of this course, the student	s should be able to	S.	-	
$\frac{1}{2}$	n of this course, the student Understand various Explore various ac	s should be able to a advanced power electronics device dvanced modulation techniques and it	s. ts applicati	ions	
$\frac{1}{2}$	n of this course, the student Understand variou Explore various ac Describe the oper	s should be able to a advanced power electronics device avanced modulation techniques and it ration of multi-level inverters with	s. ts applicati	ions	ies for high
	n of this course, the student Understand variou Explore various ac Describe the oper power application	s should be able to as advanced power electronics device dvanced modulation techniques and i ration of multi-level inverters with	s. ts applicati switching	ions strateg	ies for high
1 2 3 4	n of this course, the student Understand variou Explore various ac Describe the oper power application	s should be able to a advanced power electronics device dvanced modulation techniques and i ration of multi-level inverters with s.	s. ts applicati switching tched mod	ions strateg	ies for high
$ \begin{array}{r} 1\\ 2\\ 3\\ \hline 4\\ \hline 5\\ \hline \end{array} $	n of this course, the student Understand variou Explore various ac Describe the oper power application Comprehend the d	s should be able to s advanced power electronics device dvanced modulation techniques and i ration of multi-level inverters with s. lesign of resonant converters and swi	s. ts applicati switching tched mod	ions strateg e powe	ies for high r supplies.
$ \begin{array}{r} 1\\ 2\\ 3\\ \hline 4\\ \hline 5\\ \hline 6\\ \hline \end{array} $	n of this course, the student Understand variou Explore various ac Describe the oper power application Comprehend the d Gain knowledge o Develop and analy	s should be able to a advanced power electronics device dvanced modulation techniques and i ration of multi-level inverters with s. lesign of resonant converters and swi n various topologies converter circui	s. ts applicati switching tched mod ts	ions strateg e powe	ies for high r supplies.
$     \begin{array}{r}       1 \\       2 \\       3 \\       4 \\       5 \\       6 \\       7 \\       7       \end{array} $	n of this course, the student Understand variou Explore various ac Describe the oper power application Comprehend the d Gain knowledge o Develop and analy	s should be able to s should be able to dvanced modulation techniques and i ration of multi-level inverters with s. lesign of resonant converters and swi n various topologies converter circui vze various converter topologies.	s. ts applicati switching tched mod ts	ions strateg e powe	ies for high r supplies.
$     \begin{array}{r}       1 \\       2 \\       3 \\       4 \\       5 \\       6 \\       7 \\       8 \\       8       \end{array} $	n of this course, the student Understand variou Explore various ac Describe the oper power application Comprehend the d Gain knowledge o Develop and analy Design AC or DC	s should be able to s should be able to lis advanced power electronics device dvanced modulation techniques and i ration of multi-level inverters with s. lesign of resonant converters and swi n various topologies converter circui //ze various converter topologies. switched mode power supplies.	s. ts applicati switching tched mod ts	ions strateg e powe	ies for high r supplies.



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Course	Year / semester	Subject Name (Subject Code)	L: 4 T: 0 P: 0 C:
Outcome	I/II Sem	Power Electronic Control of DC Drives	4
		(A943202)	
After the completio	n of this course, the student	s should be able to	
l	Learn basic prelin	ninary requirements for operating DC drives	
2	Explore various re	ectifier fed DC drives	
3	Study the continue	ous and discontinuous modes of operation of s	ingle phase semi
	and full converter	for DC drives	
4	Study the continue	ous and discontinuous modes of operation of the	nree phase semi and
	full converter for	DC drives	
5	Perform steady sta	ate analysis of three phase converter controlled	DC motor drive
6	Explore various cu	urrent and speed controllers	
7	Perform steady sta	ate analysis of chopper controlled DC motor dri	ive
8	Simulate the dyna	mics of speed controlled DC motor drives	
Course	Year / semester	Subject Name (Subject Code)	L: 4 T: 0 P: 0 C:
Outcome	I/II Sem	Power Electronic Control of AC Drives	4
		(A943203)	
After the completio	I earn the speed to	s should be able to	la fraquancy
1	operation	rque enaracterístics variable voltage and variat	ne nequency
2	Study the operation	an of induction motor in constant torque and fie	ld weakening
2	regions	in or induction motor in constant torque and ne	ia weakening
3	Understand the sta	ator side controls employed for induction drives	0
	Employ speed and	I flux control in current fed inverter drive	, 
5	Employ speed and Evaluate the effici	ency of the drive by applying optimization con	otrol
6	Study the principle	es of vector control methods in rotor of induction	on drives
7	Implement variou	s speed control schemes in synchronous motor	drives
8	Study the characte	ristics, and control of variable reluctance moto	r drive
Course	Voor / somostor	Subject Name (Subject Code)	
Outcomo	I cal / semester	Power Quality (A943204)	
After the completio	n of this course. the student	s should be able to	-
1	Know the differen	t terms and concepts of electric power quality i	in power systems.
2	Learn about the at	oplications of non-linear load.	
3	Identify and study	the difference between system failures, outage	e and interruptions
4	Predict various sh	ort and long interruptions	
5	Characterize and	calculate the magnitude the single and three pl	nases Voltage sag in
_	the system		88
6	Learn how to miti	gate the power quality problems	
7	Learn about the ar	oplication of FACTS device on DG side.	
8	Know the differen	t characteristics of electric power quality in po	wer systems.
Course	Year / semester	Subject Name (Subject Code)	L: 3 T: 0 P: 0
Outcome	I/II Sem	Advanced Digital Signal Processing	C:3
_		(A943205)	
After the completio	n of this course, the student	s should be able to	1 1
1	Provide fundamen	tal knowledge of analysing and processing of c	ligital systems
2	Study the relations	ship between continuous time and discrete time	signals and
	systems		



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3	Study the fundame	entals of time, frequency and Z-Plane analysis	and their
	interrelationships.		
4	Study and design	digital filters form analysis to synthesis	
5	Explore few real v	vorld signal processing applications	
6	Get acquainted wi	th FFT algorithms, multi-rate signal processing	techniques.
Course	Year / semester	Subject Name (Subject Code)	L: 3 T: 0 P: 0 C:
Outcome	I/II Sem	Switched Mode Power Supplies (SMPS)	3
		(A943206)	
After the completio	h of this course, the student	s should be able to	ortora
1	Explore various d	oncepts of power electronics for designing conv	
2	Explore various of	esign considerations.	
3	Explore various co	mont practical airquits for LIDS_SMDS	
4	Understand the of	fact of Electromognetic interference (EMI)	
5	Understand the en	rieus motortion agnetic fan the agruenters	
0	Understand the va	FIGUS PROTECTION ASPECTS FOR THE CONVERTERS.	
Course	Year / semester	Flexible AC Transmission Systems	
Outcome	1/11 Sem	(A943207)	3
After the completio	n of this course, the student	s should be able to	
1	Know the concept	s and types of FACTS controllers	
2	Learn various con	verters employed for FACTS controllers	
3	Study the impact of	of FACTS devices in the power flow in the AC	system
4	Learn various shu	nt compensation using SVC and STATCOM	
5	Learn various seri	es compensators such as TCSC, TSSC	
6	Explore the conce	pt of UPFC and its application.	
Course	Year / semester	Subject Name (Subject Code)	L: 3 T: 0 P: 0 C:
Outcome	I/II Sem	High-Frequency Magnetic Components	3
		(A943208)	
1	Learn the fundame	entals of magnetic devices	
2	Evalore the prope	rties of magnetic core materials	
3	Study the various	effects that exists the round conductor carrying	AC currents
<u> </u>	Evaluate the energy	y stored in coupled inductors of transformers	
5	Design of transfor	mers for fly-back converters in CCM	
6	Design the integra	ted inductors and self capacitance for high freq	uency applications
Course	Vear / semester	Subject Name (Subject Code)	
Outcome	I/II Sem	Dynamics of Electrical Machines (A943209)	3
After the completio	n of this course, the student	s should be able to	•
1	Basics of machine	e theory of all types of machines	
2	Learn generalized	modeling of all electrical machines	
3	Apply of Lagrange	e's equation solution of Electro dynamical equa	tions.
4	Understand the	basic mathematical analysis of electrical	machines and its
	characteristics.		
5	Understand behav	ior of electrical machines under steady state and	d transient state.
6	Understand dynam	nic modeling of electrical machines	
Course	Year / semester	Subject Name (Subject Code)	L: 3 T: 0 P: 0 C:
Outcome	I/II Sem	Instrumentation & Control (A943210)	3



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After the completio	n of this course, the student	s should be able to	
1	Survey various me	ethods of power generation	
2	Understand the im	portance of instrumentation in power generatio	n
3	Explore various m	easuring and supervising systems involved in t	hermal power plant
	processes such as	boiler and turbine units	
4	Understand variou	is controls employed in boiler	
5	Explore the tempe	rature and pressure controls in turbine	
6	Study the nuclear	power plant instrumentation	
Course	Year / semester	Subject Name (Subject Code)	L: 3 T: 0 P: 0 C:
Outcome	I/II Sem	Intelligent Control (A943211)	3
After the completio	n of this course, the student	s should be able to	
1	Learn the architec	ture of Intelligent control	
2	Learn the basic art	tificial neural network and its mathematical mo	del
3	Train and test the	neural network with various configurations.	
4	Apply genetic algo	orithm for various optimisation problems	
5	Model and control	l different system with fuzzy logic controller	
6	Explore various po	ower system problem and apply GA, NN and F	uzzy controller
Course	Year / semester	Subject Name (Subject Code)	L: 3 T: 0 P: 0 C:
Outcome	I/II Sem	Smart grid technologies (A943212)	3
After the completio	n of this course, the student	s should be able to	
1	Recite the structur conditions.	re of an electricity market in either regulated or	deregulated market
2	Understand the a	dvantages of DC distribution and developing	ng technologies in
	distribution		0 0
3	Discriminate the	trade-off between economics and reliability o	f an electric power
	system.		1
4	Differentiate varie	ous investment options (e.g. generation capac	tities, transmission,
	renewable, deman	d-side resources, etc) in electricity markets.	
5	Analyze the devel	opment of smart and intelligent domestic system	ns.
6	Recite the structur	e of an electricity market in either regulated or	deregulated market
	conditions.	·	0
Course	Year / semester	Subject Name (Subject Code)	L: 3 T: 0 P: 0 C:
Outcome	I/II Sem	AI Techniques in Electrical Engineering	3
		(A943213)	
After the completio	n of this course, the student	s should be able to	1 4 1
1	Gain knowledge o	in soft computing techniques such as artificial n	eural networks,
	Fuzzy logic and ge	enetic Algorithms.	1 / 1
2	Learn the concept	s of feed forward neural networks and feedback	neural networks.
3	Get the concept of	tuzziness involved in various systems and con	prehensive
-	knowledge of fuzz	y logic control and to design the fuzzy rules	
4	Acquire complete	knowledge on genetic algorithm including thr	ee genetic
	operators		<b>.</b>
5	Explore various po	ower system problems which can utilize these A	AI techniques
6	Assess system stal	bility using AI techniques	
Course	Year / semester	Subject Name (Subject Code) Doliobility Engineering (A042214)	L: 3 T: 0 P: 0 C:
Outcome	I/II Sem	Kenaulity Engliceting (A945214)	3
After the completio	n of this course, the student	s should be able to	



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1	To identify the gen	neration system model and recursive relation fo	or capacitive model
	building		
2	calculate the equiv	valent transitional rates, cumulative probability	and cumulative
	frequency		
3	Evaluate cumulat	ive probability and cumulative frequency of no	n-identical
	generating units an	nd merging generation and load	
4	Distinguish variou	is approaches to evaluate operating reserves and	d bulk power
	generation reserve		-
5	Analyse the reliab	ility indices on radial and weakly meshed distri	bution networks
6	Study the effect of	f short circuits in substation and switching station	ons.
Course	Year / semester	Subject Name (Subject Code)	L: 3 T: 0 P: 0 C:
Outcome	I/II Sem	Energy Auditing, Conservation &	3
		Management (A943215)	
After the completio	n of this course, the student	s should be able to	
1	Know the necessit	y of conservation of energy	
2	Generalize the me	thods of energy management	
3	Illustrate the facto	rs to increase the efficiency of electrical equipr	nent
4	Detect the benefits	s of carrying out energy audits.	
5	Analyze the powe	r factor and to design a good illumination syste	m
6	Determine pay bac	ck periods for energy saving equipment.	1
Course	Year / semester	Subject Name (Subject Code)	L: 0 T: 0 P: 4 C:
Outcome	I/II Sem	Power Converters and Drives Lab	2
After the completio	n of this source, the student	(A943210)	
1	I earn basic sneed	measurement and implement closed loop contr	rol in PMDC motor
2	Experience the im	proved control of thyristor drive for PMDC mo	tor over
2	conventional cont	rol	
3	Learn to generate	PWM signals using DSP	
3	Evalore the invert	ar controls for solar DV systems	
4 Course	Voor / comostor	Subject Name (Subject Code)	Ι. Ο.Τ. Ο.Ρ. /
Outcome	I ear / semester	Seminar-II (A943217)	$\begin{array}{c} \mathbf{L}: \mathbf{U} \mathbf{I}: \mathbf{U} \mathbf{\Gamma}: 4 \\ \mathbf{C} \cdot 2 \end{array}$
Course	1/11 Selli	Subject Name (Subject Code)	
Course	i ear / semester	Comprehensive Viva-Voce (A943301)	
Outcome	11/1 Sem		U:4

#### COURSE OUTCOMES FOR B.TECH-CSE R20 FOR THE YEAR 2020-2021

				Cuadita 1
Course	Year/Semester	Subject Name (Subject Code)	No. of Hours	Creans: 4
Outcome	I Sem	LINEAR ALGEBRA AND CALCULUS	L:3 T:1 P:0	
		(B20MA01)		
On successf	ul completion of th	is course, students will be able to:		
1	Understand the prin using multiple met	nciples of matrix to calculate the characteristics hods.	s of system of linea	ar equations
2	Determine Eigen va	alues, Eigenvectors of matrices.		
3	Analyse the nature	of sequence and series to identify the converge	ence.	
4	Evaluate limits of s integrals using Beta	ingle-variable functions graphically and compute and Gamma functions.	utationally. Analys	se improper
5	Calculate Partial de	rivatives, extreme of functions of multiple vari	iables.	
Course	Year /Semester	Subject Name (Subject Code)	No. of Hours L:3 T:0 P:0	Credits:3
Outcome	I Sem	MODERN PHYSICS (B20PH01)		
On success	sful completion of	f this course, students are able to:		
1	Understands the ba	sic concepts and hypothesis of quantum mecha	nics	
2	Describes the chara	cteristics and working of lasers and their use in	various fields.	
3	Analyze and apply	the concepts of wave optics for accurate determined	nination of theinte	erference in
	thin films, Newton	's rings and the diffraction in single slit etc.		
4	Classify the materi	als on the basis of energy band gap, and evaluate	uates the carrierco	oncentration of
	given semiconduct	ors for device applications		
5	Apply the concepts	of the light propagation in optical fibres in opt	icalcommunicatio	n systems
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:3
Outcome	I Som	BASIC ELECTRICAL AND ELECTRONICS	I.3 T.0 P.0	Creation
Outcome	1 Sem	ENGINEERING(B20EE01)	L.5 1.01.0	
After the o	completion of this o	course, the students should be able to		
1	Analyze circuit the	orems, mesh and nodal analysis, series and par	allel networks, Ele	ectricalpower.
2	Gain knowledge on Factor	AC circuits, reactance, Impedance, Susceptance	ce and Admittance	andPower
3	Learn the working	principle of DC motors. Transformers		
4	Study the character	istics of PN Junction diode and zener diode		
5	Learn the basic of A	Amplifiers and Rectifiers.		
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits: 4
Outcome	I Sem	PROGRAMMING FOR PROBLEM	L:4 T:0 P:0	
After the c	completion of this a	course, the students should be able to		
1	Understanding how	y problems are posed and how they can be analy	zed for obtaining	solutions.
2	Learning of sequen	cing, branching, looping and decision making	statements tosolve	scientific and
-	engineering proble	ms.		
3	Implementing diffe	rent operations on arrays and creating and usin	g of functionsto so	olve problems
4	Understanding and	exploring the various methods of memory allo	cations.	
5	Ability to design an	bility to design and implement different types of file structures using standardmethodology.		

Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits: 2
Outcome	I Sem	ENGINEERING DRAWING (B20ME01)	L:0 T:0 P:4	
After the o	completion of this c	ourse, the students should be able to		
1	Understand various	commands, modify the applications and object	properties in AU	TOCAD
2	Analyse the Project	ions of Points and solids		
3	Estimate the use of	drawings, dimensioning, scales and conic secti	ons	
4	Compare the Conve	ersion of Isometric views to Orthographic view		
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:
Outcome	I Sem	PHYSICS LAB (B20PH05)	L:0 T:0 P:3	1.5
After the c	completion of this c	ourse, the students should be able to		
1	Estimate the freque	ncy of tuning for and AC supply with the help	of stretched string	s
2	Analyze as well a	s compare the intensity distribution of interfe	erence and diffra	ction patterns
3	Draw the character parameter	istics of electrical and electronic circuits and e	valuate the depen	dent
4	Explore and unders	tand the applications of semiconducting device	s	
5	Evaluates the wave	elength and radius of curvature of Plano con-	vex lens by Newt	ton's rings
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:1.5
Outcome	I Sem	PROGRAMMING FOR PROBLEM	L:0 T:0 P:3	
		SOLVING LAB(B20CS02)		
After the c	completion of this c	ourse, the students should be able to		
1	Understand basic st	ructure of the C Programming, data types, decl	laration and usage	of variables,
	control structures a	nd all related concepts.		
2	Ability to understar	nd any algorithm and Write the C programming	code in executab	le form
3	Implement Progran	is using functions, pointers and arrays, and use	the pre-processors	s to solvereal
1	time problems	matures and implement and shows on files		
4	Adding to use the s	fuctures and implement programs on mes.		
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits: 4
		U V U /		
Outcome	II Sem	DIFFERENTIAL EQUATIONS AND VECTOR CALCULUS(B20MA02)	L:3 T:1 P:0	
Outcome After the c	II Sem	DIFFERENTIAL EQUATIONS AND VECTOR CALCULUS(B20MA02) ourse, the students should be able to	L:3 T:1 P:0	
Outcome After the o	II Sem completion of this of Apply the fundame	DIFFERENTIAL EQUATIONS AND VECTOR CALCULUS(B20MA02) ourse, the students should be able to ntal concepts of ordinary differential equations :	L:3 T:1 P:0	ems
Outcome After the o 1 2	<b>II Sem</b> completion of this of Apply the fundame Find the complete s	DIFFERENTIAL EQUATIONS AND VECTOR CALCULUS(B20MA02) ourse, the students should be able to ntal concepts of ordinary differential equations solution of a non homogeneous differential equ	L:3 T:1 P:0 to real time proble ations and applyir	ems ng its concepts
Outcome After the o 1 2	<b>II Sem</b> completion of this of Apply the fundame Find the complete s inEngineering prob	DIFFERENTIAL EQUATIONS AND VECTOR CALCULUS(B20MA02) ourse, the students should be able to ntal concepts of ordinary differential equations solution of a non homogeneous differential equalems	L:3 T:1 P:0 to real time proble ations and applyir	ems ng its concepts
Outcome After the c 1 2 3	II Sem completion of this of Apply the fundame Find the complete s inEngineering prob Evaluate the multip	DIFFERENTIAL EQUATIONS AND VECTOR CALCULUS(B20MA02) ourse, the students should be able to ntal concepts of ordinary differential equations solution of a non homogeneous differential equ lems le integrals in various coordinate systems.	L:3 T:1 P:0 to real time proble ations and applyin	ems ng its concepts
Outcome After the c 1 2 3 4	II Sem completion of this of Apply the fundame Find the complete s inEngineering prob Evaluate the multip Apply the concepts	DIFFERENTIAL EQUATIONS AND VECTOR CALCULUS(B20MA02) ourse, the students should be able to ntal concepts of ordinary differential equations solution of a non homogeneous differential equ lems le integrals in various coordinate systems. of gradient, divergence and curl to formulate E	L:3 T:1 P:0 to real time proble ations and applyin	ems ng its concepts em
Outcome After the o 1 2 3 4 5	II Sem completion of this of Apply the fundame Find the complete s inEngineering prob Evaluate the multip Apply the concepts Analyse line, surfac	DIFFERENTIAL EQUATIONS AND VECTOR CALCULUS(B20MA02) ourse, the students should be able to ntal concepts of ordinary differential equations solution of a non homogeneous differential equ lems le integrals in various coordinate systems. of gradient, divergence and curl to formulate E ce and volume integrals using fundamental theo	L:3 T:1 P:0 to real time proble ations and applyin Engineering proble rems.	ems ng its concepts em
Outcome After the c 1 2 3 4 5 Course	II Sem completion of this of Apply the fundame Find the complete s inEngineering prob Evaluate the multip Apply the concepts Analyse line, surface Year / semester	DIFFERENTIAL EQUATIONS AND VECTOR CALCULUS(B20MA02) ourse, the students should be able to ntal concepts of ordinary differential equations solution of a non homogeneous differential equ lems le integrals in various coordinate systems. of gradient, divergence and curl to formulate E ce and volume integrals using fundamental theo Subject Name (Subject Code)	L:3 T:1 P:0 to real time proble ations and applyin Engineering proble rems. No. of Hours	ems ng its concepts em Credits: 3
Outcome After the o 1 2 3 4 5 Course Outcome	II Sem completion of this of Apply the fundame Find the complete s inEngineering prob Evaluate the multip Apply the concepts Analyse line, surfac Year / semester II Sem	DIFFERENTIAL EQUATIONS AND VECTOR CALCULUS (B20MA02) ourse, the students should be able to ntal concepts of ordinary differential equations solution of a non homogeneous differential equalems le integrals in various coordinate systems. of gradient, divergence and curl to formulate E ee and volume integrals using fundamental theo Subject Name (Subject Code) MODERN CHEMISTRY	L:3 T:1 P:0 to real time proble ations and applyin Engineering proble rems. No. of Hours L:3 T:0 P:0	ems ng its concepts em Credits: 3
Outcome After the o 1 2 3 4 5 Course Outcome	II Sem completion of this of Apply the fundame Find the complete s inEngineering prob Evaluate the multip Apply the concepts Analyse line, surface Year / semester II Sem	DIFFERENTIAL EQUATIONS AND VECTOR CALCULUS(B20MA02) ourse, the students should be able to ntal concepts of ordinary differential equations solution of a non homogeneous differential equ lems le integrals in various coordinate systems. of gradient, divergence and curl to formulate E ee and volume integrals using fundamental theo Subject Name (Subject Code) MODERN CHEMISTRY (B20CH04)	L:3 T:1 P:0 to real time proble ations and applyin Engineering proble rems. No. of Hours L:3 T:0 P:0	ems ng its concepts em Credits: 3
Outcome After the o  3 4 5 Course Outcome After the o	II Sem completion of this of Apply the fundame Find the complete s inEngineering prob Evaluate the multip Apply the concepts Analyse line, surfac Year / semester II Sem	DIFFERENTIAL EQUATIONS AND VECTOR CALCULUS (B20MA02) ourse, the students should be able to ntal concepts of ordinary differential equations solution of a non homogeneous differential equalems le integrals in various coordinate systems. of gradient, divergence and curl to formulate E ce and volume integrals using fundamental theo Subject Name (Subject Code) MODERN CHEMISTRY (B20CH04) ourse, the students should be able to	L:3 T:1 P:0 to real time proble ations and applyin Engineering proble rems. No. of Hours L:3 T:0 P:0	ems ng its concepts em Credits: 3
Outcome     After the o     1     2     3     4     5     Course     Outcome     After the o     1	II Sem completion of this of Apply the fundame Find the complete s inEngineering prob Evaluate the multip Apply the concepts Analyse line, surface Year / semester II Sem completion of this of The knowledge of e	DIFFERENTIAL EQUATIONS AND VECTOR CALCULUS(B20MA02) ourse, the students should be able to ntal concepts of ordinary differential equations solution of a non homogeneous differential equ lems le integrals in various coordinate systems. of gradient, divergence and curl to formulate E ee and volume integrals using fundamental theo Subject Name (Subject Code) MODERN CHEMISTRY (B20CH04) ourse, the students should be able to electro chemical cells, different batteries	L:3 T:1 P:0 to real time proble ations and applyin Engineering proble rems. No. of Hours L:3 T:0 P:0	ems ng its concepts em Credits: 3
Outcome     After the or     1     2     3     4     5     Course     Outcome     After the or     1     2	II Sem completion of this of Apply the fundame Find the complete s inEngineering prob Evaluate the multip Apply the concepts Analyse line, surface Year / semester II Sem completion of this of The knowledge of p	DIFFERENTIAL EQUATIONS AND VECTOR CALCULUS(B20MA02) ourse, the students should be able to ntal concepts of ordinary differential equations solution of a non homogeneous differential equ lems le integrals in various coordinate systems. of gradient, divergence and curl to formulate E ee and volume integrals using fundamental theo Subject Name (Subject Code) MODERN CHEMISTRY (B20CH04) ourse, the students should be able to electro chemical cells, different batteries principles and concepts in corrosion & it's cont	L:3 T:1 P:0 to real time proble ations and applyin Engineering proble rems. No. of Hours L:3 T:0 P:0	ems ng its concepts em Credits: 3
OutcomeAfter the o12345CourseOutcomeAfter the o123	II Sem completion of this of Apply the fundame Find the complete s inEngineering prob Evaluate the multip Apply the concepts Analyse line, surface Year / semester II Sem completion of this of The knowledge of p The knowledge of p	DIFFERENTIAL EQUATIONS AND VECTOR CALCULUS (B20MA02) ourse, the students should be able to ntal concepts of ordinary differential equations solution of a non homogeneous differential equalems le integrals in various coordinate systems. of gradient, divergence and curl to formulate E ce and volume integrals using fundamental theo Subject Name (Subject Code) MODERN CHEMISTRY (B20CH04) ourse, the students should be able to electro chemical cells, different batteries principles and concepts in corrosion & it's cont Water treatment.	L:3 T:1 P:0 to real time proble ations and applyin Engineering proble rems. No. of Hours L:3 T:0 P:0	ems ng its concepts em Credits: 3
Outcome         After the o         1         2         3         4         5         Course         Outcome         After the o         1         2         3         4         5         Course         Outcome         3         4         3         4         3         4	II Sem completion of this of Apply the fundame Find the complete sinEngineering prob Evaluate the multip Apply the concepts Analyse line, surfact Year / semester II Sem completion of this of The knowledge of p The knowledge of p	DIFFERENTIAL EQUATIONS AND VECTOR CALCULUS(B20MA02) ourse, the students should be able to ntal concepts of ordinary differential equations solution of a non homogeneous differential equ lems le integrals in various coordinate systems. of gradient, divergence and curl to formulate E ee and volume integrals using fundamental theo Subject Name (Subject Code) MODERN CHEMISTRY (B20CH04) ourse, the students should be able to electro chemical cells, different batteries orinciples and concepts in corrosion & it's cont Water treatment. Amino acids, Proteins and Nucleic acids	L:3 T:1 P:0 to real time proble ations and applyin Engineering proble rems. No. of Hours L:3 T:0 P:0	ems ng its concepts em Credits: 3

Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits: 4
Outcome	II Sem	DATA STRUCTURES AND ALGORITHMS(B20CS04)	L:4 T:0 P:0	
After the o	completion of this c	course, the students should be able to		
1	Define the basic tec	chniques of algorithm analysis		
2	Examine the linear	and non linear data structures.		
3	Develop Priority Q	ueues and Balanced Trees		
4	Understand Hashin	g Techniques and Graph applications		
5	Apply suitable algo	rithms for sorting Technique		
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:4
Outcome	II Sem	PYTHON PROGRAMMING(B20CS03)	L:4 T:0 P:0	
After the c	completion of this c	course, the students should be able to		1
1	Defining the funda	mentals of writing Python scripts.		
2	Europeanin a tha Car	- Dethon conjusting a lamonta angle ag upricklag	n d florr control at	
Z	Expressing the Cor	e Python scripting elements such as variables a	nd flow control st	ructures.
3	Apply Python funct	ions to facilitate code reuse.		
4	Extending how to v	vork with lists and sequence data.		
5	Implement file oper	ations such as read and write and Adapting the	code robust byha	ndling errors
	and exceptions prop	perly.		
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:1.5
Outcome	II Sem	DATA STRUCTURES AND ALGORITHMS LAB(B20CS08)	L:0 T:0 P:3	
After the o	completion of this c	course, the students should be able to		<u> </u>
1	Explaining the line	ar data structures such as List, Stack, Queue and	d its applications	
2	Implement non-line	ear data structure such as Trees, Graphs and its	applications	
3	Apply suitable algo	rithms for sorting Techniques		
	-rr-j ~	riting rechniques		
4	Choose appropriate	algorithm for Searching and Hashing		
4 Course	Choose appropriate Year / semester	algorithm for Searching and Hashing Subject Name (Subject Code)	No. of Hours	Credits:1.5
4 Course Outcome	Choose appropriate Year / semester II Sem	algorithm for Searching and Hashing Subject Name (Subject Code) PYTHON PROGRAMMING	No. of Hours L:0 T:0 P:3	Credits:1.5
4 Course Outcome	Choose appropriate Year / semester II Sem	algorithm for Searching and Hashing Subject Name (Subject Code) PYTHON PROGRAMMING LAB(B20CS07)	No. of Hours L:0 T:0 P:3	Credits:1.5
4 Course Outcome After the c	Choose appropriate Year / semester II Sem	algorithm for Searching and Hashing Subject Name (Subject Code) PYTHON PROGRAMMING LAB(B20CS07) course, the students should be able to Prtham parinting algorithm and parameters and parameters.	No. of Hours L:0 T:0 P:3	Credits:1.5
4 Course Outcome After the c 1	Choose appropriate Year / semester II Sem completion of this of Expressing the Cor	algorithm for Searching and Hashing         Subject Name (Subject Code)         PYTHON PROGRAMMING         LAB(B20CS07)         course, the students should be able to         e Python scripting elements such as variables a	No. of Hours L:0 T:0 P:3 nd flow control st	Credits:1.5
4 Course Outcome After the c 1 2 3	Choose appropriate Year / semester II Sem completion of this of Expressing the Cor Apply Python funct	algorithm for Searching and Hashing         Subject Name (Subject Code)         PYTHON PROGRAMMING         LAB(B20CS07)         course, the students should be able to         e Python scripting elements such as variables a         ions to facilitate code reuse         work with lists and sequence data	No. of Hours L:0 T:0 P:3 nd flow control st	Credits:1.5
4 Course Outcome After the c 1 2 3 4	Choose appropriate Year / semester II Sem completion of this of Expressing the Cor Apply Python funct Extending how to v Implement file one	algorithm for Searching and Hashing Subject Name (Subject Code) PYTHON PROGRAMMING LAB(B20CS07) Course, the students should be able to e Python scripting elements such as variables a cions to facilitate code reuse work with lists and sequence data. rations such as read and write and Adapting the	No. of Hours L:0 T:0 P:3 nd flow control st	Credits:1.5
4 Course Outcome After the c 1 2 3 4	Choose appropriate Year / semester II Sem completion of this of Expressing the Cor Apply Python funct Extending how to Implement file ope and exceptions pro-	algorithm for Searching and Hashing         Subject Name (Subject Code)         PYTHON PROGRAMMING         LAB(B20CS07)         course, the students should be able to         e Python scripting elements such as variables a         tions to facilitate code reuse         work with lists and sequence data.         rations such as read and write and Adapting the perly	No. of Hours L:0 T:0 P:3 nd flow control st e code robust byha	Credits:1.5
4 Course Outcome After the c 1 2 3 4	Choose appropriate Year / semester II Sem completion of this of Expressing the Cor Apply Python funct Extending how to Implement file ope and exceptions prop	algorithm for Searching and Hashing         Subject Name (Subject Code)         PYTHON PROGRAMMING         LAB(B20CS07)         course, the students should be able to         e Python scripting elements such as variables a         ions to facilitate code reuse         work with lists and sequence data.         rrations such as read and write and Adapting the perly.         Schiptet Nerro (Schipter Code)	No. of Hours L:0 T:0 P:3 nd flow control st e code robust byha	Credits:1.5
4 Course Outcome After the c 1 2 3 4 Course	Choose appropriate Year / semester II Sem completion of this of Expressing the Cor Apply Python funct Extending how to Implement file ope and exceptions prop Year / semester	algorithm for Searching and Hashing         Subject Name (Subject Code)         PYTHON PROGRAMMING         LAB(B20CS07)         course, the students should be able to         e Python scripting elements such as variables a         ions to facilitate code reuse         work with lists and sequence data.         rations such as read and write and Adapting the         perly.         Subject Name (Subject Code)         ENGLISH LANGUAGE AND	No. of Hours L:0 T:0 P:3 Ind flow control st e code robust byha	Credits:1.5 ructures. andling errors Credits: 1.5
4 Course Outcome After the c 1 2 3 4 4 Course Outcome	Choose appropriate Year / semester II Sem completion of this of Expressing the Cor Apply Python funct Extending how to Implement file ope and exceptions prop Year / semester II Sem	algorithm for Searching and Hashing         Subject Name (Subject Code)         PYTHON PROGRAMMING         LAB(B20CS07)         course, the students should be able to         e Python scripting elements such as variables a         ions to facilitate code reuse         work with lists and sequence data.         rrations such as read and write and Adapting the         perly.         Subject Name (Subject Code)         ENGLISH LANGUAGE AND         INTERACTIVE COMMUNICATION         SKILLS LAB(B20EN02)	No. of Hours L:0 T:0 P:3 nd flow control st e code robust byha No. of Hours L:0 T:0 P:3	Credits:1.5 ructures. andling errors Credits: 1.5
4 Course Outcome After the c 1 2 3 4 Course Outcome After the c	Choose appropriate Year / semester II Sem completion of this of Expressing the Cor Apply Python funct Extending how to Implement file ope and exceptions prop Year / semester II Sem completion of this of	algorithm for Searching and Hashing         Subject Name (Subject Code)         PYTHON PROGRAMMING         LAB(B20CS07)         course, the students should be able to         e Python scripting elements such as variables a         cions to facilitate code reuse         work with lists and sequence data.         rations such as read and write and Adapting the         perly.         Subject Name (Subject Code)         ENGLISH LANGUAGE AND         INTERACTIVE COMMUNICATION         SKILLS LAB(B20EN02)         course, the students should be able to	No. of Hours L:0 T:0 P:3 and flow control st e code robust byha No. of Hours L:0 T:0 P:3	Credits:1.5 ructures. andling errors Credits: 1.5
4 Course Outcome After the c 1 2 3 4 Course Outcome After the c 1	Choose appropriate Year / semester II Sem completion of this of Expressing the Cor Apply Python funct Extending how to Implement file ope and exceptions prop Year / semester II Sem completion of this of Understand the nua	algorithm for Searching and Hashing Subject Name (Subject Code) PYTHON PROGRAMMING LAB(B20CS07) course, the students should be able to e Python scripting elements such as variables a ions to facilitate code reuse work with lists and sequence data. rrations such as read and write and Adapting the perly. Subject Name (Subject Code) ENGLISH LANGUAGE AND INTERACTIVE COMMUNICATION SKILLS LAB(B20EN02) course, the students should be able to nces of English language through audio-visual	No. of Hours L:0 T:0 P:3 nd flow control st e code robust byha No. of Hours L:0 T:0 P:3	Credits:1.5 ructures. andling errors Credits: 1.5
4CourseOutcomeAfter the c1234CourseOutcomeAfter the c12	Choose appropriate Year / semester II Sem completion of this of Expressing the Cor Apply Python funct Extending how to Implement file ope and exceptions prop Year / semester II Sem completion of this of Understand the nual Speak with clarity a	Subject Name (Subject Code)         PYTHON PROGRAMMING         LAB(B20CS07)         course, the students should be able to         e Python scripting elements such as variables a         cions to facilitate code reuse         work with lists and sequence data.         rations such as read and write and Adapting the         perly.         Subject Name (Subject Code)         ENGLISH LANGUAGE AND         INTERACTIVE COMMUNICATION         SKILLS LAB(B20EN02)         course, the students should be able to         ncces of English language through audio-visual         and confidence which in turn enhances their employed and set of the students in turn enhances their employed and set of the students in turn enhances their employed and confidence which in turn enhances their employed and set of the students in turn enhances their employed and confidence which in turn enhances th	No. of Hours L:0 T:0 P:3 and flow control st e code robust byha No. of Hours L:0 T:0 P:3 experience and gr poloyability skills.	Credits:1.5 ructures. andling errors Credits: 1.5 roupactivities.
4CourseOutcomeAfter the c1234CourseOutcomeAfter the c123	Choose appropriate Year / semester II Sem completion of this of Expressing the Cor Apply Python funct Extending how to Implement file ope and exceptions prop Year / semester II Sem completion of this of Understand the nua Speak with clarity a Develop their lister	algorithm for Searching and Hashing         Subject Name (Subject Code)         PYTHON PROGRAMMING         LAB(B20CS07)         course, the students should be able to         e Python scripting elements such as variables a         ions to facilitate code reuse         work with lists and sequence data.         rrations such as read and write and Adapting the         perly.         Subject Name (Subject Code)         ENGLISH LANGUAGE AND         INTERACTIVE COMMUNICATION         SKILLS LAB(B20EN02)         course, the students should be able to         Inces of English language through audio-visual         and confidence which in turn enhances their emaining skills so that they may appreciate its role in	No. of Hours L:0 T:0 P:3 nd flow control st e code robust byha No. of Hours L:0 T:0 P:3 experience and gr sployability skills. n developing LSR	Credits:1.5 ructures. andling errors Credits: 1.5 coupactivities. W skills
4CourseOutcomeAfter the c1234CourseOutcomeAfter the c123	Choose appropriate Year / semester II Sem completion of this of Expressing the Cor Apply Python funct Extending how to Implement file ope and exceptions prop Year / semester II Sem completion of this of Understand the nua Speak with clarity a Develop their lister language and impro-	Subject Name (Subject Code)         PYTHON PROGRAMMING         LAB(B20CS07)         course, the students should be able to         e Python scripting elements such as variables a         cions to facilitate code reuse         work with lists and sequence data.         rations such as read and write and Adapting the         perly.         Subject Name (Subject Code)         ENGLISH LANGUAGE AND         INTERACTIVE COMMUNICATION         SKILLS LAB(B20EN02)         course, the students should be able to         ncces of English language through audio-visual         and confidence which in turn enhances their em         and so that they may appreciate its role in         pove their pronunciation.	No. of Hours L:0 T:0 P:3 and flow control st e code robust byha No. of Hours L:0 T:0 P:3 experience and gr aployability skills. n developing LSR	Credits:1.5 ructures. andling errors Credits: 1.5 roupactivities. W skills

Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits: 1.5	
Outcome	II Sem	WORKSHOP LAB(B20ME03)	L:0 T:0 P:3		
After the o	completion of this o	course, the students should be able to			
1	1 Know the fundamental knowledge of House wiring and soldering and their usage in real time				
	Applications.				
2	Gain knowledge or	electronic components and measuring instrum	ents.		
3	Use basic concepts	of computer hardware for assembly and disasse	embly.		
4	Use Microsoft tool	s for exercise.			
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits: 3	
Outcome	III Sem	DESIGN AND ANALYSIS OF ALGORITHMS(B20CS10)	L:3 T:0 P:0		
After the o	completion of this o	course, the students should be able to			
1	Expose student's to	o few known methods of solution processes, bu	ild new solution a	lgorithms,	
	analyze the asympt	otic performance of algorithms and to write rig	orous correctness	proofs for	
	algorithms.				
2	Identify appropriate	e data structures and algorithm design methods	for specified class	ses of	
3	Applications,	boice of data structures and algorithm design m	othods would im	act the	
5	performance of pro	grams and how to compare them	ietilous would imp		
4	Design methods su	ch as the greedy method, divide and conquer, dy	vnamic programm	inα	
-	backtracking and branch and bound				
5	Perceive methods t	o deal with logarithmic type, polynomial type	and non-polynomi	al type of	
5	classes of problems	and Synthesis of efficient algorithms in comm	on engineering de	sign situations	
	would bediscussed		on engineering de	sign situations	
Course	Voor / comostor	Subject Name (Subject Code)	No of Hours	Credits: 3	
Outcome	III Sem	DIGITAL LOGIC DESIGN & MICRO	L:3 T:0 P:0	Creans. 5	
		FROCESSORS(B20EC09)		<u> </u>	
After the o	Completion of this (	course, the students should be able to	acia thaonama usir	a in Declaan	
1	algebra.	ic concepts of afferent Number systems and ba	asic theorems usir	ig in Boolean	
2	Design the logic cir	cuits using basic logic gates by reducing the Bo	oolean expression	s with thehelp	
	of Karnaugh Map.				
3	Analyze various ty	pes of combinational and sequential circuits.			
4	Analyze various ty	pes of sequential circuits.			
5	Understand the inte	ernal organization of popular8086 microprocess	sors		
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits: 3	
Outcome	III Sem	MATHEMATICAL FOUNDATIONS OF	L:3 T:0 P:0		
		COMPUTER SCIENCE(B20CS11)			
After the c	completion of this o	course, the students should be able to			
1	Evaluate the notion	s of propositions, predicate formulae, Rules of	inference.		
2	Illustrate and descr	ibe various types of Relations and Functions.			
3	Apply knowledge of	of Mathematics, Combinations & Permutations	, Binomial Multin	omial	
	theorems, Pigeon h	ole principles			
4	Develop to solve th	ne recurrence relations by using various method	S		
5	Perceive the basic concepts of graph theory and apply for real time examples.				

Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits: 3	
Outcome	III Sem	JAVA PROGRAMMING (B20CS12)	L:3 T:0 P:0		
After the o	completion of this o	course, the students should be able to			
1	Understand the use of OOP concepts and solve real world problems using OOP techniques.				
2	Solve the inter-disciplinary applications using the concept of inheritance.				
3	Develop robust and	l faster applications by applying different excep	tion handling me	chanisms.	
4	Understand the mu	ltithreading concepts and develop efficient appl	ications.		
5	Design GUI based	applications and develops applets for web appli	cations.		
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits: 2	
Outcome	III Sem	ENGLISH FOR EFFECTIVE	L:2 T:0 P:0		
		COMMUNICATIONS(B20EN01)			
After the o	completion of this of	course, the students should be able to			
	Skim and scan the o	digital text to summarize it for future reference.			
2	Read the text to ma	ke notes according to their needs.			
5		ige effectively in spoken and written forms.			
4	Communicate conf	idently in various contexts and different culture	s		
5	Acquire basic proficiency in English including reading and listening comprehension, writing and speaking skills.				
Course	Year/semester	Subject Name (Subject Code)	No. of Hours	Credits:1.5	
Outcome	III Sem	DIGITAL LOGIC DESIGN & MICRO	L:0 T:0 P:3		
	in bein	PROCESSORS LAB(B20EC10)			
After the o	completion of this o	course, the students should be able to	NOD YOD YA		
I	Demonstrate variou flops.	us types of logic gates (AND, OR, NOT, NANI	D, NOR, XOR,XN	(OR) and flip	
2	Analyze and design	a various types of combinational and sequential	circuits.		
3	Develop microproc	essor based programs for Arithmetic and Logic	al Operations		
4	Develop microproc	essor based programs for various problems.			
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits: 1.5	
Outcome	III Sem	DESIGN AND ANALYSIS OF	L:0 T:0 P:3		
		ALGORITHMS LAB(B20CS13)			
After the o	completion of this o	course, the students should be able to			
1	Ability to choose a	ppropriate algorithm design techniques for solv	ing problems.		
2	Design an algorithr	n in an effective manner			
3	Design and apply it	erative and recursive algorithms			
4	Ability to analyze t	he performance of algorithms.	ſ		
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:1.5	
Outcome	III Sem	JAVA PROGRAMMING LAB(B20CS14)	L:0 T:0 P:3		
After the o	completion of this o	course, the students should be able to			
1	Use the Java SDK o	environment to create, debug and run simple Ja	va programs.		
2	Write Java program	ns to implement error handling techniques using	g exception handl	ng	
3	Develop multithre	aded applications with synchronization.			
4	Design simple Graphical User Interface applications and event driven programming.				

Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:3
Outcome	IV Sem	OPERATING SYSTEMS (B20CS16)	L:3 T:0 P:0	
After the c	completion of this o	course, the students should be able to		
1	Compare various C	Derating Systems architectures, IO structures, N	Network Structure	
2	Analyze the virtual	memory, paging and memory allocation techni	ques for variousa	pplications
3	Apply Deadlock pr	evention and Deadlock Detection algorithms and	nd perceive the we	orking of an
	operating system as	s a File manager, I/O manager, Process manager	r.	
4	Understand the ove	erview of Disk Storage Structure.		
5	Analyze assess acc	ess controls to protect files.	Γ	
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits: 3
Outcome	IV Sem	FORMAL LANGUAGES AND AUTOMATA THEORY(B20CS17)	L:3 T:0 P:0	
After the c	completion of this o	course, the students should be able to		
1	Explain basic conc	epts in formal language theory, grammars, auto	mata theory(DFA	&NFA),
	computability theor	ry, and complexity theory.		
2	Know the production	on rules of regular expressions and grammars, i	ncluding context:	free and
	context: sensitive g	grammar		
3	Construct a pushdo	wn automata and context free, regular, normal	form grammars to	odesign
4	computer language	S		
4	Evaluate solution f	or various problems using a theoretical comput	er (Turing machir	ie)for a
5	computer language	abie among language alagaas and geometry wi	th the help of	
5	Explain the relation	ismp among language classes and grammars wi	lecidability	
C			N CII	<b>C 1</b> ¹ <b>1 2</b>
Course	Year / semester	Subject Name (Subject Code) COMPLITER ORGANIZATION &	No. of Hours	Credits:3
Outcome	IV Sem	ARCHITECTURE(B20CS18)	L:3 T:0 P:0	
After the c	completion of this o	course, the students should be able to		
1	Understand the stru	icture, function of various functional units of co	omputer.	
2	Understand the bas	ic design of Computer, and its organization		
3	Perceive control un	it operations and Micro Program example.		
4	Understand differe	ent computer arithmetic algorithms for various a	rithmetic operatio	n
5	Identity and compa	re different methods of input-output.		
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:3
Outcome	IV Sem	DATABASE MANAGEMENT	L:3 T:0 P:0	
After the c	ompletion of this a	provide the students should be able to		
1	Perceive the fundation	mental concepts of database management.		
2	Analyze database n	nodels & Entity Relationship models and to dra	w the E-R diagram	n forthe given
	case study.			
3	Apply relational Da	atabase Theory, and be able to write relational a	algebra expressior	s forqueries
4	Apply Normalizati	on Process to construct the database and explain	n Basic Issues of T	ransaction
	processing			
5	Compare the basic	Database storage structures and access techniqu	ies: File	
	Organizationindexing methods including B- Tree and Hashing			

Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:3
Outcome	IV Sem	PROBABILITY AND	L:3 T:0 P:3	
	-,	STATISTICS(B20MA07)		
After the c	completion of this of	course, the students should be able to		
1	Use probability theory and deals with modeling uncertainty in order to evaluateThe probability of real world events.			
2	Develop discrete pr data from Binomia	obability distributions and its applications, and land Poisson Distributions.	use the technique	s togenerate
3	Use the techniques	of continuous probability distributions to generative	ate data from Nor	mal
	Distributions.			
4	Perform correlatior	and regression analysis, in order to estimate the between two variables.	ne nature and these	trength of the
5	Construct confiden	ce interval to estimates population parameters t	o test the hypothes	sis.
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:1.5
Outcome	IV Sem	OPERATING SYSTEMS LAB(B20CS20)	L:0 T:0 P:3	
After the c	completion of this o	course, the students should be able to		
1	Apply CPU schedu	ling algorithms, Page replacement algorithms.		
2	Explain Bankers A	lgorithm for Dead Lock Avoidance & Dead Lo	ck Prevention	
3	Describe the conce	pts of paging and segmentation.		
4	Make use of Linux	commands		
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits: 1.5
Outcome	IV Sem	DATABASE MANAGEMENT SYSTEMS LAB(B20CS21)	L:0 T:0 P:3	
After the c	completion of this o	course, the students should be able to		
1	Design database sci	hema for given Application.		
2	Transform ER Mod	lel to Relational Model.		
3	Apply the normaliz	ation techniques for development of applicatio	n software to real	isticproblems.
4	Construct SQL que	ries to retrieve information from database		-
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:1.5
Outcome	IV Sem	WEB TECHNOLOGIES LAB(B20CS22)	L:0 T:0 P:3	
After the co	mpletion of this co	ourse, the students should be able to		
1	Design and implem	ent dynamic websites with good aesthetic sens	e of designing and	1 latest
	technical know-how	v's		
2	Understand, analyz	e and apply the role of languages like HTML, G	CSS, XML, JavaS	cript, PHPand
	protocols in the wo	rkings of the web and web applications		
3	Create dynamic we	b pages using JavaScript		
4	Build web applicati	ons using PHP		
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:3
Outcome	V Sem	SOFTWARE ENGINEERING(B20CS29)	L:3 T:0 P:0	
After the co	mpletion of this co	ourse, the students should be able to		I
1	- Define Software Er	ngineering and list core principles of software en	ngineering and un	derstand
-	various process mo	odels		
2	Develop an underst	anding of software requirements and be able to	prepare SRS docu	iment.
3	Understand softwar	re design engineering process using structural a	nd object oriented	approaches
1	and be able to mod	el	coord of cofference	davalanment
4	Apply the testing of	trategies on different level of implementation ()	init integration	)
5	Understand and ab	le to compute quality measures and develop a s	oftware quality as	surance plan
	for a software development.			

Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:3	
Outcomo	V Som	DATA COMMUNICATIONS AND	I.3 T.0 D.0		
Outcome	v Sem	COMPUTER NETWORKS(B20CS30)	L.3 1.01.0		
After the co	ompletion of this co	ourse, the students should be able to			
1	1 Illustrate basic computer network technology, functions of each layer in the OSI and TCP/IP				
	reference model.				
2	Gain the knowledge on error control and flow control mechanisms.				
3	Obtain the skills of subnetting and routing mechanisms.				
4	Analyze the feature	es and Operations of TCP/UDP, congestion con	trol and QoS Tecl	nniques.	
5	Familiarity with t	he essential protocols of application layer, and	nd how they can	be used in	
	network design and	1 implementation.	[		
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:3	
Outcome	V Sem	DATA WAREHOUSING AND DATA MINING(B20CS24)	L:3 T:0 P:0		
After the c	completion of this (	course, the students should be able to	L		
1	Develop an unders	tanding of data warehouse, designing and using	data in data ware	house using	
	various operations.	· · · · · · · · · · · · · · · · · · ·		_	
2	Introduce data mini	ing concepts and develops understanding of data	a mining applicati	on.	
3	Develop an outlool	k of Association rule mining, association rule m	ining methods and	l their	
4	application on som	e sample data sets, evaluate these methods base	ed on need.	1.1.	
4	Develop an under	standing of classification and prediction, clas	sification method	s and their	
5	Develop conceptus	al understanding of clustering various clustering	a methods and th	eirapplication	
5	on some sample da	the understanding of clustering, various clustering the sets, evaluate these methods based on need.	ig methods and th	ien application	
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:3	
Outcome	VSom	ARTIFICIAL INTELLIGENCE	I •3 T•0 P•0		
Outcome	Viseni	(B20AI03)	1.5 1.01.0		
After the co	mpletion of this co	ourse, the students should be able to			
1	Possess the ability	to formulate an efficient problem space for a pr	oblem expressed i	n English.	
2	Possess the ability	to select a search algorithm for a problem.	*	-	
3	Possess the skill for	r representing knowledge using the appropriate	technique		
4	Possess the ability	to apply AI techniques to solve problems of Ga	me Playing.		
5	Possess the Expert	Systems, Machine Learning and Natural Langua	age Processing		
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:3	
Outcome	VSem	COMPILER DESIGN(B20CS31)	L:3 T:0 P:0		
After the co		(PROFESSIONAL ELECTIVE-I)			
After the completion of this course, the students should be able to					
1	ompletion of this co	ourse, the students should be able to			
1	Apply the knowled	ge of modern phases of compiler and its feature	es.		
1 2	Apply the knowled Identify the similar	ge of modern phases of compiler and its feature ities and differences among varies parsing techn	es. niques.		
1 2 3	Apply the knowled Identify the similar Explain semantic a	ge of modern phases of compiler and its feature ities and differences among varies parsing techn nalysis in the context of the compilation proces	es. niques. s.		
1 2 3 4	Apply the knowled Identify the similar Explain semantic a Design a symbol ta	ge of modern phases of compiler and its feature ities and differences among varies parsing techn nalysis in the context of the compilation proces ble format for the language defined by a gramm	es. niques. s. nar		
1 2 3 4 5	Apply the knowled Identify the similar Explain semantic a Design a symbol ta Analyze the code g	ge of modern phases of compiler and its feature rities and differences among varies parsing tech nalysis in the context of the compilation proces ble format for the language defined by a gramm generation algorithm	es. niques. s. ar		
1 2 3 4 5 <b>Course</b>	Apply the knowled Identify the similar Explain semantic a Design a symbol ta Analyze the code g Year / semester	burse, the students should be able to ge of modern phases of compiler and its feature rities and differences among varies parsing tech inalysis in the context of the compilation proces ble format for the language defined by a gramm generation algorithm Subject Name (Subject Code)	es. niques. s. har <b>No. of Hours</b>	Credits:3	
1 2 3 4 5 Course Outcome	Apply the knowled Identify the similar Explain semantic a Design a symbol ta Analyze the code g Year / semester V Sem	burse, the students should be able to ge of modern phases of compiler and its feature ities and differences among varies parsing tech inalysis in the context of the compilation proces ble format for the language defined by a gramm generation algorithm Subject Name (Subject Code) PRINCIPLES OF PROGRAMMING LANGUACEDE (PROGRAMMING LANGUACEDE (PROGRAMMING	es. niques. s. nar No. of Hours L:3 T:0 P:0	Credits:3	
1 2 3 4 5 Course Outcome	Apply the knowled Identify the similar Explain semantic a Design a symbol ta Analyze the code g Year / semester V Sem	burse, the students should be able to lige of modern phases of compiler and its feature ities and differences among varies parsing tech inalysis in the context of the compilation proces ble format for the language defined by a gramm generation algorithm Subject Name (Subject Code) PRINCIPLES OF PROGRAMMING LANGUAGES (B20CS32) (PROFESSIONAL ELECTIVE-I)	es. niques. s. har No. of Hours L:3 T:0 P:0	Credits:3	
1       2       3       4       5       Course       Outcome	Apply the knowled Identify the similar Explain semantic a Design a symbol ta Analyze the code g Year / semester V Sem	burse, the students should be able to lge of modern phases of compiler and its feature ities and differences among varies parsing tech inalysis in the context of the compilation proces ble format for the language defined by a gramm generation algorithm Subject Name (Subject Code) PRINCIPLES OF PROGRAMMING LANGUAGES (B20CS32) (PROFESSIONAL ELECTIVE-I) purse, the students should be able to	es. niques. s. nar No. of Hours L:3 T:0 P:0	Credits:3	
1 2 3 4 5 <b>Course</b> <b>Outcome</b> <b>After the co</b> 1	Apply the knowled Identify the similar Explain semantic a Design a symbol ta Analyze the code g Year / semester V Sem Ompletion of this con Able to analyze sym	burse, the students should be able to lge of modern phases of compiler and its feature ities and differences among varies parsing tech inalysis in the context of the compilation proces ble format for the language defined by a gramm generation algorithm Subject Name (Subject Code) PRINCIPLES OF PROGRAMMING LANGUAGES (B20CS32) (PROFESSIONAL ELECTIVE-I) Durse, the students should be able to ntax-related concepts including context-free gra	es. niques. s. har No. of Hours L:3 T:0 P:0 ummars, parse tree	Credits:3	
1           2           3           4           5           Course           Outcome           After the co           1	Apply the knowled Identify the similar Explain semantic a Design a symbol ta Analyze the code g Year / semester V Sem Ompletion of this co Able to analyze syn issues associated w	ities and differences among varies parsing tech inalysis in the context of the compilation proces ble format for the language defined by a gramm generation algorithm Subject Name (Subject Code) PRINCIPLES OF PROGRAMMING LANGUAGES (B20CS32) (PROFESSIONAL ELECTIVE-I) Durse, the students should be able to ntax-related concepts including context-free gra vith function implementations.	es. niques. s. har No. of Hours L:3 T:0 P:0 mmars, parse tree	Credits:3	
1           2           3           4           5           Course           Outcome           After the co           1           2	Apply the knowled Identify the similar Explain semantic a Design a symbol ta Analyze the code g Year / semester V Sem Moletion of this co Able to analyze syn issues associated w Summarize the des	ities and differences among varies parsing tech- inalysis in the context of the compilation proces ble format for the language defined by a gramm generation algorithm Subject Name (Subject Code) PRINCIPLES OF PROGRAMMING LANGUAGES (B20CS32) (PROFESSIONAL ELECTIVE-I) Durse, the students should be able to ntax-related concepts including context-free gra vith function implementations. ign issues of various reference types and its imp	es. niques. s. har No. of Hours L:3 T:0 P:0 mmars, parse tree plementation relat	Credits:3 s, semantic ed to these	
12345CourseOutcomeAfter the co12	Apply the knowled Identify the similar Explain semantic a Design a symbol ta Analyze the code g Year / semester V Sem mpletion of this co Able to analyze syn issues associated w Summarize the des types.	burse, the students should be able to lge of modern phases of compiler and its feature ities and differences among varies parsing tech inalysis in the context of the compilation proces ble format for the language defined by a gramm generation algorithm Subject Name (Subject Code) PRINCIPLES OF PROGRAMMING LANGUAGES (B20CS32) (PROFESSIONAL ELECTIVE-I) purse, the students should be able to ntax-related concepts including context-free gra /ith function implementations. ign issues of various reference types and its imp	es. niques. s. har No. of Hours L:3 T:0 P:0 mmars, parse tree plementation relat	Credits:3 s, semantic ed to these	
1           2           3           4           5           Course           Outcome           After the conne           1           2           3	Apply the knowled Identify the similar Explain semantic a Design a symbol ta Analyze the code g Year / semester V Sem Mole to analyze syn issues associated w Summarize the des types. Able to understand	<b>burse, the students should be able to</b> Ige of modern phases of compiler and its feature         ities and differences among varies parsing tech         inalysis in the context of the compilation proces         ble format for the language defined by a gramm         generation algorithm         Subject Name (Subject Code)         PRINCIPLES OF PROGRAMMING         LANGUAGES (B20CS32)         (PROFESSIONAL ELECTIVE-I)         Durse, the students should be able to         ntax-related concepts including context-free gra <i>i</i> th function implementations.         ign issues of various reference types and its implementations         the concepts of Abstraction and Encapsulation	es. niques. s. ar No. of Hours L:3 T:0 P:0 Immars, parse tree plementation relat constructs of clas	Credits:3 s, semantic ed to these ses, interfaces,	
1           2           3           4           5           Course           Outcome           After the co           1           2           3	Apply the knowled Identify the similar Explain semantic a Design a symbol ta Analyze the code g Year / semester V Sem Ompletion of this co Able to analyze syn issues associated w Summarize the des types. Able to understand packages of variou	<b>burse, the students should be able to</b> Ige of modern phases of compiler and its feature         ities and differences among varies parsing tech         inalysis in the context of the compilation proces         ible format for the language defined by a gramm         generation algorithm         Subject Name (Subject Code)         PRINCIPLES OF PROGRAMMING         LANGUAGES (B20CS32)         (PROFESSIONAL ELECTIVE-I)         Durse, the students should be able to         ntax-related concepts including context-free gra         with function implementations.         ign issues of various reference types and its implementations         the concepts of Abstraction and Encapsulation         s Language Examples.         nd the nature and implementation of chiest with	es. niques. s. har No. of Hours L:3 T:0 P:0 mmars, parse tree plementation relat constructs of clas	Credits:3 s, semantic ed to these ses, interfaces,	

Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:3
Outcome	V Sem	NETWORK PROGRAMMING (B20CS33) (PROFESSIONAL ELECTIVE-I)	L:3 T:0 P:0	
After the co	mpletion of this co	ourse, the students should be able to		
1 Demonstrate advanced knowledge of OSI layers, TCP & UDP concepts				
2	Networking. Sumn	narize the TCP socket functions and Byte Order	ring.	
3	Make use of TCP client server applications and analyze I/O Multiplexing and socket options.			
4	Define about the E	lementary UDP sockets and Address conversio	ns.	-
5	Explain DNS, othe	r networking information, Pseudo -Terminals.	, Terminal modes	s, Control
	Terminals.			-
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:1.5
Outcome	V Sem	DATA COMMUNICATIONS AND	L:0 T:0 P:3	
		COMPUTER NETWORKS LAB(B20CS34)		
After the co	mpletion of this co	ourse, the students should be able to		
1	Implement data lin	k layer farming methods.		
2	Analyze error detec	ction and error correction codes.		
3	Implement and ana	lyze routing and congestion issues in network of	design.	
4	Implement Encodir	g and Decoding techniques used in presentation	n layer.	
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:1.5
Outcome	V Sem	ARTIFICIAL INTELLIGENCE LAB (B20AI04)	L:0 T:0 P:3	
After the co	mpletion of this co	ourse, the students should be able to		
1	Demonstrate Know	ledge of the building blocks of AI as presented	in terms of intelli	gent agents.
2	Analyze and forma	lize the problem as a state space, graph and desi	gn heuristics	<u> </u>
3	Jevelop intelligent	algorithms for constraint satisfaction problems	and also design in	telligent
	systemsfor game pl	aying.	C	C
4	Attain the capability	y to represent various real life problem domains	using logicbased	techniques
	anduse this to perfo	orm inference or planning.		-
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:0
Outcome	V Sem	INDIAN CONSTITUTION(B20MC03)	L.2 T.0 P.0	
oucome				
After the co	mpletion of this co	ourse, the students should be able to		
1	Demonstrate the fur	ndamental rights and duties of a citizen		
2	Classify the admini	strative structure of the Indian union		
3	Identify the power of	of state government and make use of positions		
4	Categorize the varie	ous department and local administrations respo	nsibilities	
5	Functions of electio	n commission and its roles		
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:3
Outcome	WSem	MACHINE LEARNING (B20AI06)	L:3 T:0 P:0	
After the co	mpletion of this co	ourse the students should be able to :		
1	Explain the theory u	underlying machine learning		
2	Learn beyond binar	y classification.		
3	Recognize and imp	lement various genetic algorithms.		
4	Construct algorithn	ns to learn tree, to learn linear, non-linear model	s and Probabilistic	c models.
5	Able to analyze the	data using R Programming		

Course Outcome	Year / semester VI Sem	Subject Name (Subject Code) CLOUD COMPUTING (B20CS36)	No. of Hours L:3 T:0 P:0	Credits:3	
After the co	mpletion of this co	ourse, the students should be able to			
1	Ability to understa	nd various service delivery models of a cloud co	mouting architect	ure	
2	Ability to understand the ways in which the cloud can be programmed and deployed				
3	Understanding Cloud Computing Architecture and Management				
4	Understanding clou	Understanding cloud service Models			
5	Understanding cloud service providers.				
		1	1		
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:3	
Outcome	VI Sem	INTERNET OF THINGS(B20CS37)	L:3 T:0 P:0		
After the co	mpletion of this co	Durse, the students should be able to			
1	Interpret the visior	n of IoT from global context.			
2	Perceive building b	blocks of Internet of Things and its characteristi	cs.		
3	Learn the basic con	cepts of Python. Implement the python program	nming using Rasp	berry.	
4	Perceive the applic	cation areas of IoT. Realize the revolution of In	ternet in Mobile	Devices,	
	Cloud &Sensor Ne	etworks			
5	Determine the Mar for IoT.	rket perspective of IoT. Develop Python web a	oplications and clo	oud servers	
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:3	
Outcome	VI Sem	SOFTWARE PROJECT MANAGEMENT (PROFESSIONAL ELECTIVE-II)	L:3 T:0 P:0		
		(B20CS38)			
After the co	ompletion of this co	ourse, the students should be able to			
1	Gain knowledge of	software economics, phases in the life cycle of	f software develop	oment, project	
	organization, and p	project control and process instrumentation.			
2	Summarize softwar workflows, checkp	re economics, software development life cycle, oints, project organization and responsibilities,	artifacts of the pr project control an	ocess, id process	
3	Choose the right so	oftware development approach. Compare variou	is project organiza	ations and	
C	responsibilities.		is project organize	uions und	
4	Analyze the major	and minor milestones, artifacts and metrics for	management and	technical	
	perspective.				
5	Design software	product using conventional and modern p	principles of sof	tware project	
C	management.		NI CII	<b>C</b> 14 2	
Course	Year / semester	Subject Name (Subject Code) NETWORK SECURITY AND	No. of Hours	Credits:3	
Outcome	VI Sem	CRYPTOGRAPHY (B20CS39)	L:3 T:0 P:0		
		(PROFESSIONAL ELECTIVE-II)			
After the c	completion of this o	course, the students should be able to			
1	Identifies various t	ypes of vulnerabilities, attacks, mechanisms and	l security services		
2	Compare and contr	ast symmetric and asymmetric encryption algo	rithms.		
3	Implementation of	message authentication, hashing algorithms and	able to understan	nd kerberos.	
4	Explore the attacks	and controls associated with IP, transport level	, web and E-mail	security.	
5	Develop intrusion of	detection system, solutions for wireless network	s and designing of	of varioustypes	
	of firewalls.				

Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:3		
Outcome	VI Sem	WEB SERVICES (B20CS40)	L:3 T:0 P:0			
		(PROFESSIONAL ELECTIVE-II)				
After the o	completion of this of	course, the students should be able to				
1	Implement Web service client and server with interoperable systems like core distributed computing, J2EE, SOA, WSDL, UDDI and EBXML					
2	Perceive and analy	Perceive and analyze the principles of SOAP.				
3	Perceive the imple	Perceive the implement Web Services life cycle, Anatomy of WSDL definition document.				
4	How to utilize the s	semantics of web services. Working with UDDI	, programming wi	th UDDI,		
	UDDIdata structur	es				
5	Explore interopera webservices	bility between different frameworks. Design we	b based applicatio	ons that use		
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:1.5		
Outcome	VI Sem	MACHINE LEARNING LAB (B20AI08)	L:0 T:0 P:3			
After the o	completion of this (	course, the students should be able to				
1	Discuss different a	pplication on Machine Learning problems.				
2	Describe various al	Igorithms on Machine Learning mentioning its	strengths andweal	knesses.		
3	Improve the perfor	mance of Machine Learning algorithms with dif	fferent parameters			
4	Understand the late	est issues raised by current researchers.				
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:1.5		
Outcome	VI Sem	CLOUD COMPUTING LAB(B20CS41)	L:0 T:0 P:3			
After the co	ompletion of this co	ourse, the students should be able to				
1	Analyze Cloud Cor	mputing fundamentals, technologies, applicatio	ns and implement	ation of		
	virtualization with	Oracle VM Virtual box.	0 111 0			
2	Development know and Networking.	viedge of cloud computing using Amazon web	Services like Cor	npute, Storage		
3	Providing Security	to the Cloud System using Identity Access Ma	anagement(IAM).			
4	Attain the Capabili Web Services.	ty of design, development of agile and highly a	vailable systems ı	ısingAmazon		
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:1.5		
Outcome	VI Sem	INTERNET OF THINGS LAB(B20CS42)	L:0 T:0 P:3			
After the ec	mulation of this a	avera the students should be able to				
After the cu	Improve the quality	y of life of humans through IoT technology for t	hat student closer	interaction		
1	between the experi	ment and the society	hat student closer	Interaction		
2	Identify the Compo	ponents that forms part of IoT specific Application	on.			
3	Determine the mos	t appropriate IoT Devices and Sensors based on	IoT application.			
4	Improve the Python	n programming skills for writing IoT Application	on			
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:0		
Outcome	VI Sem	LOGICAL REASONING AND	L:2 T:0 P:0			
		QUANTITATIVE APTITUDE(B20MC05)				
After the o	completion of this of	course, the students should be able to				
1	Apply quantitative problems.	reasoning and mathematical analysis methodol	ogies to understar	id and solve		
2	Apply quantitative	e correctly arrive at meaningful conclusions	regarding their a	nswers and		
	manipulate equation	ons and formulas in order to solve for the desire	d variable			
3	Interpret given inf	ormation correctly, determine which mathemat	tical model best d	escribes the		
	data, and apply the	model correctly.				
4	Correctly apply ma	thematical language and notation to explain the solving problems using mathematical or statistic	e reasoning under	lying their		
5	Improve their math	pematical skills in various general aspects to solu	ve real time proble	ms		
5	Improve their mathematical skills in various general aspects to solve real time problems.					

Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:3
Outcome	VII Sem	DEEP LEARNING(B20AI10)	L.3 T.0 P.0	
Outcome			1.5 1.01.0	
After the c	completion of this c	course, the students should be able to		
1	Understand the bas	ics of Artificial Neural Networks.		
2	Understand the Dec	is Learning Networks and Special Networks.		
5				
4	Develop different p	barameters for Regularization for Deep Learning	g.	
5	Design Optimized			
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:3
Outcome	VII Sem	MANAGERIAL ECONOMICS AND FINANCIAL ANALYSIS(B20MB01)	L:3 T:0 P:0	
After the c	ompletion of this c	course the students should be able to		
Arter the t	Understand the net	ure score and importance of Managerial Econo	mias	
2	Know what deman	d is analyze demand and how elasticity of dema	nd is used for pri	cingdecisions
2	and to evaluate me	thods for forecasting demand.	ind is used for pri-	enigueersions
3	Know how product	ion function is carried out to achieve least cost	combination of	
	Inputsand how to a	nalyze cost.		
4	Understand the cha	racteristics of different kinds of markets and ou	tline different for	m
	ofbusiness organiza	ation and analyze how capital budgeting technic	ques are used for	
5	Know how to prepa	lls.	lyze and interpre	tfinancial
5	statements using ra	tio analysis.	aryze and interpre	umanetar
Course	Vear / semester	Subject Name (Subject Code)	No. of Hours	Credits:3
Outcome	VII Com	SOFTWARE TESTING(B20CS44)	I.2 T.0 D.0	Ci cuits.s
Outcome	vii Sem	(PROFESSIONAL ELECTIVE – III)	L:5 1:0 P:0	
After the c	completion of this c	course, the students should be able to		
1	Design test cases su	uitable for a software development for different	domains.	
2	Prepare test planning	ng based on the document.		
3	Identify suitable tes	sts to be carried out.		
4	Validate test plan a	nd test cases designed		
5	Use of automatic te	esting tools		
Course	Veen / semester	Subject Name (Subject Code)	No. of House	Creadites?
Course	Year / semester	SUBJECT NAME (SUBJECT CODE)	No. of Hours	Creans:5
Outcome	VII Sem	(PROFESSIONAL ELECTIVE – III)	L:3 T:0 P:0	
		(B20CS45)		
After the c	completion of this c	course, the students should be able to		
1	Design various ser	vice layers		
2	Model service cand	lidate derived from existing business documenta	ation.	
3	Design the compos	ition of SOA.		
4	Design application	services for technology abstraction.		
5	Principles of Servic	e-Orientation.		
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:3
Outcome	VII Sem	SCRIPTING LANGUAGES (B20CS46)	L:3 T:0 P:0	
		(PROFESSIONAL ELECTIVE – III)		
After the c	completion of this c	course, the students should be able to		
1	Perceive of scriptin	ig and the contributions of scripting languages.		
2	Develop simple s	cripts to automate system administration.	-1	
3	Gain knowledge of	the strengths and weakness of Perl, TCL and R	uby; and select a	n
4	Acquire programm	ing skills in scripting language		
5	Develop simple a	pplications by various tools and expose to c	create advanced	applications
				11

Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:3	
Outcome	VII Sem	BUSINESS INTELLIGENCE & BIG DATA	L:3 T:0 P:0		
		(PROFESSIONAL ELECTIVE – IV) (B20CS47)			
After the c	ompletion of this c	course the students should be able to			
1	Explain the foundation	tions, definitions and capabilities of Bigdata.			
2	List the definitions.	, concepts, architectures and challenges in Big of	data environment.	Outline the	
	definitions, concept	ts, and enabling technologies of big data analyt	ics.		
3	Understand concepts on Handoop Ecosystem in Big data.				
4	Analyze the Map re	educe programming in Big data Analytics.			
5	Apply Security big	data technologies in business intelligence using	g geospatialλ data	, location-	
	based analytics, soo	cial networking, Web 2.0, reality mining, and c	loud computing.		
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:3	
Outcome	VII Sem	REINFORCEMENT LEARNING (B20AI15) (PROFESSIONAL ELECTIVE – IV)	L:3 T:0 P:0		
After the c	completion of this c	course, the students should be able to			
1	Understand the key	features of Reinforcement Learning.			
2	Apply the different	algorithms and define the policy.			
3	Analyze multiple c metrics.	riteria for analyzing RL algorithms and evaluat	e algorithms on th	lese	
4	Evaluate the eligibi	lity traces, Eligibility traces used for sampling.			
5	Create Function Ap	pproximation Methods.			
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:3	
Outcome	VII Sem	CYBER SECURITY & ETHICAL	L:3 T:0 P:0		
		HACKING (B20CS48)			
		(PROFESSIONAL ELECTIVE – IV)			
After the c	completion of this o	course, the students should be able to			
1	Outline key terms	and concepts in cyber law, intellectual pro	perty and		
	cybercrimes.		1 2		
2	cybercrimes. Explore the vulne	rabilities, threats and cybercrimes posed by	criminals.		
23	cybercrimes. Explore the vulne Identify various sec	rabilities, threats and cybercrimes posed by curity challenges phased by mobile devices.	criminals.		
2 3 4	cybercrimes. Explore the vulne Identify various sec	rabilities, threats and cybercrimes posed by curity challenges phased by mobile devices.	v criminals.	counter	
2 3 4	cybercrimes. Explore the vulne Identify various sec Identify various typ methods to maintai	prabilities, threats and cybercrimes posed by curity challenges phased by mobile devices. bes of tools and methods used in cybercrime, de n security protection	v criminals.	counter	
2 3 4 5	cybercrimes. Explore the vulne Identify various sec Identify various typ methods to maintai Analyze the cyber	rabilities, threats and cybercrimes posed by curity challenges phased by mobile devices. bes of tools and methods used in cybercrime, de n security protection r security risk management policies in order	v criminals. evelops the secure	counter rotect an	
2 3 4 5	cybercrimes. Explore the vulne Identify various sec Identify various typ methods to maintai Analyze the cyber organization's crit	prabilities, threats and cybercrimes posed by curity challenges phased by mobile devices. bes of tools and methods used in cybercrime, de n security protection r security risk management policies in order cical information and assets.	v criminals. evelops the secure r to adequately p	counter rotect an	
2 3 4 5 <b>Course</b>	cybercrimes. Explore the vulne Identify various sec Identify various typ methods to maintai Analyze the cyber organization's crit <b>Year / semester</b>	rabilities, threats and cybercrimes posed by curity challenges phased by mobile devices. bes of tools and methods used in cybercrime, de n security protection r security risk management policies in order cical information and assets.	v criminals. evelops the secure r to adequately p	counter rotect an Credits:2	
2 3 4 5 Course Outcome	cybercrimes. Explore the vulne Identify various sec Identify various typ methods to maintai Analyze the cyber organization's crit Year / semester VII Sem	rabilities, threats and cybercrimes posed by curity challenges phased by mobile devices. bes of tools and methods used in cybercrime, de n security protection r security risk management policies in order cical information and assets. Subject Name (Subject Code) MINI PROJECT & INTERNSHIP	v criminals. evelops the secure r to adequately p No. of Hours L:0 T:0 P:0	counter rotect an Credits:2	
2 3 4 5 Course Outcome	cybercrimes. Explore the vulne Identify various sec Identify various typ methods to maintai Analyze the cyber organization's crit Year / semester VII Sem	rabilities, threats and cybercrimes posed by curity challenges phased by mobile devices. bes of tools and methods used in cybercrime, de n security protection r security risk management policies in order cical information and assets. Subject Name (Subject Code) MINI PROJECT & INTERNSHIP (B20CS49)	v criminals. evelops the secure t to adequately p <b>No. of Hours</b> L:0 T:0 P:0	counter rotect an Credits:2	
2 3 4 5 Course Outcome	cybercrimes. Explore the vulne Identify various sec Identify various typ methods to maintai Analyze the cyber organization's crit Year / semester VII Sem Enhance students	rabilities, threats and cybercrimes posed by curity challenges phased by mobile devices. bes of tools and methods used in cybercrime, de n security protection r security risk management policies in order cical information and assets. Subject Name (Subject Code) MINI PROJECT & INTERNSHIP (B20CS49) ' knowledge in current technology	v criminals. evelops the secure r to adequately p No. of Hours L:0 T:0 P:0	counter rotect an Credits:2	
2 3 4 5 Course Outcome	cybercrimes. Explore the vulne Identify various sec Identify various typ methods to maintai Analyze the cyber organization's crit Year / semester VII Sem Enhance students Develop leadersh	rabilities, threats and cybercrimes posed by curity challenges phased by mobile devices. bes of tools and methods used in cybercrime, de n security protection r security risk management policies in order cical information and assets. Subject Name (Subject Code) MINI PROJECT & INTERNSHIP (B20CS49) ' knowledge in current technology in ability and responsibility to execute the s	v criminals. evelops the secure r to adequately p No. of Hours L:0 T:0 P:0	counter rotect an Credits:2	
2 3 4 5 Course Outcome	cybercrimes. Explore the vulne Identify various sec Identify various typ methods to maintai Analyze the cyber organization's crit Year / semester VII Sem Enhance students Develop leadersh Enhance their em	rabilities, threats and cybercrimes posed by curity challenges phased by mobile devices. bes of tools and methods used in cybercrime, de n security protection r security risk management policies in order cical information and assets. Subject Name (Subject Code) MINI PROJECT & INTERNSHIP (B20CS49) ' knowledge in current technology ip ability and responsibility to execute the g ployability skills along with real corporate	v criminals. evelops the secure t to adequately p No. of Hours L:0 T:0 P:0 given task exposure	counter rotect an Credits:2	
2 3 4 5 Course Outcome	cybercrimes. Explore the vulne Identify various sec Identify various typ methods to maintai Analyze the cyber organization's crit Year / semester VII Sem Enhance students Develop leadersh Enhance their em Elaborate the con	rabilities, threats and cybercrimes posed by curity challenges phased by mobile devices. bes of tools and methods used in cybercrime, de n security protection r security risk management policies in order cical information and assets. Subject Name (Subject Code) MINI PROJECT & INTERNSHIP (B20CS49) ' knowledge in current technology ip ability and responsibility to execute the g ployability skills along with real corporate pleted task and compile the report.	v criminals. evelops the secure r to adequately p No. of Hours L:0 T:0 P:0	counter rotect an Credits:2	
2 3 4 5 Course Outcome	cybercrimes. Explore the vulne Identify various sec Identify various typ methods to maintai Analyze the cyber organization's crit Year / semester VII Sem Enhance students Develop leadersh Enhance their em Elaborate the con	rabilities, threats and cybercrimes posed by curity challenges phased by mobile devices. bes of tools and methods used in cybercrime, de n security protection r security risk management policies in order cical information and assets. Subject Name (Subject Code) MINI PROJECT & INTERNSHIP (B20CS49) ' knowledge in current technology ip ability and responsibility to execute the g ployability skills along with real corporate pleted task and compile the report. Subject Name (Subject Code)	v criminals. evelops the secure r to adequately p No. of Hours L:0 T:0 P:0 given task exposure	counter rotect an Credits:2	
2 3 4 5 Course Outcome 1 2 3 4 Course	cybercrimes. Explore the vulne Identify various sec Identify various typ methods to maintai Analyze the cyber organization's crit Year / semester VII Sem Enhance students Develop leadersh Enhance their em Elaborate the con Year / semester	rabilities, threats and cybercrimes posed by curity challenges phased by mobile devices. bes of tools and methods used in cybercrime, de n security protection r security risk management policies in order cical information and assets. Subject Name (Subject Code) MINI PROJECT & INTERNSHIP (B20CS49) ' knowledge in current technology ip ability and responsibility to execute the g ployability skills along with real corporate upleted task and compile the report. Subject Name (Subject Code) DEEP LEARNING LAB (B20AI13)	v criminals. evelops the secure r to adequately p No. of Hours L:0 T:0 P:0 given task exposure No. of Hours	counter rotect an Credits:2 Credits:1.5	
2 3 4 5 Course Outcome 1 2 3 4 Course Outcome	cybercrimes. Explore the vulne Identify various sec Identify various typ methods to maintai Analyze the cyber organization's crit Year / semester VII Sem Enhance students Develop leadersh Enhance their em Elaborate the con Year / semester VII Sem	rabilities, threats and cybercrimes posed by curity challenges phased by mobile devices. bes of tools and methods used in cybercrime, de n security protection r security risk management policies in order cical information and assets. Subject Name (Subject Code) MINI PROJECT & INTERNSHIP (B20CS49) ' knowledge in current technology ip ability and responsibility to execute the g ployability skills along with real corporate mpleted task and compile the report. Subject Name (Subject Code) DEEP LEARNING LAB (B20AI13)	v criminals. evelops the secure r to adequately p No. of Hours L:0 T:0 P:0 given task exposure No. of Hours L:0 T:0 P:3	counter rotect an Credits:2 Credits:1.5	
2 3 4 5 Course Outcome 1 2 3 4 Course Outcome After the c	cybercrimes. Explore the vulne Identify various sec Identify various typ methods to maintai Analyze the cyber organization's crit Year / semester VII Sem Enhance students Develop leadersh Enhance their em Elaborate the con Year / semester VII Sem	rabilities, threats and cybercrimes posed by curity challenges phased by mobile devices. bes of tools and methods used in cybercrime, de n security protection r security risk management policies in order cical information and assets. <b>Subject Name (Subject Code)</b> MINI PROJECT & INTERNSHIP (B20CS49) ' knowledge in current technology ip ability and responsibility to execute the g ployability skills along with real corporate pleted task and compile the report. <b>Subject Name (Subject Code)</b> DEEP LEARNING LAB (B20AI13)	v criminals. v criminals. evelops the secure r to adequately p No. of Hours L:0 T:0 P:0 given task exposure No. of Hours L:0 T:0 P:3	counter rotect an Credits:2 Credits:1.5	
2 3 4 5 Course Outcome 1 2 3 4 Course Outcome After the c 1	cybercrimes. Explore the vulne Identify various sec Identify various typ methods to maintai Analyze the cyber organization's crit Year / semester VII Sem Enhance students Develop leadersh Enhance their em Elaborate the con Year / semester VII Sem completion of this of Understand the bas	rabilities, threats and cybercrimes posed by curity challenges phased by mobile devices. Des of tools and methods used in cybercrime, de n security protection r security risk management policies in order cical information and assets. Subject Name (Subject Code) MINI PROJECT & INTERNSHIP (B20CS49) ' knowledge in current technology ip ability and responsibility to execute the <u>g</u> ployability skills along with real corporate mpleted task and compile the report. Subject Name (Subject Code) DEEP LEARNING LAB (B20AI13) course, the students should be able to ics of Artificial Neural Networks.	v criminals. evelops the secure r to adequately p No. of Hours L:0 T:0 P:0 given task exposure No. of Hours L:0 T:0 P:3	counter rotect an Credits:2 Credits:1.5	
2 3 4 5 Course Outcome 1 2 3 4 Course Outcome After the c 1 2	cybercrimes. Explore the vulne Identify various sec Identify various sec Identify various typ methods to maintai Analyze the cyber organization's crit Year / semester VII Sem Enhance students Develop leadersh Enhance their em Elaborate the con Year / semester VII Sem completion of this of Understand the bas Describe the variou	rabilities, threats and cybercrimes posed by curity challenges phased by mobile devices. bes of tools and methods used in cybercrime, den security protection r security risk management policies in order cical information and assets. <b>Subject Name (Subject Code)</b> MINI PROJECT & INTERNSHIP (B20CS49) ' knowledge in current technology ip ability and responsibility to execute the <u>g</u> ployability skills along with real corporate upleted task and compile the report. <b>Subject Name (Subject Code)</b> DEEP LEARNING LAB (B20AI13) <b>course, the students should be able to</b> ics of Artificial Neural Networks. Ins Learning Networks and Special Networks	v criminals. evelops the secure r to adequately p No. of Hours L:0 T:0 P:0 given task exposure No. of Hours L:0 T:0 P:3	counter rotect an Credits:2 Credits:1.5	
2 3 4 5 Course Outcome 1 2 3 4 Course Outcome After the c 1 2 3 3	cybercrimes. Explore the vulne Identify various sec Identify various sec Identify various typ methods to maintai Analyze the cyber organization's crit Year / semester VII Sem Enhance students Develop leadersh Enhance their em Elaborate the con Year / semester VII Sem completion of this of Understand the bas Describe the variou Understand the Description	rabilities, threats and cybercrimes posed by curity challenges phased by mobile devices. Des of tools and methods used in cybercrime, de n security protection r security risk management policies in order cical information and assets. Subject Name (Subject Code) MINI PROJECT & INTERNSHIP (B20CS49) r knowledge in current technology ip ability and responsibility to execute the g ployability skills along with real corporate rapleted task and compile the report. Subject Name (Subject Code) DEEP LEARNING LAB (B20AI13) course, the students should be able to ics of Artificial Neural Networks. Is Learning Networks and Special Networks ep Neural Network.	v criminals. v criminals. evelops the secure r to adequately p No. of Hours L:0 T:0 P:0 given task exposure No. of Hours L:0 T:0 P:3	counter rotect an Credits:2 Credits:1.5	

Course Outcome	Year / semester VII Sem	Subject Name (Subject Code) MAJOR PROJECT PHASE-I	No. of Hours L:0 T:0 P:8	Credits:4	
1		(B20CS50)			
1	Identify the probl	em by applying acquired knowledge.			
2	Analyze and categorize executable project modules.				
3	Choose efficient tools for designing project modules.				
4	Combine all the n	Combine all the modules through effective team work after efficient testing			
5	Elaborate the con	npleted task and compile the project report.			
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:0	
Outcome	VII Sem	HUMAN VALUES AND PROFESSIONAL ETHICS(B20MC05)	L:2 T:0 P:0		
After the o	completion of this c	course, the students should be able to			
1	Perceive the impor	tance of ethics and values in life and society.			
2	Develop moral resp	oonsibility and mould them as best professionals	i.		
3	Create ethical visio	n and achieve harmony in life.			
4	Provide a critical pe	erspective on the socialization of men and wom	en		
5	Perceive the impor	tant issues related to gender in contemporary In	dia		
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:3	
Outcome	VIII Sem	DESIGN PATTERNS (B20CS51)	L:3 T:0 P:0		
	,	(PROFESSIONAL ELECTIVE – V)			
After the o	completion of this c	course, the students should be able to			
1	Identify the approp	riate design patterns to solve object oriented de	sign problems.		
2	Identify and impler	nent appropriate solutions to recurring program	iming problems b	y consulting	
	technical document	tation and specifications, including design patte	rn catalogs and ex	tisting	
3	Understand basic of	lamonte of structural patterns and their implane	ntation		
	Understand basic e	lements of creational patterns and their implements	entations		
5	Understand basic e	lements of behavioral patterns and their implem	entation along w	ith growth in	
5	the field of using d	esign natterns	citation along w	itil growth ill	
Course	Voor / comostor	Subject Name (Subject Code)	No of Hours	Credite:3	
Course	I cal / semester	BLOCK CHAIN TECHNOLOGIES		Cieuns.5	
Outcome	VIII Sem	(B20CS52)	L:3 1:0 P:0		
		(PROFESSIONAL ELECTIVE – V)			
After the c	completion of this c	course, the students should be able to			
1	Introduce the funda	amentals of blockchain, history, technology and	decentralization.		
2	Revise cryptograph	hic concepts and its use in blockchain.			
3	Define bitcoin and	understand structure of blockchain, alternatives	s to proof of work		
4	Introduce smart co	ntracts, solidity and Web3 to implement blockc	hain		
5	Understand applica	tions of blockchain and its challenges			
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:3	
Outcome	VIII Sem	PRINCIPLES OF ROBOTICS(B20AI24) (PROFESSIONAL ELECTIVE – V)	L:3 T:0 P:0		
After the c	completion of this c	course, the students should be able to			
1	Understand Roboti	c Process Automation & Bot Creation.			
2	Apply methods for	Bots Upload and Credentials.			
3	Analyze devices to	Develop and Runtime Clients and Device Pool	s.		
4	Develop Bot creato	or using XML commands.			
5	Create work flow d	lesigner			

Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:3	
Outcome	VIII Sem	COMPUTER VISION (B20AI26)	L:3 T:0 P:0		
oucome		(PROFESSIONAL ELECTIVE – VI)			
After the c	After the completion of this course, the students should be able to				
1	Elaborate developn	nent of algorithms and techniques.			
2	Analyze and interp	ret the visible world around us with real time pr	roblems.		
3	Apply the fundame	ental concepts on multi-dimensional signal proc	essing, feature ex	traction,	
4	pattern analysis vis	ual geometric modeling, stochastic optimizatio	n etc.		
4	Take part to makeu	ip and contribute in research developments in tr	tield of comput	er vision.	
5	Explain different	applications ranging from Biometrics, Me	dical diagnosis,	document	
a	processing, mining		idering etc.	G 14 0	
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:3	
Outcome	VIII Sem	(PROFESSIONAL FLECTIVE - VI)	L:3 T:0 P:0		
After the c	ompletion of this (	course the students should be able to			
Arter the t	Understands variou	is types of Substitution ciphers			
2	Explore various	techniques to break the ciphers and under	rstands transposi	tion	
_	techniques.		istantas transposi		
3	Compare and contr	ast block cipher and stream cipher algorithms			
4	Implementation of	asymmetric key cryptographic algorithms and u	understand key ma	anagement in	
	public key cryptog	raphy.			
5	Explore different	types of steganography techniques to hide	the data in text	and	
	images.				
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:3	
Outcome	VIII Sem	NATURAL LANGUAGE PROCESSING	L:3 T:0 P:0		
		(PROFESSIONAL ELECTIVE - VI)			
A 64 41		(B20A117)			
After the c	Show consitivity to	linguistic phonomone and an ability to model to	ham with formal		
1	orammars	iniguistic phenomena and an admity to model t	menn with format		
2	Understand and car	rry out proper experimental methodology for tra	aining and evaluat	ting empirical	
	NLP systems		C	<i>C</i> 1	
3	Able to manipulate	probabilities, construct statistical models over	strings and trees,	and	
	estimate parameter	s using supervised and unsupervised training m	ethods.		
4	Able to design, imp	plement, and analyze NLP algorithms			
5	Able to design diff	erent language modelling Techniques.	-		
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:1	
Outcome	VIII Sem	TECHNICAL SEMINAR(B20CS53)	L:0 T:0 P:2		
After the c	ompletion of this <i>c</i>	ourse, the students should be able to		<u> </u>	
1	Identify recent te	chnical topics from interested domains			
2	Analyze the appli	cability of modern tools and technology			
3	Discuss and justif	fy the technical aspects of the chosen topic	in a systematic a	pproach	
4	Develop Presenta	tion and Communication skills	in a systematic a	prouen	
Course	Voor / comostor	Subject Neme (Subject Code)	No of Hours	Creditor	
Course	VIII Sem	MAIOR PROJECT PHASE-II(R20CS54)	NU. OI HOURS	CI CUILS:0	
Outcome			L:0 T:0P:16		
After the c	completion of this o	course, the students should be able to			
1	Identify the probl	em by applying acquired knowledge.			
2	Analyze and cate	gorize executable project modules.			
3	Choose efficient	tools for designing project modules.			
4	Combine all the r	nodules through effective team work after e	efficient testing		
5	Elaborata 41	an lated tools and as seen its the market set of the			
1	Enaborate the con	inpleted task and compile the project report.			

#### Vaagdevi College of Engineering-Autonomous Bollikunta, Warangal-506005 Department Of MBA MBA R20 COURSE OUTCOMES

I/I SEM					
<b>Course out</b>	Year/ semester:	Subject name code:	No. of Hours	Credits:	
come	I/I Sem.	<b>Business Environment</b>	L:4 T:0 P:0	4	
		( <b>M20MB01</b> )			
On successfu	al completion of this	s course, student should be able to:			
1	Explains the concept	pt of BE and different techniques of en	vironmental scann	ing process.	
2	Describes economi	c systems, GATT, WTO, Fiscal and n	nonitory policies		
3	Emphasizes on Ind	ustrial Policy and regulatory structure			
4	Explains socio poli	tical environment.			
5	Interprets India trac	le policy, EXIM Policies and FEMA.			
Course out	Year/ Semester:	Subject name code:	No. of Hours	Credits: 4	
come	I/I Sem	Managerial Economics	L:4 T:0 P:0		
		(M20MB02)			
On successfu	ul completion of this	s course, student should be able to:			
1	solve problems face	ed by the business organization			
2	apply the tools and	techniques in real business situations.			
3	determine the product	uction factors and returns			
4	Analyse				
	31 the different cos	ts			
5	formulate different	pricing strategies and profit policies	•	1	
Course out	Year/ semester:	Subject name code:	No. of Hours	Credits: 4	
come	I/I Sem.	Management and Organization	L:4 T:0 P:0		
		Behaviour (M20MB03)			
On successfu	al completion of this	s course, student should be able to:			
1	Show the significar	nce of fundamentals of Management and	nd its contributions		
2	Outline the plannin	g process and types of plans in dynam	ic environment, de	velop the	
	decision making st	yles in various situations in organization	on.		
3	Demonstrate the or	ganization structures with its merits ar	d demerits, Contra	ist between	
	authority, power an	d influence, Asses the significance of	controlling in an o	rganization.	
4	Examine individua	I and group behavior in an organization	on using personality	y theories	
5	Identify how manage	gers apply different leadership styles a	nd motivation theo	ries in an	
	organization.		NT 0.77		
Course out	Year/ semester:	Subject name code:	No. of Hours	Credits:4	
come	I/I Sem.	Accounting for Management	L:4 T:0 P:0		
	1 1/1 6/11	(MI20MIB04)			
Un successfi	II completion of this	s course, student should be able to:			
	Explain the importa	ance of Accounting.			
2	Explain Accounting	g cycle in preparing financial statemen	ts of the company.		

2						
3	A polygo and integration	issue of snares and depentures for rais	ang capital by the c	Vortical		
4	Analyze and interpret financial position of the company using ratio analysis, Vertical					
	and Horizontal anal	and Horizontal analysis.				
3	Make use of funds flow statements in the company.					
Course out	Year/semester:	Subject name code:	No. of Hours	Credits: 4		
come	I/I Sem.	Statistics for Management	L:4 T:0 P:0			
		(M20MB05)				
On successfu	In successful completion of this course, student should be able to:					
1	Explain the role of statistics and statistical techniques in management decision making					
	and choose appropr	iate measures of central tendency and	dispersion.			
2	Define correlation	and also measure the degree of corr	relation between v	ariables and		
	estimate the relation	nship between independent and depen	dent variables usin	ig regression		
	lines.					
3	Distinguish between	n parametric and non-parametric test.				
4	Classify Null- hyp	othesis and alternative Hypothesis,	hypothesis testing	for making		
5	Cotogoriza ana wax	tent s t test.	/ A and avamina as	admaga of fit		
5	Categorize one-way	and two-way classification of ANOV	A and examine go	odness of In		
Comment	by using Chi-square		N CIL.	Cara dittara A		
Course out	Year/ semester:	Subject name code:	NO. OI HOURS	Credits:4		
come	1/1 sem	Business Communication	L:4 1:0 P:0			
		(M20MB06)				
On successi	il completion of this	s course, student should be able to:	1			
1	Explain the importa	ince of written communication skills a	ppropriate for busi	ness		
	situations.		·			
2	Demonstrate the stu	ident effectively deliver on oral preser	tations.	1 '11		
3	Examine the studen	ts report writing skills and develop the	e positive writing s	kills.		
4	Identify the barriers	s of communication				
5	Minimize the stude	nt negative attitudes towards the verba	al and nonverbal			
	communication		1			
Course out	Year/ semester:	Subject name code:	No. of Hours	Credits:3		
come	I/I sem	Information Technology Lab	L:0 T:0 P:3			
		(M20MB07)				
On successfu	ul completion of this	s course, student should be able to:				
1	To create awareness a	about MS-word, creation of document and	d mail merge.			
2	To construct the sprea	adsheets and data analysis with statistical	tools.			
3	Create and manage D	atabase & data mining.				
4	List out the procedure	e of mail merge and build the presentation	n graphics through p	ower point		
	creation					
		I/II Sem		•		
Course	Year/ semester:	Subject name code:	No. of Hours	Credits:4		
out come	I/II Sem.	Marketing Management	L:4 T:0 P:0			
		(M20MB08)				
On successfu	ul completion of this	s course, student should be able to:				
1	Outline the role and	functions of marketing.				
2	Identify and demon	strate the nature of marketing environ	ment.			

3	Explain the Market	research project/process.			
4	Make use of PLC for	or framing marketing strategies and ap	praise the importa	nce of	
	promotion mix.				
5	Utilize the different	pricing strategies for profit maximization	tion.		
Course out	Year/ semester:	Subject name code:	No. of Hours	Credits: 4	
come	I/II Sem.	Human Resource Management	L:4 T:0 P:0		
		( <b>M20MB09</b> )			
On successfu	ll completion of this	course, student should be able to:			
1	Define the basic concepts of HRM, Its model.				
2	Demonstrate HRP p	process and Job Analysis.			
3	Illustrate the technic	ques and tools for training and Develo	pment, performan	ce appraisal.	
4	Infer Industrial Rela	ations System Grievance redressal me	chanism and dispu	te	
	settlements.				
5	Recommend and ap	praise the contemporary issues related	l to HR practices i	n Global	
	perspective.		•	-	
Course out	Year/ semester:	Subject name code:	No. of Hours	Credits:4	
come	I/II sem	Financial Management	L:4 T:0 P:0		
		(M20MB10)			
On successfu	il completion of this	course, student should be able to:			
1	Identify the importa	nce of profit maximization and wealth	h maximization		
2	Apply different tech	iniques for investment decision proces	ss and measuring	the cost of	
	capital				
3	Analyze the capital	structure theories			
4	Examine the factors	s determining dividend and its valuation	on		
5	Assess the needs an	d planning of working capital			
Course out	Year/ semester:	Subject name code:	No. of Hours	Credits:4	
come	I/II sem	Business Research Methods	L:4 T:0 P:0		
		(M20MB11)			
1	Un successful co	mpletion of this course, student sho	uid be able to:		
1	What is research me	ethodology and why it is useful.			
2	Explain the research	n problem and research design			
3	Importance of question	nah structure	L		
4	Importance of research	h reference			
<u> </u>	Voor/ comostor	Subject nome adde	No of Houng	Creditar	
Course out	I eal/ semester:	Subject name code:		Creans:4	
come	1/11 Sein.	Quantitative Analysis for Business Decisions (M20MB12)	L:4 1:0 F:0		
On successfi	l completion of this	course student should be able to:			
	Define OR and OR	Model			
2	Construct the struct	ure of I PD			
3	Compare Two-phas	e method and Big-M method			
3	Build the mathemat	ical model of transportation problem			
5	How to solve the A	ssignment problem			
		ssignment problem.			

<b>Course out</b>	Year/ semester:	Subject name code:	No. of Hours	Credits:4		
come	I/II sem	<b>Cost &amp; Management Accounting</b>	L:4 T:0 P:0			
		(M20MB13)				
On successfu	al completion of this	s course, student should be able to:				
1	Distinguish Financial Accounting, Cost accounting & Management Accounting					
2	Analyze Costing fo	Analyze Costing for specific industries.				
3	Apply Break Even	analysis for various business problems	5			
4	Classify and evalua	te budgets.				
5	Compare and contra	ast standard cost, estimated cost & ma	rginal cost			
Course out	Year/ semester:	Year/ semester: Subject name code: No. of Hours Credits:3				
come	I/II sem	Soft Skills Lab (M20MB14)	L:0 T:0 P:4			
On successfu	al completion of this	s course, student should be able to:				
1	show how to overce	ome fear of facing interviews				
2	Improve communic	ation skills and able to convince their	view point to the s	uperior,		
	peers and subordina	ates.				
3	Adopt Time manag	ement skills to efficiently manage time	e in meeting deadli	nes.		
4	Compare Traits of	positive thinking and high achievers				
5	Improve General ki	nowledge and current information.				
		II/I Sem				
Course out	Year/ semester:	Subject name code: Strategic	No. of Hours	Credits: 4		
come	II/I Sem.	Management (M20MB15)	L:4 T:0 P:0			
On successfu	al completion of this	s course, student should be able to:		1		
1	Formulate organiza	tional objectives, policies, vision and	mission and outline	e the		
	concepts in strategi	c management.				
2	Define the role of s	trategist in an organization.				
3	Evaluate the perform	mance by using qualitative and quantit	tative benchmarkin	g technique.		
4	Identify diversifyin	g strategies and define why firms dive	rsify?			
5	Propose strategies f	or competing in global markets.				
Course out	Year/ semester:	Subject name code:	No. of Hours	Credits:4		
come	II/I sem	Entrepreneurship (M20MB16)	L:4 T:0 P:0			
On successfu	al completion of this	s course, student should be able to:				
1	Explains characteri	stics, Qualities, Skill and Functions of	Entrepreneur.			
2	Infers financial Inst	itutions assistance to promote Entrepr	eneurship.			
3	Relates Technologi	cal competitiveness, legal regulatory s	ystems, patents, tra	ademarks		
	and intellectual pro	perty rights to Entrepreneurship.				
4	Summarizes necess	ity for business ethics and ethical guid	lelines in business.			
5	Recalls corporate g	overnance and its History and theoreti	cal basis of corpor	ate		
	Governance.		1	1		
Course out	Year/ semester:	Subject name code:	No. of Hours	Credits: 3		
come	II/I sem	Intellectual Property Rights	L:4 T:0 P:0			
		(M20MB17A)				
On successfu	al completion of this	s course, student should be able to:				
1	Outline the increasi	ng importance of intellectual property	rights			
2	Utilize post registr	ation procedures and trade mark regist	ration process			
3	Explain the copyright principles and rights					

4	Prioritize the law of patents and patent ownership.				
5	Develop the trade s	ecret and maintenance.			
Course out	Year/ semester:	Subject name code: Stress	No. of Hours	Credits:3	
come	II/I sem	Management (M20MB17B)	L:4 T:0 P:0		
On successfu	ul completion of this	s course, student should be able to:			
1	Define the stress an	nd Symptoms of stress			
2	Identify various iss	ues in crisis management			
3	Develop the relatio	nship between the teams			
4	Improve the organization personality of employee				
5	Discuss the skills re	equired for personality development			
Course out	Year/ semester:	Subject name code:	No. of Hours	Credits:3	
come	II/I sem	Data Analytics	L:4 T:0 P:0		
		(M20MB17C)			
On successfu	al completion of this	s course, student should be able to:			
1	Explain basic Data	concepts such as Data Analytics conce	epts to include Imp	ortance of	
	data analytics, data	visualization tools, Descriptive Statist	tical Measures, Pre	dictive	
	Analytics, Data Mi	ning, and Simulation			
2	Apply knowledge t	o solve simple tasks using data analyti	cs techniques with	computer	
	(MS Excel).				
3	Identify the advanta	ages and disadvantages of simulation,	risk analysis and d	ecision tree	
	analysis				
4	Measure the data and	nalytics parameters (descriptive analyt	ics, diagnostic ana	lytics,	
	predictive analytics	and prescriptive analytics).			
5	Choose the data and	alytics techniques for solving practical	problems in busin	ess.	
Course out	Year/ semester:	Subject name code: Tourism and	No. of Hours	Credits: 3	
come	II/I sem	Hospitality Management	L:4 T:0 P:0		
On suggest	l completion of thi	(MIZUMIDI/D)			
	List out the differen	s course, student should be able to:			
1	Identify the factors	affecting hospitality and tourism indu	atre		
2	Improve the employ	we and the spitality and tourism indu	stry		
3	Develop the employ	stam and acotourism activities			
5	Solve the various p	roblems in tourism and Hospitality ma	nagement		
Course out	Voor/ somester:	Subject nome code: Indian	No of Hours	Crodits	
come	I Call Schlester.	Constitution (M20MB17F)	$\mathbf{I} \cdot \mathbf{A} = \mathbf{T} \cdot \mathbf{A}$		
On successfi	1/1 scm 11 completion of this	s course student should be able to:	1.4 1.0 1.0	05	
1	Define Indian const	titution and constitutional history			
2	Explain federalism	and centre-state relationship			
3	Make use of state s	ecretariat and it structure			
4	Determine the impo	ortance of election commission			
5	Improve the welfar	e of SC/ST/BC and women			
Course out	Year/ semester:	Subject name code: Consumer	No. of Hours	Credits:	
come	II/I Sem	Behavior (M20MB18M1)	L:4 T:0 P:0	03	

On successfu	al completion of this	course, student should be able to:		
1	Understand consum	er behavior research process and rural	consumer behavio	or.
2	Understand the env	ironmental influences on consumer b	ehavior and able t	o appreciate
	the importance of c	ultural adaptation of consumer behavior	or.	
3	Analyze Individua	l personality and self-concept, co	nsumer perception	n, changing
	attitudes of consum	ers, consumer learning and informatio	n processing.	
4	Establish the releva	nce of consumer behavior models in d	ecision making.	
5	Makeup role of co	nsumerism, consumer safety, and co	nsumer informatio	n at market
	place.			
Course out	Year/ semester:	Subject name code: Sales and	No. of Hours	Credits:
come	II/I Sem	<b>Distribution Management</b>	L:4 T:0 P:0	03
		(M20MB19M2)		
On successfu	al completion of this	course, student should be able to:		
1	Explain the fundam	entals of sales management.		
2	Define and formula	te the strategies to effectively manage	company's sales o	perations
	and identify the role	es and responsibilities of the sales man	ager.	
3	Develop the sales for	prce productivity and control.		
4	Analyze and impler	nent distribution channel strategy.		
5	Examine the channe	els efficiency and effectiveness in who	lesaling and retaili	ng.
Course out	Year/ semester:	Subject name code: Supply	No. of Hours	Credits:
come	II/I Sem	Chain Management	L:4 T:0 P:0	03
		(M20MB20M3)		
On successfu	il completion of this	course, student should be able to:		
1	Conceptual framew	ork and essentials of Supply Chain Ma	anagement.	
2	Emerging trends in	logistics management.		
3	Factors influencing	selection of transportation and wareho	ousing managemen	t.
4	Strategic issues in s	upply chain management.	Γ	
Course out	Year/ semester:	Subject name code:	No. of Hours	Credits:
come	II/I Sem	Security Analysis and Portfolio	L:4 T:0 P:0	03
		Management (M20MB18F1)		
On successfu	il completion of this	course, student should be able to:		
1	Analyze investment	alternatives and make investment pol	icy recommendation	on including
2	the determination of	t an optimal asset allocation.		
2	Examine various ty	pes of bonds in the stock markets		
3	To define equity an	alysis and valuation	C 11 1	
4	Construct optimal p	ortfolios following the tenets of mode	rn portfolio theory	
5	Discuss various typ	es of mutual funds schemes	NT OTT	<b>G 1</b> ¹
Course out	Year/ semester:	Subject name code:	No. of Hours	Credits:
come	II/I Sem	Financial Institutions, Markets	L:4 1:0 P:0	03
On an a a a g	al completion of this	and Services (M20MB19F2)		
	Define the financial	Ecourse, student should be able to:	mlain the financial	Deferme
1	ofter 1001 Domist	institutions markets and services, Ex	piani the mancial	KCI011118
2	Outling the Donling	and non Banking Institutions		
2	Distinguish the star	and non-danking institutions.	t & anital manlest	
5	Distinguish the stru	clure and functioning of money marke	ri & capital market.	

4	Evaluate of lease fi	nance and Hire Purchase.			
5	Elaborate functions and activities of Investment bankers.				
<b>Course out</b>	Year/ semester:	Subject name code: International	No. of Hours	Credits:	
come	II/I Sem	<b>Financial Management</b>	L:4 T:0 P:0	03	
		(M20MB20F3)			
On successfu	ul completion of this	s course, student should be able to:			
1	To determine differ	ent international Business Methods			
2	To evaluate Balance of payments and International Monetary system				
3	To Make use of for	eign exchange market movements.			
4	To make experiment	nt with exchange rate movements			
5	To find the opportu	inities in International financial market	ts		
Course out	Year/ semester:	Subject name code: Leadership	No. of Hours	Credits:	
come	II/I Sem	and Change Management	L:4 T:0 P:0	03	
		(M20MB18H1)			
On successfu	ul completion of this	s course, student should be able to:			
1	Define leadership r	oles and functions.			
2	How to become an	effective leader and his/her leadership	styles.		
3	Explains leadership	styles in organizational work settings			
4	Solve the various p	roblems while inviting change in orga	nization.		
5	Distinguish the rela	tionship between power, politics and a	conflicts.		
Course out	Year/ semester:	Subject name code: Management	No. of Hours	Credits:	
come	II/I Sem	of Industrial Relations	L:4 T:0 P:0	03	
		(M20MB19H2)			
On successfu	ul completion of this	s course, student should be able to:			
1	Demonstrate indust	rial relation and Indian IR system			
2	Outline the trade un	nion, types and their recognition			
3	Analysis dispute se	ttlement missionary and its instrument	S		
4	Develop grievance	handling procedure			
5	Analyze collective	bargaining levels and legal framework	CS		
Course out	Year/ semester:	Subject name code:	No. of Hours	<b>Credits:</b>	
come	II/I Sem	<b>Compensation Management</b>	L:4 T:0 P:0	03	
		(M20`MB20H3)			
On successfu	ul completion of this	s course, student should be able to:			
1	Define the compense	sation management and its objectives			
2	Explain issues and	models of executive compensation			
3	Explain the compo	nents of pay structure and its strategy			
4	Determine internati	ional compensation system and manag	ing variations in i	nternational	
	pay				
5	Plan employee stoc	k ownership plans and broad based op	tion plans		
Course out	Year/ semester:	Subject name code: Internship	No. of Hours	Credits:	
come	II/I sem	and Seminar (M20MB21)	L:0 T:0 P:0	02	
On successfu	ul completion of this	s course, student should be able to:			
1 1					
I	Improve their pract	ical knowledge by working in any org	anization		

3	List out organizatio	nal working teams and dynamics of or	rganization		
4	Develop his compe	tencies for future job requirement			
II/II Sem					
Course out	Year/ semester:	Subject name code: Business	No. of Hours	Credits:	
come	II/II sem	Laws and Ethics (M20MB22)	L:4 T:0 P:0	04	
On successfu	al completion of this	s course, student should be able to:			
1	Outline the variou	s laws affecting the business conce	ern. Define the pr	ocedure for	
	incorporation and w	vinding up of company			
2	Categorize contrac	ets and define essential elements o	f Indian contract	act and its	
	remedies for bread	ch. Explain the general principles,	conditions and w	arranties in	
	contract of sale.				
3	Choose the approp	priate negotiable instrument under t	he negotiable inst	rument act.	
	Determine the rules	and regulations of GST in India.			
4	Asses the ethical iss	sues in business.	1		
5	Identify the issues a	and challenges in cybercrime and its ne	eed in Indian conte	xt.	
Course out	Year/ semester:	Subject name code: Production	No. of Hours	Credits:	
come	II/II sem	and Operations Management	L:4 1:0 P:0	04	
On successful	a appropriation of this	(M20MB23)			
	Determine ontimun	a production methods. Compare and a	antrast production	mathada	
1	Illustrate the produc	and process design	Siliast production	methous	
2	Choose the appropr	iste facilities location and Plant layour	t		
3	Choose and apply t	he techniques of sequencing and sched	uling in production	n control	
	Asses the concents	of quality control		i control.	
5	Apply materials ma	inagement techniques for inventory co	ntrolling		
5	rippiy materials ma	magement teeninques for inventory co	introlling		
Course out	Year/ semester:	Subject name code: Health Care	No. of Hours	Credits:	
come	II/II sem	Management (M20MB24B)	L:4 T:0 P:0	03	
On successfu	ll completion of this	s course, student should be able to:			
1	Identify the prevail	ing health care system in India			
2	Avail the facility pr	ovided by the health policies			
3	Adopt the benefits t	from different programs introduced by	government		
4	Utilize different hea	althcare schemes and funds offered by	WHO and UNICE	F	
5	Outline the trends in	n the health insurance sector			
Course out	Year/ semester:	Subject name code: Disaster	No. of Hours	Credits:	
come	II/II sem	Management (M20MB24C)	L:4 T:0 P:0	03	
On successfu	il completion of this	s course, student should be able to:			
1	Define concept of E	environmental Hazards & Disasters.			
2	Identify causes of e	artnquakes.			
3	Discuss about the d	isasters and their impact on the enviro	nment.		
4	Estimate sedimenta	tion & Environmental problems			
Correct 1	Formulate correctiv	e measures of Erosion & Sedimentation		Creative 2	
Course out	1 ear/ semester:	Subject name code: Agri Rusings Management		Credits:3	
COME	11/11 50111	(M20MB24D)			

On successfu	al completion of this	s course, student should be able to:		
1	Define the role of a	griculture in economic development		
2	Make use of marke	ting of agriculture produce and agencie	es through which a	griculture
	produce is markete	d		
3	Identify and eliminate	ate the defects of agricultural marketin	g	
4	Inspect the agricult	ural prices and price policy		
5	Plan the duties and	responsibilities of marketing functiona	aries.	
Course out	Year/ semester:	Subject name code:	No. of Hours	Credits:
come	II/II Sem	Sustainability Management	L:4 T:0 P:0	03
		(M20MB24F)		
On successfu	al completion of this	s course, student should be able to:		
1	List out the History	and emergence of sustainable develop	oment	
2	Explain the Indian.	Judiciary system and Sustainability d	levelopment	
3	Develop the quality	of life, equation of poverty population	n and pollution	
4	Prioritize biodivers	ity conservation and ecosystem integri	ty	
5	Design the sustaina	ble development strategies	•	
Course out	Year/ semester:	Subject name code: Customer	No. of Hours	Credits:
come	II/II Sem	<b>Relationship Management</b>	L:4 T:0 P:0	03
		(M20MB25M4)		
On successfu	al completion of this	s course, student should be able to:		
1	Define the various	concepts in customer relationship man	agement	
2	Determine the impo	ortance of customer relationship managed	gement	
3	Explain the recent t	rends in customer relationship manage	ement	
4	Build the customer	relations and customer profile		
5	Develop strategies	for customer, retention and developme	ent	
Course out	Year/ semester:	Subject name code: Services	No. of Hours	Credits:
come	II/II Sem	Marketing (M20MB26M5)	L:4 T:0 P:0	03
On successfu	al completion of this	s course, student should be able to:		
1	Differentiate Marke	eting services Vs. Physical services, a	nalyze services ma	arketing mix
	and Gaps model of	service quality.		
2	Understand consur	ner requirements and extend custome	er relationships wi	th regard to
	services.			
3	Identify critical is	sues in service design, service blu	e printing, plan	new service
	development proce	ss and service standards.		
4	Explain the Employ	yee's and Customer's roles in service of	lelivery.	
5	Integrate services	marketing communications and five	categories of str	ategies, and
	creates an environ	ment that achieves excellence in cust	tomer service. Des	sign the key
	issues in pricing of	services.	Γ	Γ
Course out	Year/ semester:	Subject name code: International	No. of Hours	Credits:
come	II/II Sem	Marketing (M20MB27M6)	L:4 T:0 P:0	03
On successfu	al completion of this	s course, student should be able to:		
1	Define internationa	l marketing and its environment		
2	Understand world t	rade, features and opportunities		
3	Compare the domes	stic market with international market		

4							
4	Discuss the various	factors influencing pricing decisions					
5	Develop the global marketing program and segmentation of product and services						
Course out	Year/ semester:	Subject name code: Financial	No. of Hours	Credits:			
come	II/I Sem	Derivatives (M20MB25F4)	L:4 T:0 P:0	03			
On successfu	al completion of this	s course, student should be able to:					
1	Define significance	of derivatives in stock in commodity	market.				
2	Explain players in Derivative market						
3	Differentiate forwa	rd and future contract					
4	Analyze Trading w	ith option					
5	Explain strategies in	nvolving option					
Course out	Year/ semester:	Year/ semester: Subject name code: No. of Hours Credit					
come	II/II Sem	Strategic Investment & Financing	L:4 T:0 P:0	03			
••••••		Decisions (M20MB26F5)	200 200 200				
On successfi	il completion of this	s course, student should be able to:		1			
1	Define investment	decisions under conditions of risk and	uncertainty				
2	Make use of discou	nted payback, post payback, return on	investment and su	rolus			
_	payback						
3	Maximize the advar	ntages of leasing and leasing decisions					
4	Develop the various	s strategies for financing decisions					
5	Solve various probl	ems on mergers and acquisitions	1	1			
<b>Course out</b>	Year/ semester:	Subject name code: Corporate	No. of Hours	Credits:			
come	II/II Sem	Taxation and Planning	L:4 T:0 P:0	03			
		(M20MB27F6)					
On successfu	al completion of this	s course, student should be able to:					
1	Express Basic conc	epts of direct & Indirect taxes and able	e to compute Resid	lential Status			
	and Scope of Total	Income of a Company and exempted	Incomes of compar	ny.			
2	Compute total Inco	me of corporate.					
3	Identify the importa	ance of Tax planning, Tax Managemer	nt and able to use T	Fax planning			
	techniques towards	Capital Structure decisions.					
4	Use the tax plannin	g with reference to setting up of a new	business.				
6	Perform tax plannir	ig in respect of mergers and Amalgam	ations.				
Course	Year/ semester:	Subject name code: International	No. of Hours	Credits:			
out come	II/II Sem	HRM (M20MB25H4)	L:4 T:0 P:0	03			
On successfu	al completion of this	s course, student should be able to:					
1	Define nature, scop	e and components of IHRM.					
2	Compare IHRM an	d domestic HRM					
3	Tell transfer policie	s and compensation management					
4	Identify IHRM prac	ctices in selected countries					
5	Classify workers an	nd cadres					
Course out	Year/ semester:	Subject name code: Performance	No. of Hours	Credits:			
come	II/II Sem	Management Systems	L:4 T:0 P:0	03			
		( <b>M20MB26H5</b> )					
On successfi	l completion of this	s course, student should be able to:	1	<u>I</u>			
1	Define performance	e management and methods of perform	ance appraisal				
2	Measure the employ	vee performance towards the predeter	nine standarde				
<u> </u>	Measure the employee performance towards the predetermine standards						

3	Examine the perfor	mance management system and appra	isal practices in As	ian			
5	countries						
	Improve the employ	wee performance through performance	related concents				
5	Identify the Legal i	sues involved in performance manage	ament and reward of	wetame			
Course out	Voor/ comostor	Subject nome adder Strategie	No of Hours	Cradita			
Course out	I cal/ semester:	Iteal/semester.Subject name code. StrategicNo. of floursCredits.II/II SomHPM (M20MR27H6)I ·4 T·0 P·003					
Come	II/II Selli	nkivi (ivizuvidz7no)	L:4 1:0 P:0	03			
	E completion of this	s course, student should be able to:		1			
1	(SHRD)	en strategic business planning (SBP)	and strategic HK de	evelopment			
2	Discuss about trend	s in utilization of HR and relocation of	of work				
3	Identify managerial	issues in strategic formulation.					
4	Compare Results O	riented vs Process oriented measures.					
5	Evaluate strategic c	ontribution of traditional areas such as	s selection, training	g and			
	compensation						
<b>Course out</b>	Year/ semester:	Subject name code:	No. of Hours	Credits:			
	<b>TT</b> / <b>TT</b>						
come	II/II sem	Comprehensive Subject Viva-	L:0 T:0 P:0	02			
come	II/II sem	Comprehensive Subject Viva- Voce (M20MB28)	L:0 T:0 P:0	02			
come On successfu	II/II sem 11 completion of this	Comprehensive Subject Viva- Voce (M20MB28) s course, student should be able to:	L:0 T:0 P:0	02			
come On successfu	II/II sem 1l completion of this Appraise and streng	Comprehensive Subject Viva- Voce (M20MB28) s course, student should be able to: gthen the students' conceptual knowled	L:0 T:0 P:0	02 cts of the			
come On successfu	II/II sem Il completion of this Appraise and streng semester.	Comprehensive Subject Viva- Voce (M20MB28) s course, student should be able to: gthen the students' conceptual knowled	L:0 T:0 P:0	02 cts of the			
Come On successfu 1 2	II/II sem al completion of this Appraise and streng semester. Maximize the comp	Comprehensive Subject Viva- Voce (M20MB28) s course, student should be able to: gthen the students' conceptual knowled petencies regarding subjects.	L:0 T:0 P:0	02 cts of the			
Come On successfu 1 2 Course out	II/II sem Il completion of this Appraise and streng semester. Maximize the comp Year/ semester:	Comprehensive Subject Viva- Voce (M20MB28) s course, student should be able to: gthen the students' conceptual knowled petencies regarding subjects. Subject name code: Main project	L:0 T:0 P:0 dge in all the subje	02 cts of the Credits:			
Come Con successfu Course out come	II/II sem al completion of this Appraise and streng semester. Maximize the comp Year/ semester: II/II sem	Comprehensive Subject Viva- Voce (M20MB28) s course, student should be able to: gthen the students' conceptual knowled petencies regarding subjects. Subject name code: Main project and viva-voce (M20MB29)	L:0 T:0 P:0 dge in all the subjection No. of Hours L:0 T:0 P:0	02 cts of the Credits: 04			
come       On successful       1       2       Course out       come       On successful	II/II sem Il completion of this Appraise and streng semester. Maximize the comp Year/ semester: II/II sem Il completion of this	Comprehensive Subject Viva- Voce (M20MB28) s course, student should be able to: gthen the students' conceptual knowled betencies regarding subjects. Subject name code: Main project and viva-voce (M20MB29) s course, student should be able to:	L:0 T:0 P:0 dge in all the subje No. of Hours L:0 T:0 P:0	02 cts of the Credits: 04			
come       On successful       1       2       Course out       come       On successful       1	II/II sem Il completion of this Appraise and streng semester. Maximize the comp Year/ semester: II/II sem Il completion of this Gain knowledge on	Comprehensive Subject Viva- Voce (M20MB28) s course, student should be able to: gthen the students' conceptual knowled petencies regarding subjects. Subject name code: Main project and viva-voce (M20MB29) s course, student should be able to: real time working environment.	L:0 T:0 P:0 dge in all the subjection No. of Hours L:0 T:0 P:0	02 cts of the Credits: 04			
comeOn successful12Course out comeOn successful12	II/II sem Il completion of this Appraise and streng semester. Maximize the comp Year/ semester: II/II sem Il completion of this Gain knowledge on Develop skills in re	Comprehensive Subject Viva- Voce (M20MB28) s course, student should be able to: gthen the students' conceptual knowled betencies regarding subjects. Subject name code: Main project and viva-voce (M20MB29) s course, student should be able to: real time working environment. port writing through data collection, d	L:0 T:0 P:0 dge in all the subje No. of Hours L:0 T:0 P:0	02 cts of the Credits: 04			
comeOn successful12Course out comeOn successful12	II/II sem Il completion of this Appraise and streng semester. Maximize the comp Year/ semester: II/II sem Il completion of this Gain knowledge on Develop skills in re presentation and int	Comprehensive Subject Viva- Voce (M20MB28)         s course, student should be able to:         gthen the students' conceptual knowled         betencies regarding subjects.         Subject name code: Main project and viva-voce (M20MB29)         s course, student should be able to:         real time working environment.         port writing through data collection, during through data collection, during through data collection.	L:0 T:0 P:0 dge in all the subjection No. of Hours L:0 T:0 P:0	02 cts of the Credits: 04			
comeOn successful12Course out comeOn successful123	II/II sem II completion of this Appraise and streng semester. Maximize the comp Year/ semester: II/II sem I completion of this Gain knowledge on Develop skills in re presentation and int Analyze best praction	Comprehensive Subject Viva- Voce (M20MB28) s course, student should be able to: gthen the students' conceptual knowled petencies regarding subjects. Subject name code: Main project and viva-voce (M20MB29) s course, student should be able to: real time working environment. port writing through data collection, d repretation. ces, system, processes, procedures and	L:0 T:0 P:0 dge in all the subject No. of Hours L:0 T:0 P:0	02 cts of the Credits: 04 extraction,			
comeOn successful12Course out comeOn successful123	II/II sem Il completion of this Appraise and streng semester. Maximize the comp Year/ semester: II/II sem Il completion of this Gain knowledge on Develop skills in re presentation and int Analyze best practic company/industry i	Comprehensive Subject Viva- Voce (M20MB28) s course, student should be able to: gthen the students' conceptual knowled betencies regarding subjects. Subject name code: Main project and viva-voce (M20MB29) s course, student should be able to: real time working environment. port writing through data collection, d repretation. ces, system, processes, procedures and n different functional areas.	L:0 T:0 P:0 dge in all the subjection No. of Hours L:0 T:0 P:0 data analysis, data end l policies of a	02 cts of the Credits: 04			
comeOn successful12Course out comeOn successful1234	II/II sem Il completion of this Appraise and streng semester. Maximize the comp Year/ semester: II/II sem Il completion of this Gain knowledge on Develop skills in re presentation and int Analyze best practic company/industry i Improve research k	Comprehensive Subject Viva- Voce (M20MB28) s course, student should be able to: gthen the students' conceptual knowled betencies regarding subjects. Subject name code: Main project and viva-voce (M20MB29) s course, student should be able to: real time working environment. port writing through data collection, d repretation. ces, system, processes, procedures and n different functional areas. nowledge on business problems	L:0 T:0 P:0 dge in all the subjection No. of Hours L:0 T:0 P:0 ata analysis, data e	02 cts of the Credits: 04			

#### (AUTONOMOUS)

#### ELECTRICAL AND ELECTRONICS ENGINEERING

#### COURSE OUTCOMES FOR B.TECH-EEE R20 FOR THE YEAR 2020-2021

Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:			
Outcome	I Sem	Linear Algebra and	B20MA03	L/T/P :3/1 /0	4			
		<b>Complex Variable</b>						
After learn	ing the conte	ents of this subject, the studen	t must be able to	·				
1	Understand	l the principles of matrix to ca	alculate the charac	teristics of syster	n of			
	linear equa	tions using multiple methods						
2	Determine Eigen values, Eigenvectors of matrices							
3	Calculate P	Partial derivatives, extreme of	functions of mult	iple variables				
4	Analyze the	e complex function with refer	ence to their analy	yticity and evalua	te using			
	integral the	orems						
5	Expand the	complex function using pow	er series					
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:			
Outcome	I Sem	Programming For	B20CS01	L/T/P: 3/1 /0	4			
		<b>Problem Solving</b>						
After learn	ing the conte	ents of this subject, the studen	t must be able to					
1	Understand	ling how problems are posed	and how they can	be analyzed for o	obtaining			
	solutions							
2	Understand	ling the fundamentals of C pro-	ogramming					
3	Learning of	f sequencing, branching, loop	ing and decision-	making statement	s to solve			
	scientific an	nd engineering problems.						
4	Implementi	ing different operations on arr	ays and creating a	and using of func	tions to			
	solve probl	ems						
5	Design and	implement different types of	file structures usi	ng standard meth	odology.			
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:			
Outcome	I Sem	Fundamentals of	B20ME06	L/T/P: 3/0/0	3			
		Mechanical Engineering						
By the end	of the cours	e, students will be able to						
1	To understa	and the various sources of ene	ergy and basic terr	ninology of Mecl	nanical			
	systems							
2	To understa	and the various types of autor	nobile engines					
3	To underst	and and appreciate significan	ce of mechanical	engineering in di	fferent			
	fields of en	gineering						
4	To understa	and power transmission eleme	ents, and applicati	ons of various en	gineering			
	materials							
5	To understa	and various manufacturing pro-	cesses.					
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Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:			
Outcome	I Sem	Chemistry	B20CH02	L/T/P :3/0 /0	3			
The basic concepts included in this course will help the student to gain:								
1	The knowledge of electrochemical cells, different batteries							
2	The require	d principles and concepts of co	orrosion, control	methods.				
3	The knowl	The knowledge of water treatment.						
4	The knowle	edge of polymers and their imp	ortance in day to	day life				
5	The require	d principles and concepts of pa	assive devices.					
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:			
Outcome	I Sem	English Language and	B20EN02	L/T/P :0/0 /3	1.5			
		Interactive						
		<b>Communication Skills Lab</b>						
After learn	ing the conte	ents of this subject, the student	must be able to					
1	Understand	the nuances of English langua	ge through audio	-visual experient	ce and			
	group activ	ities.						
2	speak with	clarity and confidence which is	n turn enhances t	heir employabilit	ty skills			
3	develop the	ir listening skills so that they r	nay appreciate its	role in developi	ng			
	LSRW skil	Is language and improve their	pronunciation					
4	Involve the	students in speaking activities	in various contex	kts.				
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:			
Outcome	I Sem	<b>Programming for Problem</b>	B20CS02	L/T/P :0/0 /2	1			
		Solving Lab						
After learn	ing the conte	ents of this subject, the student	must be able to					
1	Understand	basic structure of the C Progr	amming, data typ	es, declaration a	nd usage			
	of variables	s, control structures and all rela	ated concepts.					
2	Understand	any algorithm and Write the C	C programming c	ode in executable	e form			
3	Implement	Programs using functions, point	nters and arrays					
4	Use the pre	processors to solve real time	problems					
5	Use file str	uctures and implement program	ns on files	NT 6 TT	<b>a 1</b> ¹			
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:			
Outcome	I Sem	Engineering and IT	B20ME03	L/T/P :0/0 /3	1.5			
A.C. 1	• .1	Workshop	.1 11 .					
After learn	ing the conte	ents of this subject, the student	must be able to	J	· · ·			
1	Know the f	undamental knowledge of Hou	ise wiring and sol	idering and their	usage in			
	real time A	pplications.	1 .	• , ,				
2	Gain know	leage on electronic component	s and measuring	instruments				
3	Use basic c	concepts of computer hardware	for assembly and	a disassembly.				
1 4	Use Micros	soft tools for exercise						

Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:			
Outcome	II Sem	Differential Calculus and	B20MA05	L/T/P :3/1 /0	4			
		<b>Numerical Methods</b>						
After learn	After learning the contents of this subject, the student must be able to							
1	Apply the fundamental concepts of ordinary differential equations to real time							
	problems.	problems.						
2	Find the co	mplete solution of a non-homo	geneous differen	tial equations an	d			
	applying its	s concepts in solving physical j	problems of Engi	neering				
3	Analyse lin	e, surface and volume integral	s using fundamer	tal theorems.				
4	Find a bette	er approximate root of a given	equation.					
5	Compute the	ne differential equation using n	umerical techniq	ues.				
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:			
Outcome	II Sem	Electrical Circuits-I	B20EE04	L/T/P :3/1 /0	4			
After learn	ing the conte	ents of this subject, the student	must be able to					
1	Learn basic	es of electrical circuits such as	laws, transformat	ion and network				
	reduction to	echniques.						
2	Explore the	e basic principles and concepts	involved in AC o	circuits and analy	ze power			
	in series an	d parallel AC circuits						
3	Learn the c	concepts of resonance and the i	mportance of loci	us diagrams.				
4	Understand	l various network theorems and	d its applications	in electrical circu	uits.			
5	Analyze the	e series and parallel magnetic o	circuits with basic	e magnetic princi	ples and			
	laws of ele	ctromagnetic induction.						
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:			
Outcome	II Sem	<b>Basic Electronic devices</b>	B20EC01	L/T/P :3/1 /0	4			
After learn	ing the conte	ents of this subject, the student	must be able to					
1	Analyze the	e characteristics of the PN junc	ction diode and Z	ener diode				
2	Design the	rectifiers with and without filte	ers for specified I	DC voltage.				
3	Illustrate th	e voltage- current characteristi	ics of Junction Tr	ansistor and diff	erent			
	configurati	ons of transistor						
4	Design and	analyze the different biasing c	circuits and ampli	fier circuits				
5	Acquire kn	owledge about the construction	n, theory and char	racteristics of FE	T and			
	MOSFET							
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:			
Outcome	II Sem	Physics	B20PH02	L/T/P :3/0 /0	3			
After learn	ing the conte	ents of this subject, the student	must be able to					
1	Understand	ls the materials on the basis of	energy band gap	and its device				
	application	S						
2	Describes t	he characteristics and working	of lasers and the	ir use in various	fields			
3	Analyse an	d apply the concepts of Electri	c Fields for accur	ate determinatio	n of			

	Electric flux, Electric flux density, energy stored in electric fields etc							
4	Apply the concepts of the light propagation in optical fibres in optical							
	communication systems							
5	Classify and enumerate the properties of magnetic and Dielectric materials and							
	identifies their role in specific engineering applications							
Course	SemesterSubject NameSubject CodeNo. of HoursCredits:							
Outcome	II Sem	Electrical Engineering	B20EE05	L/T/P :0/0 /3	1.5			
		<b>Practice Lab</b>						
After learn	earning the contents of this subject, the student must be able to							
1	Identify and find the various components and equipment used for electrical							
	engineering	g applications						
2	Understand	l the staircase wiring and ceil	ing fan wiring					
3	Develop th	e simple electric circuits on b	bread board and PC	CB.				
4	Understand	I the earthing connections and	d DOL starter conr	nection				
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:			
Outcome	II Sem	Physics Lab	B20PH05	L/T/P :0/0 /2	1			
After learn	ing the conte	ents of this subject, the studer	nt must be able to					
1	Estimate th	ne frequency of tuning for and	AC supply with t	he help of stretcl	ned			
	strings							
2	Analyze as	well as compare the intensit	y distribution of in	terference and di	ffraction			
	patterns							
3	Draw the c	haracteristics of electrical and	d electronic circuit	s and evaluate th	e			
	dependent	parameters						
4	Explore an	d understand the applications	of semiconducting	g devices				
5	Evaluates t	he wavelength and radius of	curvature of Plano	convex lens by ]	Newton's			
	rings							
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:			
Outcome	II Sem	Engineering Drawing	B20ME01	L/T/P :0/0 /4	2			
After learn	ing the conte	ents of this subject, the studer	it must be able to					
1	Understand	l various commands, object p	roperties in AUTC	DCAD				
2	Analyse the	e Projections of Points.						
3	Understand	l the projections of solids						
4	Estimate th	ne use of drawings, dimension	ning, scales and co	nic sections				
5	Modify the	applications of this knowled	ge in computer gra	aphics.				
6	Compare the	he Conversion of Isometric v	ews to Orthograph	nic views				
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:			
Outcome	II Sem	<b>Basic Electronic devices</b>	B20EC02	L/T/P :0/0 /3	1.5			
		Lab						
1	Demonstra	te the characteristics and ope	ration of Semicono	luctor diodes.				
2	Analyze di	fferent rectifier circuits						

3	Demonstrate V-I characteristics of BJT, FET and UJT					
4	Design sim	ple electronic circuits		1		
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:	
Outcome	III Sem	Electrical Circuits – II	B20EE05	L/T/P :3/0 /0	3	
After learn	ing the conte	ents of this subject, the student	must be able to			
1	Understand	I the basics of network represe	ntation, method o	f analyzing the r	network	
	and duality	of network.				
2	Analyze balanced and unbalanced three phase circuits and measure voltage, current					
	and power	in three phase star and delta co	onnections			
3	Study the t	ransient response of series and	parallel RLC circ	cuits for DC and		
	sinusoidal	excitations. Analyze the respon	nse for step, ramp	, impulse etc., us	sing	
	Laplace tra	nsformation				
4	Study diffe	rent types of network function	s and evaluate the	e network param	eters in	
	two port ne	twork using transformed varia	bles			
5	Learn abou	t different types of filters and	Fourier analysis a	pplied to AC cir	cuits	
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:	
Outcome	III Sem	Signals and Systems	B20EC03	L/T/P :3/0 /0	3	
After learn	ing the conte	ents of this subject, the student	must be able to			
1	Analyze the	e spectral characteristics of con	ntinuous-time per	iodic signals usi	ng	
	Fourier ser	ies			-	
2	Demonstra	te and apply Fourier transform	on various signa	ls.		
3	Apply the l	Laplace transform and Fourier	transform for the	analysis of cont	inuous-	
	time signal					
4	Analyse sy	stems based on their properties	s and determine th	ne response of L'	ГΙ	
	system.					
5	Understand	l the concepts of convolution a	nd correlation of	signals.		
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:	
Outcome	III Sem	Electrical Machines-I	B20EE07	L/T/P :3/0 /0	3	
After learn	ing the conte	ents of this subject, the student	must be able to			
1	Evaluate th	e stored and converted energy	and also exerted	force in		
	electromec	hanical energy conversion dev	ices.			
2	Able to ana	alyze and design the types of d	c generators			
3	Able to sel	ect appropriate D.C Generator	to meet the requi	rements of the a	oplication	
	in industry		_		-	
4	To underst	and the characteristics and con	cept s of speed co	ontrol.		
5	Able to Te	st the performance and select a	ppropriate D.C m	achine to meet t	he	
	requiremen	its of the application in industr	y.			
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:	
Outcome	III Sem	Electromagnetic Fields	B20EE08	L/T/P :3/0 /0	3	
After learn	ing the conte	ents of this subject, the student	must be able to	1		

1	Analyze the relation between the electric field and the magnetic field, about the					
	various laws such as EFI, Potential and other concepts of these fields					
2	Understand the behavior of conductors and dielectrics, their boundary conditions,					
	Maxwell's equations with respect to electrostatics.					
3	Understand the magnetic field concepts using Biot-Savart law and Ampere's law					
4	Analyze the relation between two or more conductors when subjected to magnetic					
	fields					
5	Understand	I the concepts of time varying	fields in both elec	tric and magneti	c fields	
	and their re	lationship in evaluating powe	r			
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:	
Outcome	III Sem	Python Programming	B20CS03	L/T/P :2/0 /0	2	
After learn	ing the conte	ents of this subject, the studen	t must be able to			
1	Defining th	e fundamentals of writing Pyt	hon scripts.			
2	Expressing	the Core Python scripting ele	ments such as vari	ables and flow c	ontrol	
	structures.					
3	Apply Pyth	on functions to facilitate code	reuse.			
4	Extending l	now to work with lists and sec	juence data			
5	Implement	file operations such as read a	nd write and Adap	oting the code rol	bust by	
	handling er	rors and exceptions properly				
Course	Semester	Subject Name	Subject Code	No. of Hours	<b>Credits:</b>	
Outcome	III Sem	<b>English for Effective</b>	B20EN01	L/T/P :2/0 /0	2	
Outcome	III Sem	English for Effective Communication	B20EN01	L/T/P :2/0 /0	2	
Outcome After learn	<b>III Sem</b> ing the conte	English for Effective Communication ents of this subject, the studen	B20EN01 t must be able to	L/T/P :2/0 /0	2	
Outcome After learn 1	III Sem ing the conte Skim and s	English for Effective Communication ents of this subject, the studen can the digital text to summar	<b>B20EN01</b> t must be able to ize it for future re	L/T/P :2/0 /0 ference.	2	
Outcome After learn 1 2	III Sem ing the conte Skim and s Read the te	English for Effective Communication ents of this subject, the studen can the digital text to summar ext to make notes according to	B20EN01 t must be able to ize it for future re their needs	L/T/P :2/0 /0 ference.	2	
Outcome After learn 1 2 3	III Sem ing the conte Skim and s Read the te Use Englis	English for Effective Communication ents of this subject, the studen can the digital text to summar ext to make notes according to h language effectively in spok	B20EN01 t must be able to tize it for future re- their needs ten and written for	L/T/P :2/0 /0 ference. ms.	2	
Outcome After learn 1 2 3 4	III Sem ing the conte Skim and s Read the te Use Englist Communic	English for Effective Communication ents of this subject, the studen can the digital text to summar ext to make notes according to h language effectively in spok ate confidently in various con	<b>B20EN01</b> t must be able to ize it for future re- their needs en and written for texts and different	L/T/P :2/0 /0 ference. ms. cultures.	2	
Outcome After learn 1 2 3 4 5	III Sem ing the conte Skim and s Read the te Use Englist Communic Acquire ba	English for Effective Communication ents of this subject, the studen can the digital text to summar ext to make notes according to h language effectively in spok ate confidently in various con sic proficiency in English incl	B20EN01 t must be able to ize it for future re- their needs en and written for texts and different luding reading and	L/T/P :2/0 /0 ference. ms. cultures. l listening compr	2 rehension,	
Outcome After learn 1 2 3 4 5	III Sem ing the conte Skim and s Read the te Use Englis Communic Acquire ba writing and	English for Effective Communication ents of this subject, the studen can the digital text to summar ext to make notes according to h language effectively in spok ate confidently in various con sic proficiency in English incl l speaking skills.	B20EN01 t must be able to tize it for future re- their needs ten and written for texts and different uding reading and	L/T/P :2/0 /0 ference. ms. cultures. l listening compr	2 ehension,	
Outcome After learn 1 2 3 4 5 Course	III Sem ing the conte Skim and s Read the te Use Englis Communic Acquire ba writing and Semester	English for Effective Communication ents of this subject, the studen can the digital text to summar xt to make notes according to h language effectively in spok ate confidently in various con sic proficiency in English incl l speaking skills. Subject Name	B20EN01 t must be able to ize it for future re- their needs ten and written for texts and different uding reading and Subject Code	L/T/P :2/0 /0 ference. ms. cultures. l listening compr No. of Hours	2 ehension, Credits:	
Outcome After learn 1 2 3 4 5 Course Outcome	III Sem ing the conte Skim and s Read the te Use Englis Communic Acquire ba writing and Semester III Sem	English for Effective Communication ents of this subject, the studen can the digital text to summar ext to make notes according to h language effectively in spok ate confidently in various con sic proficiency in English incl speaking skills. Subject Name Electrical Circuits Lab	B20EN01 t must be able to ize it for future re- their needs en and written for texts and different luding reading and Subject Code B20EE09	L/T/P :2/0 /0 ference. ms. cultures. listening compr No. of Hours L/T/P :0/0 /2	2 ehension, Credits: 1	
Outcome After learn 1 2 3 4 5 Course Outcome After learn	III Sem ing the conte Skim and s Read the te Use Englis Communic Acquire ba writing and Semester III Sem ing the conte	English for Effective Communication ents of this subject, the studen can the digital text to summar xt to make notes according to h language effectively in spok ate confidently in various con sic proficiency in English incl l speaking skills. Subject Name Electrical Circuits Lab	B20EN01 t must be able to ize it for future re- their needs ten and written for texts and different uding reading and Subject Code B20EE09 t must be able to	L/T/P :2/0 /0 ference. ms. cultures. listening compr No. of Hours L/T/P :0/0 /2	2 ehension, Credits: 1	
Outcome After learn 1 2 3 4 5 Course Outcome After learn 1	III Sem ing the conte Skim and s Read the te Use Englist Communic Acquire ba writing and Semester III Sem ing the conte Explain the	English for Effective Communication ents of this subject, the studen can the digital text to summar ext to make notes according to h language effectively in spok ate confidently in various con sic proficiency in English incl l speaking skills. Subject Name Electrical Circuits Lab ents of this subject, the studen e concept of circuit laws	B20EN01 t must be able to ize it for future re- their needs ten and written for texts and different uding reading and Subject Code B20EE09 t must be able to	L/T/P :2/0 /0 ference. ms. cultures. l listening compr No. of Hours L/T/P :0/0 /2	2 rehension, Credits: 1	
Outcome After learn 1 2 3 4 5 Course Outcome After learn 1 2	III Sem ing the conte Skim and s Read the te Use Englis Communic Acquire ba writing and Semester III Sem ing the conte Explain the Verify netw	English for Effective Communication ents of this subject, the studen can the digital text to summar ext to make notes according to h language effectively in spok ate confidently in various con sic proficiency in English incl speaking skills. Subject Name Electrical Circuits Lab ents of this subject, the studen e concept of circuit laws work theorems	B20EN01 t must be able to ize it for future re- their needs ten and written for texts and different uding reading and Subject Code B20EE09 t must be able to	L/T/P :2/0 /0 ference. ms. cultures. listening compr No. of Hours L/T/P :0/0 /2	2 ehension, Credits: 1	
OutcomeAfter learn12345CourseOutcomeAfter learn123	III Sem ing the conte Skim and s Read the te Use Englis Communic Acquire ba writing and Semester III Sem ing the conte Explain the Verify netw Determine	English for Effective Communication ents of this subject, the studen can the digital text to summar ext to make notes according to h language effectively in spok ate confidently in various con sic proficiency in English incl l speaking skills. Subject Name Electrical Circuits Lab ents of this subject, the studen e concept of circuit laws vork theorems Z, Y and ABCD parameters f	B20EN01 t must be able to ize it for future re- their needs en and written for texts and different luding reading and Subject Code B20EE09 t must be able to	L/T/P :2/0 /0 ference. ms. cultures. l listening compr No. of Hours L/T/P :0/0 /2	2 ehension, Credits: 1	
Outcome After learn 1 2 3 4 5 Course Outcome After learn 1 2 3 4 4 5 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	III Sem ing the conte Skim and s Read the te Use Englis Communic Acquire ba writing and Semester III Sem ing the conte Explain the Verify netw Determine Evaluate th	English for Effective Communication ents of this subject, the studen can the digital text to summar ext to make notes according to h language effectively in spok ate confidently in various con sic proficiency in English incl speaking skills. Subject Name Electrical Circuits Lab ents of this subject, the studen e concept of circuit laws work theorems Z, Y and ABCD parameters f e time response and frequency	B20EN01 t must be able to ize it for future re- their needs en and written for texts and different luding reading and Subject Code B20EE09 t must be able to or a given two por y response charact	L/T/P :2/0 /0 ference. ms. cultures. l listening compr No. of Hours L/T/P :0/0 /2 t network. eristics of RLC s	2 ehension, Credits: 1	
OutcomeAfter learn12345CourseOutcomeAfter learn1234	III Sem ing the conte Skim and s Read the te Use Englist Communic Acquire ba writing and Semester III Sem ing the conte Explain the Verify netw Determine Evaluate th circuit and	English for Effective Communication ents of this subject, the studen can the digital text to summar at to make notes according to h language effectively in spok ate confidently in various con sic proficiency in English incl l speaking skills. Subject Name Electrical Circuits Lab ents of this subject, the studen e concept of circuit laws vork theorems Z, Y and ABCD parameters f the time response and frequency their resonance conditions.	B20EN01 t must be able to ize it for future re- their needs en and written for texts and different uding reading and Subject Code B20EE09 t must be able to or a given two por y response charact	L/T/P :2/0 /0 ference. ms. cultures. l listening compr No. of Hours L/T/P :0/0 /2 t network. eristics of RLC s	2 ehension, Credits: 1	
OutcomeAfter learn12345CourseOutcomeAfter learn1234Course	III Sem ing the conte Skim and s Read the te Use Englist Communic Acquire ba writing and Semester III Sem ing the conte Explain the Verify netw Determine Evaluate th circuit and Semester	English for Effective Communication ents of this subject, the studen can the digital text to summar xt to make notes according to h language effectively in spok ate confidently in various con sic proficiency in English incl l speaking skills. Subject Name Electrical Circuits Lab ents of this subject, the studen e concept of circuit laws vork theorems Z, Y and ABCD parameters f the time response and frequency their resonance conditions. Subject Name	B20EN01 t must be able to ize it for future re- their needs en and written for texts and different luding reading and Subject Code B20EE09 t must be able to or a given two por y response charact	L/T/P :2/0 /0 ference. ms. cultures. l listening compr No. of Hours L/T/P :0/0 /2 t network. eristics of RLC s No. of Hours	2 ehension, Credits: 1 series Credits:	

		Lab					
After learn	ing the conte	ents of this subject, the student	must be able to				
1	Expressing the Core Python scripting elements such as variables and flow control						
	structures.						
2	Apply Python functions to facilitate code reuse						
3	Extending	how to work with lists and seq	uence data.				
4	Implement	file operations such as read an	d write and Adap	ting the code rol	oust by		
	handling er	rors and exceptions properly					
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:		
Outcome	IV Sem	<b>Power Systems – I</b>	B20EE06	L/T/P :3/0 /0	3		
After learn	ing the conte	ents of this subject, the student	must be able to				
1	Gain the kr	nowledge on operation of Hydr	ro Electric genera	tion.			
2	Acquire an	d interpret fundamental concep	pts Thermal gener	ration			
3	Understand	l various economic aspects of	the Power system	and tariff			
4	Acquire kn	owledge on power system dist	ribution systems	and substation			
5	Understand	l design of underground cables	5				
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:		
Outcome	IV Sem	<b>Electrical Machines-II</b>	B20EE12	L/T/P :3/0 /0	3		
After learn	ing the conte	ents of this subject, the student	must be able to				
1	Understand	I the concepts and performance	e of single phase t	ransformer.			
2	Test the per	rformance of single phase Trai	nsformer				
3	Choose a st	uitable three phase transformer	r based on its app	lication and also	convert		
	three phase	to two phases or vice versa.					
4	Understand	l the concepts of Construction,	operation charac	teristics, testing	(concept		
	of circle dia	agram) and speed.					
5	Analyze sp	eed torque characteristics and	control the speed	of induction mo	tors		
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:		
Outcome	IV Sem	<b>Electrical Measurements</b>	B20EE13	L/T/P :3/0 /0	3		
		and Instrumentation					
After learn	ing the conte	ents of this subject, the student	must be able to				
1	Different ty	pes of measuring instruments	their construction	n operation and			
	characterist	tics					
2	Resistance	voltage current measurements	through potention	meters, voltage c	urrent		
	measureme	ents through instruments transf	ormers.				
3	Power and	energy measurements through	watt and energy	meters with exar	nples		
4	Resistance	measurements through DC bri	dges, capacitance	and inductance			
	measureme	ents through AC bridges, differ	ent types of trans	ducers.			
5	Measureme	ent of frequency and phase thro	ough CRO, range	extension of me	asuring		
	instruments	s and different types of errors a	& their reduction	methods in meas	uring		

	instruments	8.						
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:			
Outcome	IV Sem	OOPS through JAVA	B20CS27	L/T/P :3/0 /0	3			
After learning the contents of this subject, the student must be able to								
1	Understand	Understand the use of OOP concepts and solve real world problems using OOP						
	techniques.							
2	Solve the in	nter-disciplinary applications	using the concept	of inheritance.				
3	Develop ro	bust and faster applications by	y applying differen	nt exception hand	lling			
	mechanism	NS.						
4	Understand	I the multithreading concepts	and develop effici	ent applications				
5	Design GU	I based applications and deve	lops applets for w	eb applications.				
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:			
Outcome	IV Sem	Analog and Digital	B20EC21	L/T/P :3/0 /0	3			
		Electronics						
After learni	ing the conte	ents of this subject, the studen	t must be able to					
1	Construct a	and analyze the single stage tr	ansistor amplifier.					
2	Design and	construct the negative feedba	ack amplifiers and	oscillators accor	ding to			
	the require	d specifications.						
3	Understand	I the Op Amp and its application	ions.					
4	Design diff	Ferent combinational circuits u	using minimization	n techniques				
5	Analyze ba	sic sequential circuits and als	o able to understar	nd various ADC	and DAC			
	techniques.			1				
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:			
Outcome	IV Sem	Analog and Digital	B20EC22	L/T/P :0/0 /2	1			
		Electronics Lab						
After learn	ing the conte	ents of this subject, the studen	t must be able to					
1	Understand	I the applications of diode as i	integrator, differen	tiator, clipper an	d			
	clamper cir	cuits.						
2	Design circ	cuits using operational amplifi	ers for various app	plications.				
3	Analyze the	e VCO circuit.						
4	Understand	l and implement DAC conver	sions using OP-AI	MP.	1			
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits			
Outcome	IV Sem	Electrical Machines Lab-I	<b>B20EE15</b>	L/T/P :0/0 /3	: 1.5			
After learn	ing the conte	ents of this subject, the studen	t must be able to					
1	Select rang	e of apparatus based on the ra	tings of DC Mach	ines.				
2	Determine	Characteristics of DC machin	es by conducting	tests				
3	Evaluate th	e efficiency of the machine b	y analyzing test re	sults.				
4	Study spee	d control methods for dc mac	hines	Γ				
Course	Semester	Subject Name	Subject Code	No. of Hours	<b>Credits:</b>			

Outcome	IV Sem	<b>OOPS through JAVA</b>	B20CS28	L/T/P :0/0 /3	1.5		
		Lab					
After learni	ng the conter	nts of this subject, the student	t must be able to				
1	Use the Java	a SDK environment to create	, debug and run si	mple Java progra	ıms.		
2	Write Java	Write Java programs to implement error handling techniques using exception					
	handling	andling					
3	Develop mu	Develop multithreaded applications with synchronization.					
4	Design simple	Design simple Graphical User Interface applications and event driven programming					
Course	SemesterSubject NameSubject CodeNo. of HoursCredits						
Outcome	V Sem	<b>Electrical Machines-III</b>	B20EE15	L/T/P :3/0/0	:3		
After learni	ng the conter	nts of this subject, the student	t must be able to				
1	Demonstra	te basic concepts of AC macl	nines.				
2	Analyze th	e concepts of regulation of sy	vnchronous genera	itors			
3	Evaluate p	erformance characteristics of	synchronous mac	hines.			
4	Analyze th	e operating characteristics of	synchronous mote	ors			
5	Identify the	e Construction, operation and	characteristics of	single-phase mo	tor and		
	special ma	chines					
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:		
Outcome	V Sem	Power Electronics	B20EE16	L/T/P :3/0 /0	3		
After learni	ng the conter	nts of this subject, the student	t must be able to				
1	Understand	d the differences between sign	nal level and powe	er level devices			
2	Examine si	ingle phase-controlled rectifie	er circuits.				
3	Understand	d three phase-controlled rectif	fier circuits.				
4	Learn the o	operation of DC-DC choppers	5				
5	Study the o	operation of DC-AC converte	rs and AC-AC vol	ltage regulators			
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:		
Outcome	V Sem	Control Systems	B20EE17	L/T/P :3/0 /0	3		
After learni	ng the conter	nts of this subject, the student	t must be able to				
1	Understand	d the concept of feedback and	analyze the contr	ol system compo	onents by		
	their Mathe	ematical modeling					
2	Estimate th	ne time domain specifications	and steady state e	error			
3	Apply vari	ous time domain and frequen	cy domain technic	ques to assess the	system		
	performance	ce.					
4	Improve th	e system performance by des	igning a suitable o	controller and/or	a		
	compensat	or for a specific application					
5	Test system	n Controllability and Observa	bility using state	space representat	ion and		
	application	as of state space representation	n to various syster	ns.			
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:		
Outcome	V Sem	Power Systems-II	B20EE18	L/T/P :3/0 /0	3		

Alter learnin	ter learning the contents of this subject, the student must be able to						
1	Gain know	ledge on computing transmiss	sion line paramete	ers like inductance	ce and		
	capacitance						
2	Evaluate performance of short, medium transmission lines						
3	Evaluate performance of long transmission lines and describe travelling wave and						
	transients in power system						
4	Describe va	rious effects on transmission	system and comp	oute sag on overl	nead		
	transmissio	n system					
5	Gain know	ledge on power factor and vo	ltage control in tra	ansmission syste	m		
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:		
Outcome	V Sem	Renewable Energy	B20EE19	L/T/P :3/0 /0	3		
		Systems					
After learnin	ng the conten	ts of this subject, the student	must be able to				
1	Apply the t	echnology to capture the ener	gy from the renew	wable sources lik	te sun,		
	wind, ocear	n, biomass, geothermal.					
2	Use differen	nt renewable energy sources	to produce electri	cal power.			
3	Minimize the	he use of conventional energy	v sources to produ	ice electrical ene	rgy.		
4	Identify the	fact that the conventional en	ergy resources are	e depleted.			
5	Explore the	direct energy sources.					
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:		
Outcome	V Sem	Industrial	B20EE20	L/T/P :3/0 /0	3		
		Instrumentation					
	ing the contents of this subject the student must be able to						
After learnin	ng the conten	its of this subject, the student	must be able to				
After learnin 1	ng the conten Get knowle	tts of this subject, the student dge on transducers	must be able to				
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		II					
After learn	ing the conte	ents of this subject, the student	must be able to				
1	Select rang	e of apparatus based on the ra	tings.				
2	Draw the Equivalent circuits and analyze various AC machines						
3	Determine performance and Characteristics of AC machinery						
4	Evaluate the efficiency of the machine by analyzing test results						
5	Evaluate th	Evaluate the performance of transformers.					
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:		
Outcome	V Sem	Electrical Measurements	B20EE22	L/T/P :0/0 /2	1		
		and Instrumentation Lab					
After learn	ing the conte	ents of this subject, the student	must be able to				
1	Compare p	erformance of MC, MI and D	ynamometer types	of measuremen	ts, Energy		
	meter.						
2	Determine	the circuit parameters using A	C and Dc bridges				
3	Compute the	he errors CT's and PT's.					
4	Understand	l the performance of industrial	instruments.				
5	Determine	the LVDT characteristics					
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:		
Outcome	V Sem	<b>Electrical Simulation Lab</b>	B20EE23	L/T/P :0/0 /2	1		
After learn	ing the conte	ents of this subject, the student	must be able to		<u></u>		
1	Get the know	owledge simulation of electric	al circuits				
2	Observe th	e time response analysis in sin	nulation				
3	Know the t	ransmission line parameters u	sing Simulink				
4	Know the s	simulation power electronic co	onverters				
5	Get the know	owledge on different simulatio	on software				
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:		
Outcome	V Sem	Human Values and	B20MC04	L/T/P :2/0 /0	0		
		<b>Professional Ethics</b>					
After learn	ing the conte	ents of this subject, the student	must be able to				
1	It ensures s	tudents sustained happiness th	rough identifying	the essentials of	human		
	values and	skills.					
2	It facilitate	s a correct understanding betw	veen profession an	d happiness			
3	It helps stu	dents understand practically th	ne importance of t	rust, mutually sa	tisfying		
	human beh	avior and enriching interaction	n with nature				
4	Ability to c	levelop appropriate technologi	ies and manageme	ent patterns to cre	eate		
	harmony in	n professional and personal life	2.				
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:		
Outcome	VI Sem	Computer Methods in	<b>B20EE25</b>	L/T/P :3/0 /0	3		
		Power Systems					

After learning the contents of this subject, the student must be able to						
1	Determine the bus impedance and admittance matrices for power system network					
2	Calculate various parameters at different buses using load flow studies					
3	Discuss per	unit system representation ar	nd symmetrical co	mponent theory.		
4	Discuss fau	It analysis on power system				
5	Understand	the steady state stability of p	ower system and a	analyse the transi	ient	
	stability of	power system.	T	<b>I</b>		
Course	Semester         Subject Name         Subject Code         No. of Hours         Credits:					
Outcome	VI Sem	<b>Power Semiconductor</b>	B20EE26	L/T/P :3/0 /0	3	
		Drives				
After learn	ing the conte	nts of this subject, the student	t must be able to			
1	Analyze the	e operation of converter fed do	c motors and four	quadrant operati	ons of dc	
	motors usir	ng dual converters				
2	Describe th	e chopper fed dc motors in va	rious quadrants of	f operation		
3	Know the c	concept of speed control of inc	luction motor by u	using AC voltage	2	
	controllers	and voltage source inverters.				
4	Differentiat	te the stator side control and r	otor side control o	f three phase ind	luction	
	motor.					
5	Explain the	speed control mechanism of	synchronous moto	ors.		
Course	Semester	Subject Name	Subject Code	No. of Hours	<b>Credits:</b>	
		0	5			
Outcome	VI Sem	Managerial Economics	B20MB01	L/T/P :3/0 /0	3	
Outcome	VI Sem	Managerial Economics and Financial Analysis	B20MB01	L/T/P :3/0 /0	3	
Outcome After learni	VI Sem	Managerial Economics and Financial Analysis ents of this subject, the student	B20MB01	L/T/P :3/0 /0	3	
Outcome After learni	VI Sem ing the conte Understand	Managerial Economics and Financial Analysis nts of this subject, the student the nature, scope and importa	<b>B20MB01</b> t must be able to ance of Manageria	L/T/P :3/0 /0	3	
Outcome After learni 1 2	VI Sem ing the conte Understand Know what	Managerial Economics and Financial Analysis ents of this subject, the student the nature, scope and importa- t is demand, analyze demand a	<b>B20MB01</b> t must be able to ance of Manageria and how elasticity	L/T/P :3/0 /0 Il Economics. of demand is us	3 ed for	
Outcome After learni 1 2	VI Sem ing the conte Understand Know what pricing dec	Managerial Economics and Financial Analysis ints of this subject, the student the nature, scope and importa t is demand, analyze demand a isions and to evaluate method	<b>B20MB01</b> t must be able to ance of Manageria and how elasticity s for forecasting d	L/T/P :3/0 /0 Il Economics. of demand is us lemand	3 ed for	
Outcome After learni 1 2 3	VI Sem ing the conte Understand Know what pricing dec Know how	Managerial Economics and Financial Analysis nts of this subject, the student the nature, scope and import t is demand, analyze demand a isions and to evaluate method production function is carried	<b>B20MB01</b> t must be able to ance of Manageria and how elasticity s for forecasting d l out to achieve lea	L/T/P :3/0 /0 Il Economics. of demand is us lemand ast cost combina	3 ed for tion of	
Outcome After learni 1 2 3	VI Sem ing the conte Understand Know what pricing dec Know how Inputs and	Managerial Economics and Financial Analysis ints of this subject, the student the nature, scope and importa- tis demand, analyze demand a isions and to evaluate method production function is carried how to analyze cost.	<b>B20MB01</b> t must be able to ance of Manageria and how elasticity s for forecasting d l out to achieve lea	L/T/P :3/0 /0 al Economics. of demand is us lemand ast cost combina	3 ed for tion of	
Outcome After learni 1 2 3 4	VI Sem ing the conte Understand Know what pricing dec Know how Inputs and Understand	Managerial Economics and Financial Analysis ints of this subject, the student the nature, scope and importa- t is demand, analyze demand a isions and to evaluate method production function is carried how to analyze cost.	<b>B20MB01</b> t must be able to ance of Manageria and how elasticity s for forecasting d l out to achieve lea nt kinds of markets	L/T/P :3/0 /0 Il Economics. of demand is us lemand ast cost combina s and outline diff	3 ed for tion of Ferent	
Outcome After learni 1 2 3 4	VI Sem ing the conte Understand Know what pricing dec Know how Inputs and Understand form of bus	Managerial Economics and Financial Analysis ints of this subject, the student the nature, scope and importa- tis demand, analyze demand a isions and to evaluate method production function is carried how to analyze cost. the characteristics of differen- siness organization and analyze	<b>B20MB01</b> t must be able to ance of Manageria and how elasticity s for forecasting d l out to achieve lea t kinds of markets the how capital bud	L/T/P :3/0 /0 al Economics. of demand is us demand ast cost combina s and outline diff geting technique	3 ed for tion of ferent es are	
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4	Acquire knowledge of power factor improvement.						
5	Calculate th	he distribution voltage drop ca	lculations				
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:		
Outcome	VI Sem	Electrical Engineering	B20EE28	L/T/P :3/0 /0	3		
		Materials					
After learn	After learning the contents of this subject, the student must be able to						
1	Impart the knowledge on electrical engineering materials classification and their						
	applications						
2	Study the p	erformance characteristics of	various semicond	ucting, dielectric	and		
	insulation r	naterials and their application	s in design of elec	trical and electro	onic		
	devices.						
3	Identify var	rious magnetic materials and t	heir classification	1			
4	Learn vario	ous special purpose of materia	ls				
5	Design var	ious electronic components					
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:		
Outcome	VI Sem	<b>Digital Signal Processing</b>	B20EC24	L/T/P :3/0 /0	3		
After learn	ing the conte	ents of this subject, the student	t must be able to				
1	Identify the	e different types of the discrete	e signals and syste	ems			
2	Understand	the inter relationship between	n DFT and variou	s transforms and	fast		
	computatio	n of DFT and appreciate the F	FT processing				
3	Understand	the characteristics of FIR filt	ers and classify th	e different types	of		
	windowing	techniques.					
4	Design a II	R digital filters for a given spe	ecifications and A	pply the knowle	dge to		
	real world	processing applications.					
5	Understand	l different types of signal proc	essing architectur	es			
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:		
Outcome	VI Sem	<b>Power Electronics Lab</b>	B20EE29	L/T/P :0/0 /2	1		
After learn	ing the conte	ents of this subject, the student	t must be able to				
1	Study Char	acteristics of various Power S	emiconductor dev	vices			
2	Analyze A	C/AC and AC/DC Converters					
3	Analyze the	e behavior of various DC/DC	and DC/AC conve	erters			
4	Understand	l types of Power Electronic co	nverters and ident	tify their applicat	tions		
5	Know the H	PWM techniques used for pow	ver converters				
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:		
Outcome	VI Sem	<b>Control Systems Lab</b>	B20EE30	L/T/P :0/0 /2	1		
After learn	ing the conte	ents of this subject, the student	t must be able to				
1	Analyze the	e time & Frequency response	of control systems	S			
2	Evaluate th	e performance of feedback co	ntrol systems				
3	Examine th	e response of PID controllers					

4	Identify the Performance of AC & DC servo motors					
5	Know the magnetic amplifier					
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:	
Outcome	VI Sem	Electronics Design Lab	B20EE31	L/T/P :0/0 /2	1	
After learn	ing the conte	ents of this subject, the student	t must be able to			
1	Design the	various regulated power supp	lies for control bo	ards		
2	Gain know	ledge on designing of various	triggering circuits	s for SCR.		
3	Develop sc	aling and conditioning circuit	s for various sense	ors.		
4	Develop P	WM control and gate driver ci	rcuits for various	power electronic		
	application	S				
5	Develop th	e zero-crossing detector.				
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:	
Outcome	VI Sem	Logical Reasoning and	B20MC05	L/T/P :2/0/0	0	
		Quantitative Aptitude				
After learn	ing the conte	ents of this subject, the student	t must be able to			
1	Apply quar	ntitative reasoning and mathem	natical analysis m	ethodologies to		
	understand	and solve problems.				
2	Apply quar	ntitative correctly arrive at me	aningful conclusio	ons regarding the	ir	
	answers an	d manipulate equations and fo	ormulas in order to	solve for the de	sired	
	variable					
3	Interpret gi	ven information correctly, det	ermine which mat	thematical mode	l best	
	describes the	he data, and apply the model c	correctly			
4	Correctly a	pply mathematical language a	ind notation to exp	plain the reasonir	ıg	
	underlying	their conclusions when solvin	ig problems using	mathematical or		
	statistical to	echniques				
5	Improve th	eir mathematical skills in vari	ous general aspect	ts to solve real ti	me	
~	problems.	~				
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:	
Outcome	VII Sem	Power System Operation	B20EE33	L/T/P :3/0 /0	3	
		And Control				
After learn	ing the conte	ents of this subject, the student	t must be able to			
1	Analyse ec	onomic operation of power sy	rstem.			
2	Understand	the working of hydrothermal	coordination.			
3	Analyse loa	ad frequency control of Single	e area and Two are	ea power system.		
4	Acquire kn	owledge on reactive power co	ontrol			
5	Understand	the working of deregulated e	lectricity markets	I		
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:	
Outcome	VII Sem	Power System Protection	B20EE35	L/T/P :3/0 /0	3	
After learn	ing the conte	ents of this subject, the student	t must be able to			

1	Understand the basic construction and principle of arc interruptions in Circuit					
	Breaker and its types.					
2	Understand	the basic principle of electron	magnetic Relay O	peration and its	various	
	types to dif	ferent applications.				
3	Explore the	various schemes of protectin	g generator and tr	ansformers.		
4	Explore var	rious relaying operation in pro	otecting the transm	nission line and b	ous bar.	
5	Learn the n	ecessity of neutral grounding	and protection aga	ainst overvoltage	e.	
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:	
Outcome	VII Sem	Microprocessors and	B20EC32	L/T/P :3/0 /0	3	
		Microcontrollers				
After learn	ing the conte	nts of this subject, the student	t must be able to			
1	Illustrate th	e internal organization of pop	ular 8086/8051			
	microproce	ssors/microcontrollers. Contra	ast hardware and s	software interaction	ion and	
	integration.					
2	Design mic	roprocessors and microcontro	llers-based system	ns and develop		
	microcontr	oller based systems for real tin	me applications.			
3	Understand	microcontroller 8051 and its	programming.			
4	Explain the	Memory organization, classi	fication and their a	applications and		
5	Assess prog	gramming, interfacing etc of v	various devices wi	th microprocesso	ors and	
	external world.					
					-	
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:	
Course Outcome	Semester VII Sem	Subject Name High Voltage Engineering	Subject Code B20EE35	No. of Hours L/T/P :3/0 /0	Credits: 3	
Course Outcome After learn	Semester VII Sem ing the conte	Subject Name High Voltage Engineering nts of this subject, the student	Subject CodeB20EE35must be able to	No. of Hours L/T/P :3/0 /0	Credits: 3	
Course Outcome After learni	Semester VII Sem ing the conte Understand	Subject Name High Voltage Engineering nts of this subject, the student Transients in power system.	Subject Code B20EE35 must be able to	No. of Hours L/T/P :3/0 /0	Credits: 3	
Course Outcome After learn 1 2	Semester VII Sem ing the conte Understand Acquire the	Subject Name High Voltage Engineering ents of this subject, the student Transients in power system. the knowledge on breakdown in	Subject Code B20EE35 t must be able to solid, Liquid and	No. of Hours L/T/P :3/0 /0 gaseous dielectr	Credits: 3	
Course Outcome After learn 1 2 3	Semester VII Sem ing the conte Understand Acquire the Understand	Subject Name High Voltage Engineering Ints of this subject, the student Transients in power system. I knowledge on breakdown in the generation of high voltage	Subject Code B20EE35 t must be able to solid, Liquid and e and current.	No. of Hours L/T/P :3/0 /0 gaseous dielectr	Credits: 3	
Course Outcome After learni 1 2 3 4	Semester VII Sem ing the conte Understand Acquire the Understand Identify the	Subject Name High Voltage Engineering Ints of this subject, the student Transients in power system. In knowledge on breakdown in the generation of high voltage measurement of high voltage	Subject Code B20EE35 t must be able to solid, Liquid and e and current. e and current.	No. of Hours L/T/P :3/0 /0 gaseous dielectr	Credits: 3	
Course Outcome After learn 1 2 3 4 5	Semester VII Sem ing the conte Understand Acquire the Understand Identify the Analyze po	Subject Name High Voltage Engineering ints of this subject, the student Transients in power system. knowledge on breakdown in the generation of high voltage measurement of high voltage wer apparatus and insulation	Subject Code B20EE35 t must be able to solid, Liquid and e and current. e and current. coordination	No. of Hours L/T/P :3/0 /0 gaseous dielectr	Credits: 3	
Course Outcome After learn 1 2 3 4 5 Course	Semester VII Sem ing the conte Understand Acquire the Understand Identify the Analyze po Semester	Subject Name High Voltage Engineering Ints of this subject, the student Transients in power system. In the generation of high voltage measurement of high voltage wer apparatus and insulation Subject Name	Subject Code B20EE35 must be able to solid, Liquid and e and current. and current. coordination Subject Code	No. of Hours L/T/P :3/0 /0 gaseous dielectr No. of Hours	Credits: 3 ics Credits:	
Course Outcome After learn 1 2 3 4 5 Course Outcome	Semester VII Sem ing the conte Understand Acquire the Understand Identify the Analyze po Semester VII Sem	Subject Name High Voltage Engineering Ints of this subject, the student Transients in power system. In the generation of high voltage measurement of high voltage wer apparatus and insulation Subject Name Advanced Power	Subject Code B20EE35 must be able to solid, Liquid and e and current. and current. coordination Subject Code B20EE36	No. of Hours L/T/P :3/0 /0 gaseous dielectr No. of Hours L/T/P :3/0 /0	Credits: 3 ics Credits: 3	
Course Outcome After learn 1 2 3 4 5 Course Outcome	Semester VII Sem ing the conter Understand Acquire the Understand Identify the Analyze po Semester VII Sem	Subject Name High Voltage Engineering Ints of this subject, the student Transients in power system. In the generation of high voltage measurement of high voltage wer apparatus and insulation Subject Name Advanced Power Electronics	Subject Code B20EE35 t must be able to solid, Liquid and e and current. e and current. coordination Subject Code B20EE36	No. of Hours L/T/P :3/0 /0 gaseous dielectr No. of Hours L/T/P :3/0 /0	Credits: 3 ics Credits: 3	
Course Outcome After learn 1 2 3 4 5 Course Outcome After learn	Semester VII Sem ing the conte Understand Acquire the Understand Identify the Analyze po Semester VII Sem	Subject Name High Voltage Engineering Ints of this subject, the student Transients in power system. In the generation of high voltage measurement of high voltage wer apparatus and insulation Subject Name Advanced Power Electronics	Subject Code B20EE35 t must be able to solid, Liquid and e and current. coordination Subject Code B20EE36	No. of Hours L/T/P :3/0 /0 gaseous dielectr No. of Hours L/T/P :3/0 /0	Credits: 3 ics Credits: 3	
Course Outcome After learn 1 2 3 4 5 Course Outcome After learn 1	Semester VII Sem ing the conter Understand Acquire the Understand Identify the Analyze po Semester VII Sem ing the conter Classify drives	Subject Name High Voltage Engineering ints of this subject, the student Transients in power system. knowledge on breakdown in the generation of high voltage measurement of high voltage wer apparatus and insulation Subject Name Advanced Power Electronics ints of this subject, the student iver circuits for various power	Subject Code B20EE35 must be able to solid, Liquid and e and current. and current. coordination Subject Code B20EE36	No. of Hours L/T/P :3/0 /0 gaseous dielectr No. of Hours L/T/P :3/0 /0 evices.	Credits: 3 ics Credits: 3	
CourseOutcomeAfter learni12345CourseOutcomeAfter learni12	Semester VII Sem ing the conter Understand Acquire the Understand Identify the Analyze po Semester VII Sem ing the conter Classify dri Analyze the	Subject Name High Voltage Engineering Ints of this subject, the student Transients in power system. In the generation of high voltage wer apparatus and insulation Subject Name Advanced Power Electronics Ints of this subject, the student iver circuits for various power is operation of multi-pulse con	Subject Code B20EE35 must be able to solid, Liquid and e and current. and current. coordination Subject Code B20EE36 must be able to semiconductor do verters.	No. of Hours L/T/P :3/0 /0 gaseous dielectr No. of Hours L/T/P :3/0 /0 evices.	Credits: 3 ics Credits: 3	
CourseOutcomeAfter learning12345CourseOutcomeAfter learning123	Semester VII Sem ing the conter Understand Acquire the Understand Identify the Analyze po Semester VII Sem ing the conter Classify dri Analyze the Understand	Subject Name High Voltage Engineering ints of this subject, the student Transients in power system. I Transients in power system. I the generation of high voltage measurement of high voltage wer apparatus and insulation Subject Name Advanced Power Electronics Ints of this subject, the student iver circuits for various power e operation of multi-pulse con the operation of resonant cor	Subject Code B20EE35 must be able to solid, Liquid and e and current. and current. coordination Subject Code B20EE36 must be able to semiconductor do verters.	No. of Hours L/T/P :3/0 /0 gaseous dielectr No. of Hours L/T/P :3/0 /0 evices.	Credits: 3 ics Credits: 3	
Course Outcome After learn 1 2 3 4 5 Course Outcome After learn 1 2 3 4	Semester VII Sem ing the conter Understand Acquire the Understand Identify the Analyze po Semester VII Sem ing the conter Classify dri Analyze the Understand	Subject Name High Voltage Engineering Ints of this subject, the student Transients in power system. In the generation of high voltage measurement of high voltage wer apparatus and insulation Subject Name Advanced Power Electronics Ints of this subject, the student iver circuits for various power e operation of multi-pulse con the operation of resonant cor lifferences between VSI and C	Subject Code B20EE35 t must be able to solid, Liquid and e and current. coordination Subject Code B20EE36 t must be able to semiconductor de verters.	No. of Hours L/T/P :3/0 /0 gaseous dielectr No. of Hours L/T/P :3/0 /0 evices.	Credits: 3 ics Credits: 3	
CourseOutcomeAfter learning12345CourseOutcomeAfter learning12345	Semester VII Sem ing the conter Understand Acquire the Understand Identify the Analyze po Semester VII Sem ing the conter Classify dri Analyze the Understand Know the c	Subject Name High Voltage Engineering ints of this subject, the student Transients in power system. In the generation of high voltage measurement of high voltage wer apparatus and insulation Subject Name Advanced Power Electronics Ints of this subject, the student iver circuits for various power is operation of multi-pulse con the operation of resonant cor lifterences between VSI and C	Subject Code B20EE35 must be able to solid, Liquid and e and current. coordination Subject Code B20EE36 must be able to semiconductor do verters. SI. tilevel inverters.	No. of Hours L/T/P :3/0 /0 gaseous dielectr No. of Hours L/T/P :3/0 /0 evices.	Credits: 3 ics Credits: 3	
CourseOutcomeAfter learning12345CourseOutcomeAfter learning12345Course	Semester VII Sem ing the conter Understand Acquire the Understand Identify the Analyze po Semester VII Sem Classify dri Analyze the Understand Know the c Gain know	Subject Name High Voltage Engineering Ints of this subject, the student Transients in power system. In the generation of high voltage measurement of high voltage wer apparatus and insulation Subject Name Advanced Power Electronics Ints of this subject, the student iver circuits for various power is operation of multi-pulse con the operation of resonant cor lifferences between VSI and C ledge on the operation of multi- Subject Name	Subject Code B20EE35 must be able to solid, Liquid and e and current. and current. coordination Subject Code B20EE36 must be able to semiconductor do verters. Subject Code	No. of Hours L/T/P :3/0 /0 gaseous dielectr No. of Hours L/T/P :3/0 /0 evices.	Credits: 3 ics Credits: 3 Credits:	

		Systems							
After learn	After learning the contents of this subject, the student must be able to								
1	Understand	l different non linearities and t	heir describing fu	nctions.					
2	Describe th	ne methods of Phase-plane traj	ectory of nonlinea	ar control system	s.				
3	Apply vari	ous theorems for stability anal	ysis of linear and	nonlinear system	IS.				
4	Implement	modal control and calculus of	variations						
5	Formulate	and solve optimal control prob	olems						
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:				
Outcome	VII Sem	<b>Electrical Machine</b>	B20EE38	L/T/P :3/0 /0	3				
		Design							
After learn	ing the conte	ents of this subject, the student	must be able to						
1	Understand	I the basic design consideratio	n, standards. Stud	y the heat dissipa	ation,				
	cooling cha	aracteristics and electrical char	acteristics of varie	ous dielectric ma	terials.				
2	Understand	l the design, choice of materia	ls and specificatio	ons in DC machin	nes				
3	Understand	l and design the main dimensi	ons of each part of	f a transformers					
4	Design the	constructional features of indu	uction motors and	estimate their cu	irrents				
	and reactar	nce							
5	Design the	constructional features of syn	chronous motors						
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:				
Outcome	VII Sem	Advanced Electrical	B20EE39	L/T/P :3/0 /0	3				
		Drives							
After learn	ing the conte	ents of this subject, the student	must be able to						
1	Analyse the	e operation of three phase con	verter fed dc moto	ors					
2	Describe th	ne VSI and CSI fed induction i	motor operation.						
3	Know the c	concept of vector control of in-	duction motor driv	ve.					
4	Understand	l the concept of direct torque of	control for three pl	nase induction m	otor.				
5	Gain know	ledge on vector control of PM	SM drives and int	roduction to BL	DC				
	drives.								
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:				
Outcome	VII Sem	AI Techniques in	<b>B20EE40</b>	L/T/P :3/0 /0	3				
		Electrical Engineering							
After learn	ing the conte	ents of this subject, the student	must be able to						
1	Identify ar	nd describe AI techniques and	their roles in build	ding intelligent n	nachines.				
2	Understand	l the working of multilayer ne	ural networks.						
2									
3	Explore fuz	zzy logic and reasoning.							
4	Explore fuz Learn gene	zzy logic and reasoning. tic algorithms to optimization	problems						
3 4 5	Explore fuz Learn gene Evaluate ar	zzy logic and reasoning. tic algorithms to optimization nd compare solutions by AI ap	problems proaches for a giv	en problem in m	atlab				
<u> </u>	Explore fuz Learn gene Evaluate ar simulink	zzy logic and reasoning. tic algorithms to optimization nd compare solutions by AI ap	problems proaches for a giv	en problem in m	atlab				

Outcome	VII Sem	Utilization of Electrical	<b>B20EE41</b>	L/T/P :3/0 /0	3
		Energy			
After learn	ing the conte	nts of this subject, the student	must be able to		
1	Choose a ri	ght drive for a particular appl	ication.		
2	Identify He	ating and welding schemes fo	r given applicatio	n.	
3	Explain the	basics of lighting and method	ls of illumination	and its paramete	rs
4	Understand	the different schemes of tract	tion systems, its cl	haracteristics and	l its main
	components	8.			
5	Analyze ele	ectrical energy consumption for	or traction system		
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:
Outcome	VII Sem	High Voltage DC	B20EE42	L/T/P :3/0 /0	3
		Transmission			
After learn	ing the conte	nts of this subject, the student	must be able to		
1	Know the b	asic concepts of HVDC trans	mission.		
2	Understand	the complete operation of HV	VDC Converter sta	ations	
3	Understand	the power flow control on H	VDC Transmissio	n system	
4	Understand	the Operation of the controlle	er for HVDC in w	orst and normal	
	operations				
5	Design the	Various filters.			
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:
Outcome	VII Sem	Microprocessors and	B20EC42	L/T/P :0/0 /2	1
		Microcontrollers Lab			
After learn	ing the conte	nts of this subject, the student	must be able to		
1	Demonstrat	e experimentally basic progra	mming of Microp	processor.	
2	Recall the r	nicroprocessor interfacing with	th various periphe	rals for various	
	applications	8			
3	Apply the b	asic programming of microco	ontroller.		
4	Examine m	icroprocessor interfacing with	various periphera	als for various	
	applications	8			
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:
Outcome	VII Sem	Power Systems Lab	B20EE43	L/T/P :0/0 /2	1
After learn	ing the conte	nts of this subject, the student	must be able to		
1	Calculate T	ransmission line parameters,	efficiency and reg	ulation.	
2	Evaluate the	e Performance analysis of Ov	er/Under Voltage	Relay.	
3	Understand	the Analysis and performanc	e testing of Feede	r Protection Syst	em
4	Calculate S	equence Reactance of $3-\Phi$ Tr	ansformer		
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:
Outcome	VII Sem	Mini Project &	<b>B20EE44</b>	L/T/P :0/0 /0	2

After learni	ing the conte	ents of this subject, the student	must be able to			
1	Students will be able to practice acquired knowledge within the chosen area of technology					
	for project d	levelopment				
2	Identify, dis	cuss and justify the technical asp	ects of the chosen p	project with a		
	comprehens	ive and systematic approach.				
3	Reproduce,	improve and refine technical asp	ects for engineering	g projects		
4	Work as an	individual or in a team in develo	pment of technical	projects & Comm	unicate	
	and report e	ffectively project related activitie	es and findings.			
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:	
Outcome	VII Sem	Major Project Phase-1	B20EE45	L/T/P :0/0 /8	4	
After learn	ing the conte	ents of this subject, the student	must be able to			
1	Identify the	e problem by applying acquire	d knowledge.			
2	Ability to p	blan and implement an investig	gative or developm	nental project.		
3	In-depth sk	till to use some laboratory, mo	dern tools and tec	hniques		
4	Ability to c	communicate results, concepts	, analyses and ide	as in written and	oral form	
	& Conduct	an extended independent inve	estigation that resu	ilts in the produc	tion of a	
~	research the	esis.	~ ~ .		~ ~	
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:	
Outcome	VIII	Soft Computing	B20EE46	L/T/P :3/0 /0	3	
	Sem	Techniques				
After learn	ing the conte	ents of this subject, the student	must be able to			
1	To know ba	asic idea of modern engineerin	ng techniques whi	ch are useful for	solving	
	non-linear	and complex functions that ma	ay come across dis	ssertation/researc	ch work	
2	To understa	and optimization problem				
3	Understand	l the concept of multi-objectiv	e optimization pro	oblems (MOOPs)	) and	
	issues of so	olving it.				
4	Knowing A	Adaptive Neuro-Fuzzy Inferen	ce Systems			
5	Evaluate ar	nd compare solutions by soft c	omputing techniq	ues for a given p	roblem in	
	matlab Sim	nulink				
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:	
Outcome	VIII	Digital Control Systems	<b>B20EE47</b>	L/T/P :3/0 /0	3	
	Sem					
After learn	ing the conte	ents of this subject, the student	must be able to			
1	Acquire a s	strong foundation in sampling	and reconstruction	n Z-transforms		
2	Apply know	wledge of Mathematics, Z-pla	ne analysis to disc	rete time control	systems.	
3	Replace the	e conventional control system	with Digital contr	ol system.		
4	Evaluate ar	nd apply Z-plane analysis of d	iscrete time contro	ol systems		
5	Apply state	e feedback controllers and obs	ervers			
Course	Semester	Subject Name	Subject Code	No. of Hours	Credits:	
Outcome	VIII Sem	Flexible AC	<b>B20EE48</b>	L/T/P :3/0 /0	3	

		Transmission Sys	stems					
After learni	ing the conte	nts of this subject, the	e student	must be	able to			
1	Know the c	oncept of flexible AC	C transmi	ission sys	tems.			
2	Understand	the voltage source co	onverters	s used in l	FACTS			
3	Get the exp	osure on static shunt	compens	sation.				
4	Understand	the SVC and STATC	COM.					
5	Get the exp	osure on static series	compens	sation.				
Course	Semester	Subject Name	e	Subjec	t Code	No. of I	Hours	Credits:
Outcome	VIII Sem	VLSI Design	l	B20E	EC33	L/T/P :	3/0 /0	3
After learn	ing the conte	nts of this subject, the	e student	must be	able to			
1	Design digi	tal applications using	Verilog	HDL				
2	Understand	IC technology and ba	asic elec	trical pro	perties o	f MOS ar	nd BiCl	MOS
3	Design the	layout of circuits usin	ig variou	s design	rules. De	evelop an	d desig	n the gate
	level circuit	ts						
4	Gain the kn	owledge to design da	ta path s	ubsystem	ns like A	dders, Shi	ifters, a	nd ALUs
	etc.							
5	Illustrate di	fferent programmable	e logic de	evices an	d CMOS	s testing.		
Course	Semester	Subject Name	e	Subject	Code	No. of H	ours	Credits:
Outcome	VIII Sem	Power Quality	y	B20EI	E <b>49</b> ]	L/T/P :3/	0 /0	3
After learni	ing the conte	nts of this subject, the	e student	must be	able to			
1	Know the te	erminology, definition	ns, cause	es, effects	and ana	lysis of v	arious p	ower
	quality prol	olems						
2	Define and	understand the compo	onents of	f current/	power in	sinusoid	al/non-	sinusoidal
	singlephase	e supply/load systems						
3	Define and	understand the compo	onents of	f current/	power in	sinusoid	al/non-	sinusoidal
	three phase	supply/load systems						
4	Know desig	gn, operation and Ana	lysis of	passive sl	hunt and	series co	mpensa	itors
5	Know desig	gn, operation and anal	ysis of p	bassive sh	unt/serie	es power f	filters	
Course	Semester	Subject Name	Subjec	ct Code	No. of	Hours	Cr	edits: 3
Outcome	VII Sem	Electric and	B20EE	250	L/T/P	:3/0 /0		
After learni	ing the conte	nts of this subject the	e student	must be	able to			
1	Know the f	undamentals of Electr	ric Vehic					
2	Gain the kn	owledge on battery te	chnolog	v used in	FVs			
3	Understand	the $\Delta C DC$ motor red	auireme	y used m	Je			
	Know the d	rive train components	quiterile		8			
	Get the eve	osure on fundamental	s ls of Hyl	orid EVa	design			
3	Out the exp		is of fryt		uesigii.	1		
( 'OIIPCO	Semester	Subject Nom	Δ	Subjec	t Coda	No of I	Hours	Credite
Course	Semester VIII Som	Subject Name	e	Subjec B20E	t Code	No. of I	Hours	Credits:
Course Outcome	Semester VIII Sem	Subject Name Smart Grids	e student	Subjec B20E	t Code EE51 able to	No. of I L/T/P :	Hours 3/0 /0	Credits: 3

1	Understand Indian Grid	l technologies for sma l.	art grid and featur	res of Sm	art Grid iı	n the co	ontext of
2	Assess the	role of automation in	Transmission/Di	stributior	/substatic	on.	
3	Know varie	ous communication te	chnologies invol	ved in sm	art grids a	and im	portance
	of PMUs, E	EMS, WAMS, SCAD	А				
4	Classify va	rious Smart Distribut	ion Technologies				
5	Clarify the	regulations and mark	et models for sma	art grid a	nd various	s tariffs	5
Course	Semester	Subject Nam	e Subje	ct Code	No. of H	Iours	Credits:
Outcome	VIII Sem	Embedded Syst	ems B20	EC45	L/T/P :	3/0 /0	3
After learni	ing the conte	nts of this subject, the	e student must be	able to			
1	Understand	and design embedde	d systems.				
2	Understand	the architecture of A	rm processors				
3	Develop a s	system using IO devic	ces and interfacin	g to exte	rnal world	1	
4	Understand	types of memory					
5	Understand	embedded firmware	design approache	es			
a	Semester Subject Name Subject No. of Hours Credits:						
Course	Semester	Subject Name	e Subj	ect	No. of Ho	ours	Credits:
Course Outcome	Semester	Subject Name	e Subj Cod	ect le	No. of Ha	ours	Credits: 1
Course Outcome	Semester VIII Sem	Subject Name Technical Seminar	e Subj Cod B20EE	ect le 52 I	No. of Ho ./T/P :0/0	ours	Credits: 1
Course Outcome	Semester VIII Sem Identify and	Subject Name Technical Seminar d analyze the real time	e Subj Coc B20EE: e Electrical Engin	ect le 52 I neering p	No. of Ho ./T/P :0/0 roblems	ours	Credits: 1
Course Outcome	Semester VIII Sem Identify and Acquire aw	Subject Name Technical Seminar d analyze the real time vareness on latest tech	e Subj Cod B20EE e Electrical Engin nology and curre	ect le 52 I neering p nt trends	No. of Ho <u>//T/P :0/0</u> roblems in the fiel	<b>ours</b> 0 /2 1d of E	Credits: 1 lectrical
Course Outcome	Semester VIII Sem Identify and Acquire aw Engineering Participate	Subject Name Technical Seminar d analyze the real time eareness on latest tech g.	e Subj Cod B20EE: e Electrical Engin mology and curre	ect le 52 I neering p nt trends	No. of Ho /T/P :0/0 roblems in the fiel	<b>ours</b> 0/2 Id of El	Credits: 1 lectrical
Course Outcome	Semester VIII Sem Identify and Acquire aw Engineering Participate Apply com	Subject Name Technical Seminar d analyze the real time vareness on latest tech g. in discussions for enh munication skills & I	e Subj Cod B20EE e Electrical Engin nology and curre nancement of kno	ect le 52 I neering p nt trends wledge	No. of Ho <u>//T/P :0/0</u> roblems in the fiel	ours	Credits: 1 lectrical
Course Outcome	Semester VIII Sem Identify and Acquire aw Engineering Participate Apply com professiona	Subject Name Technical Seminar d analyze the real time rareness on latest tech g. in discussions for enh munication skills & I l ethics.	e Subj Cod B20EE e Electrical Engin nology and curre nancement of kno Document and pre	ect le 52 I neering p nt trends wledge esent tech	No. of Ho ./T/P :0/0 roblems in the fiel	ours 0/2 Id of El orts foll	Credits: 1 lectrical lowing
Course Outcome	Semester VIII Sem Identify and Acquire aw Engineering Participate Apply com professiona Semester	Subject Name Technical Seminar d analyze the real time vareness on latest tech g. in discussions for enh munication skills & E l ethics. Subject Name	e Subj Cod B20EE: e Electrical Engin mology and curre nancement of kno Document and pre Subject Code	ect       le       52     I       52     I       neering p       nt trends       wledge       esent tech       No. of	No. of Ho	ours 0/2 d of E orts foll Cro	Credits: 1 lectrical lowing edits: 8
Course Outcome	Semester VIII Sem Identify and Acquire aw Engineering Participate Apply com professiona Semester VII Sem	Subject Name         Technical Seminar         d analyze the real time         d analyze the real time         d analyze the real time         areness on latest tech         g.         in discussions for enh         munication skills & E         l ethics.         Subject Name         Project Stage – II	e Subj Cod B20EE3 e Electrical Engin nology and curre nancement of kno Document and pre Subject Code B20EE53	ect       le       52     I       52     I       52     I       meering p       nt trends       wledge       esent tech       No. of       L/T/P	No. of Ho <u>L/T/P :0/0</u> roblems in the fiel unical repo <del>C</del> Hours :0/0 /16	ours 0/2 d of El orts foll Creation	Credits: 1 lectrical lowing edits: 8
Course Outcome 1 2 3 4 Course Outcome 1	Semester VIII Sem Identify and Acquire aw Engineering Participate Apply com professiona Semester VII Sem Identify the	Subject Name         Technical Seminar         d analyze the real time         d analyze the real time         d analyze the real time         areness on latest tech         g.         in discussions for enh         munication skills & E         l ethics.         Subject Name         Project Stage – II         e problem by applying	e Subj Cod B20EE: e Electrical Engin nology and curre nancement of kno Document and pre Subject Code B20EE53 g acquired knowle	ect       le       52     I       52     I       neering p       nt trends       wledge       esent tech       No. of       L/T/P       edge.	No. of Ho <u>/T/P :0/0</u> roblems in the fiel unical repo <del>C</del> Hours :0/0 /16	ours 0/2 d of E orts foll Cro	Credits: 1 lectrical lowing edits: 8
Course0utcome1234CourseOutcome12	Semester VIII Sem Identify and Acquire aw Engineering Participate Apply com professiona Semester VII Sem Identify the Ability to p	Subject Name         Technical Seminar         d analyze the real time         d analyze the real time         d analyze the real time         areness on latest tech         g.         in discussions for enh         munication skills & I         at ethics.         Subject Name         Project Stage – II         aproblem by applying         an and implement ar	e Subj Cod B20EE e Electrical Engin nology and curre nancement of kno Document and pre Subject Code B20EE53 g acquired knowle n investigative or	ect       le       52     I       52     I       52     I       meering p       nt trends       wledge       esent tech       No. of       L/T/P       edge.       developr	No. of Ho <u>./T/P :0/0</u> roblems in the fiel anical repo <del>Thours</del> <b>:0/0 /16</b> nental pro	ours 0/2 d of El orts foll Cro oject.	Credits: 1 lectrical lowing edits: 8
Course Outcome	Semester VIII Sem Identify and Acquire aw Engineering Participate Apply com professiona Semester VII Sem Identify the Ability to p In-depth sk	Subject Name         Technical Seminar         d analyze the real time         d analyze the real time         d analyze the real time         areness on latest tech         g.         in discussions for enh         munication skills & E         l ethics.         Subject Name         Project Stage – II         e problem by applying         lan and implement ar         ill to use some labora	e Subj Coo B20EE: e Electrical Engin mology and curre nancement of kno Document and pre Subject Code B20EE53 g acquired knowle n investigative or tory, modern too	ect       le       52     I       52     I       meering p       nt trends       wledge       esent tech       No. of       L/T/P       edge.       developr       ls and tech	No. of Ho ./T/P :0/0 roblems in the fiel unical repo <b>Hours</b> :0/0 /16 nental pro- chniques	ours 0/2 d of E orts foll Cro oject.	Credits: 1 lectrical lowing edits: 8
Course           0utcome           1           2           3           4           Course           Outcome           1           2           3           4           Course           Outcome           1           2           3           4	Semester VIII Sem Identify and Acquire aw Engineering Participate Apply com professiona Semester VII Sem Identify the Ability to p In-depth sk	Subject Name         Technical Seminar         d analyze the real time         d analyze the real time         d analyze the real time         areness on latest tech         g.         in discussions for enh         munication skills & E         l ethics.         Subject Name         Project Stage – II         e problem by applying         lan and implement ar         ill to use some labora         ommunicate results, or	e Subj Coo B20EE e Electrical Engin nology and curre nancement of kno Document and pro Subject Code B20EE53 g acquired knowled n investigative or tory, modern too concepts, analyse	ect       le       52     I       52     I       52     I       beering p       nt trends       wledge       esent tech       No. of       L/T/P       edge.       developr       ls and tech       s and ide	No. of Ho <u>L/T/P :0/0</u> roblems in the fiel mical repo <u>Hours</u> :0/0 /16 <u>hniques</u> as in writt	ours 0/2 d of E orts foll Cro oject.	Credits: 1 lectrical lowing edits: 8 l oral form
Course Outcome	Semester VIII Sem Identify and Acquire aw Engineering Participate Apply com professiona Semester VII Sem Identify the Ability to p In-depth sk Ability to c	Subject Name         Technical Seminar         d analyze the real time         d analyze the real time         d analyze the real time         areness on latest tech         g.         in discussions for enh         munication skills & E         l ethics.         Subject Name         Project Stage – II         e problem by applying         lan and implement ar         ill to use some labora         ommunicate results, or         an extended independer	e Subj Cod B20EE3 e Electrical Engin mology and curre nancement of kno Document and pre Subject Code B20EE53 g acquired knowled n investigative or tory, modern too concepts, analyse dent investigatior	ect       le       52     I       52     I       52     I       meering p       nt trends       wledge       esent tech       No. of       L/T/P       edge.       developr       ls and tech       s and ide       n that result	No. of Ho <u>./T/P :0/0</u> <u>roblems</u> in the fiel <u></u>	ours 0/2 d of E orts foll Cre oject. ten and produc	Credits: 1  lectrical lowing edits: 8 loral form ction of a

## COURSE OUTCOMES FOR M.TECH Artificial Intelligence R20 FOR THE YEAR 2020-2021

Course	Year/Semester	Subject Name (Subject Code)	No. of Hours	Credits: 3
Outcome	I Sem	Introduction to Artificial Intelligence and Applications(M20AI01)	L:3 T:0 P:0	
On success	ul completion of th	is course, students will be able to:		
1				
2				
2				
3				
4				
5				
6			1	
Course	Year /Semester	Subject Name (Subject Code)	No. of Hours	Credits:3
Outcom	I Sem	Soft Computing Techniques (M20CS14)	L:3 1:0 P:0	
е				
On success	ful completion of th	nis course, students are able to:		
1				
1	Understand the fuz	zy logic, concepts of fuzziness involved in fuz	zy settneory	
2	approximate reason	ning fuzzy inference systems and fuzzy logic	ig fuzzy fules,	
3	Build the fundament	ntal theory, concepts of neuralnetworks		
4	Identify different n	eural network architectures, algorithms, applic	ations along their	limitations.
5	Classify different low with itsapplications	earning rules, architectures to learn several neu	Iral network parad	igms along
6	Deploy different ap	pplications of these models to solve engineerin	g	
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:3
Outcome	I Sem	Cloud computing (M20CS03)	L:3 T:0 P:0	
After the	completion of this o	course, the students should be able to	-	
1	Discuss main conce	epts, key strengths, and limitations for cloud co	omputing.	
2	Develop the archite	ecture along with specific infrastructure on clo	ud computing, incl	uding SaaS,
	PaaS, IaaS, public	cloud, private cloud, hybrid cloud, etc.		0
3	Explain the issues	on cloud computing along with security, privac	cy, and interoperab	oility
4	Choose and use the	e appropriate technology, methods on these issue	les	
5	Identify problems,	and explain, analyze, and evaluate various clo	ud computing solu	tions
6	Provide the approp	riate solutions on cloud computing based on th	e application.	
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits: 3
Outcome	I Sem	Robotic Operating System and Simulation (M20AI02)	L:3 T:0 P:0	
1	Acquire basic Kr	nowledge on Robots		

2	Ability to process end effectors and robotic controls.
3	Analyse Robot Transformations and Sensors
4	Able to understand Robot cell design and applications

Course	Year/Semester	Subject Name (Subject Code)	No. of Hours	Credits: 3
Outcome	I Sem	Internet of Things (M20CS05 I)	L:3 T:0 P:0	
On successf	ful completion of th	nis course, students will be able to:		
1	Describe the basic	terminology, latest technology along with its a	pplications	
2	Discuss the protoc	ols based on the concepts such as machine to n	nachine.	
3	Illustrate the IOT	devices using Python Scripting Language		
4	Develop an applic applications of Io7	ation with Raspberry PI platform which can be	widely used in ma	any
5	Implement it wide	ly that can be used in many applications of IoT	devices	
6	Design a web appl	ication framework on REST ful web API.		
Course Outcome	Year /SemesterI Sem	Subject Name (Subject Code) Genetic Algorithms and Applications(M20CS19)	No. of Hours L:3 T:0 P:0	Credits:3
On success	ful completion of t	his course, students are able to:		
1	Fundamentals and	introduction concepts of genetic algorithms		
2	Basic Concepts and	d aspects of evolutionary algorithms (EAs), in	particular GA, GP	, ES
3	It also concentrates control. Many examprogramming using	s on the basic concepts of representation of ope nples and applications are dealt on the concept g python in important applications	rators and overall s of genetic	
Course Outcome	Year / semester I Sem	Subject Name (Subject Code) Artificial Neural Networks (M20AI03)	No. of Hours L:3 T:0 P:0	Credits:3
After the o	completion of this (	course, the students should be able to		
1		,		
2				
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits: 3
Outcome	I Sem	Network Security and Cryptography (M20CS08)	L:3 T:0 P:0	
1	Identifies various	s types of vulnerabilities, attacks, mechanisms a	and security servic	es
2	Compare and con	ntrast symmetric and asymmetric encryption alg	gorithms	
3	Implementation o	f message authentication, hashing algorithms a	nd able to underst	and kerberos
4	Explore the attack	as and controls associated with IP, transport lev	el, web and E-mai	il security
5	. Develop intrusic types of firewalls.	on detection system, solutions for wireless netw	orks and designin	g of various

Course Outcome	Year/Semester I Sem	Subject Name (Subject Code) PythonProgramming Lab (M20CS11)	No. of Hours L:0 T:0 P:4	Credits: 2
On successf	ul completion of th	is course, students will be able to:		
1	Expressing the Cor	re Python scripting elements such as variables	and flow control s	tructures
2	Apply Python func	tions to facilitate code reuse		
3	Extending how to v	work with lists and sequence data		
4	Implement file oper and exceptions prop	rations such as read and write and Adapting the perly	e code robust by h	andling errors
Course	Year /Semester	Subject Name (Subject Code)	No. of Hours	Credits:2
Outcome	I Sem	Cloud computing Lab(M20CS10)	L:0 T:0 P:04	
On successf	ful completion of th	is course, students are able to:		
1	Develop the archit	ecture along with specific infrastructure on clo aS, JaaS, public cloud, private cloud, hybrid clo	ud computing, oud.etc	
2	Explain the issues of	on cloud computing along with security, privac	v.and interoperabi	ility.
3	Identify problems,	and explain, analyze, and evaluate various clou	id computingsolut	ions
4	Provide the appropriate the propriet of the provide the propriet of the propri	riate solutions on cloud computing based on th	eapplication.	
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:2
Outcome	I Sem	Robotic Operating System and Simulation Lab(M20AI04)	L:0 T:0 P:4	
After the o	completion of this c	course, the students should be able to		
1	Understand the basic	components and specifications used in robotics and	automation	
2	Understand and imple	ement the different types of motors and sensors dur	ing designing of rob	otics system.
3	Use manipulators, a automation.	Actuators and Grippers and their design consi	derations in robot	ics and
4	Understand the basic	concepts of AVR microcontrollers		
5	Implement the progra	amming and interfacing concepts of AVR microcon	troller in robotic des	signing.
Course Outcome	Year / semester	Subject Name (Subject Code) Internet of Things Lab(M20CS12)	No. of Hours L:0 T:0 P:4	Credits:2
1	Demonstrate the st window	tarting of Raspberry Pi and practice Linux c	commands in com	mand terminal
2	Develop and run al	l basic python programs on RaspberryPi		
3	Build real time app	lications on Light an LED using Pythonprogra	mming	
4	Experiment with humidity,smoke.	implementation of intruder system and va	rious sensors lik	e temperature,

Course	Year/Semester	Subject Name (Subject Code)	No. of Hours	Credits: 2
Outcome	I Sem	Research Methodology & IPR(M20MC01)	L:2 T:0 P:0	
On successf	ul completion of th	is course, students will be able to:		
1	. Acquire knowledg	ge on Research Design and statistical methods i	in research	
2	Analyze the variou Data Representatio	s methods in Data Collection, Data Organization.	on and different ap	proaches of
3	Understand all the	basic concepts required to prepare		
	a. Research synops	SIS		
	b. Dissertation			
	c. Writing a good r	esearch proposal	~	
4	Interpret the Scope	of Patent Rights and Administration of Patent	System.	
Course Outcome	Year /Semester I Sem	Subject Name (Subject Code) Audit Course-I English for Research Paper Writing(M20AC01)	No. of Hours L:2 T:0 P:0	Credits:0
On successf	ul completion of th	nis course, students are able to:	I	
1	Obtain complete kr	nowledge on Definition of a research paper, Put	rpose of writing a	ny
	research paper , its	Scope and Benefits		
2	Understand the star	ndard English formats .for scripting the best res	search paper.	
3	Analyze all the Qua plagiarism	alitative and Quantitative Research Methodolog	gies and the ethics	of
4	Explain the detailed study on paper writ	d process of writing and publishing any researc	h paper and perfo	rm a case
Course	Year / semester	Subject Name (Subject Code) Advanced in Machine Learning(M20AI05)	No. of Hours	Credits:3
A ft on the c	moundation of this (	annea the students should be able to	2.5 1.01.0	
After the c	A bility to understa	ed the concents of Neural Networks		
2	Ability to understand	In the concepts of Neural Networks		
2	Ability to select the	E Learning Networks in modeling real worldsys	stems	
4	Ability to use all el	timization strategies for large seeleennliestions		
•	Ability to apply op			
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits: 3
Outcome	II Sem	Data Science (M20CS20)	L:3 T:0 P:0	
1	Describe a Data Sc	ience, skill sets available for a data scientist		
2	Discuss the terms S	Statistical Inference, its significance to explore	data analysis	
3	Understand Data S	cience Process and its components interact.	-	
4	Adapt APIs tools to	o understand the Web data.		
5	Illustrate EDA and	the Data Science as a case study		
6	Plan a effective vis	ualization on given data.		
Course	Year/Semester	Subject Name (Subject Code)	No. of Hours	Credits: 3
Outcome	II Sem	Data Pre-processing and Analysis(M20AI06)	L:3 T:0 P:0	

On successf	ful completion of th	nis course, students will be able to:		
1				
2				
3		-	-	
Course	Year /Semester	Subject Name (Subject Code)	No. of Hours	Credits:3
Outcome	II Sem	AI and Speech Processing(M20AI07)	L:3 1:0 P:0	
On success	ful completion of t	his course, students are able to:		
1				
2				
3	-			
4				
5				
6				
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:3
Outcome	I Sem	Digital Forensics (M20CS17)	L:3 T:0 P:0	
After the o	completion of this (	course, the students should be able to		
1	Discuss digital for	ensics related to investigative process.		
2	Explain the legal issues to prepare, perform digital forensic analysis based on theinvestigator's			
3	position.	abriance usage of divital formation tools		
3	Elaborate digital fo	vrancies in detail		
5	Analyze the state of	of the practice gaps in technology policy and	legal issues	
5	Develop to shari av	in the practice, gaps in technology, policy, and	legal issues	
0	. Develop techniqu	les used on Data Analysis, cybercrime.		
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits: 3
Outcome	II Sem	Computer Vision(M20Al08)	L:3 T:0 P:0	
1	To implement fund	lamental image processing techniques required	d for computer vision	on
2	Understand Image	formation process		
3	To perform shape a	analysis		
4	Extract features for	rm images and do analysis of images		
5	Generate 3D mode	l from images		
6	To develop applications using computer vision techniques			
7	Understand video J	processing, motion computation and 3D vision	and geometry	
Course	Year/Semester	Subject Name (Subject Code)	No. of Hours	Credits: 3
Outcome	II Sem	Block Chain Technology(M20CS18)	L:3 T:0 P:0	
On successf	ful completion of th	nis course, students will be able to:		
1	Introduce the fundation	amentals of blockchain, history, technology ar	d decentralization.	

2	Revise cryptographic concepts and its use in blockchain			
3	Revise cryptographic concepts and its use in blockchain			
4	Understand alterna	tives to proof of work		
5	Introduce smart co	ntracts, solidity and Web3 to implement blockc	hain	
6	Understand applica	tions of blockchain and its challenges		
Course	Year /Semester	Subject Name (Subject Code)	No. of Hours	Credits:3
Outcome	II Sem	Software Process and Project	L:3 T:0 P:0	
		Management(M20CS02)		
On successf	ful completion of th	his course, students are able to:		
1	Discuss and plan to	execute projects based on required standards		
2	Understand the ran	ge of tools used on project management		
3	Analyze the concept	pts related on project governance and methodol	ogies.	
4	Apply critical analy	Apply critical analysis on solving problems and planning process.		
5	Describe planning, Risk and issues management			
6	Plan process, pragmatic planning service delivery and quality assurance			
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:2
Outcome	I Sem	Advances in Machine Learning Lab(M20AI09)	L:0 T:0 P:4	
After the o	completion of this of	course, the students should be able to		
1	understand comple	xity of Machine Learning algorithms and their	limitations;	
2	understand modern	notions in data analysis-oriented computing;		
3	be capable of confi	be capable of confidently applying common Machine Learning algorithms in practice and		
	implementing their	: own;		
4	Be capable of perfo	orming experiments in Machine Learning using	; real-world data.	
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits: 2
Outcome	I I Sem	Digital Forensics Lab(M20CS24)	L:0 T:0 P:4	
1	Understand the me	thods available for retrieving the lost data.	L	
2	Classify the various mobile forensic techniques and how to handle them			
3	Identify the differe	nt Open-source intelligence techniques		
4	Demonstrate how t	o develop certification for Cyber Forensic		
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits: 2
Outcome	I I Sem	Data Pre-processing and Analysis Lab(M20AI10)	L:0 T:0 P:4	
1				

	-			
2				
3				
4				1
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits: 2
Outcome	I I Sem	AI and Speech Processing Lab(M20AI11)	L:0 T:0 P:4	
1				1
2				
3	+			
5				
4				
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits: 2
Outcome	I I Sem		L:0 T:0 P:4	
1		Mini Project with seminar(M20A112)		
2				
3	<u> </u>			
4				
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits: 0
Outcome	I I Sem	Audit Course-II Stress	L:2 T:0 P:0	
		Management(M20AC02)		
1	Burnout the causes o	f stress		
2	Control the time man	agement		
2				
5	Identify the right ca	areer path		
4	Handle the difficult v	work situation		
5	Manage the career lif	fe without stress		
	8			

Course Outcomes: Students will be able to: Develop healthy mind in a healthy body thus improving social health also• Improve efficiency•

## **III-SEMESTER**

Course Outcome	Year/Semester ∎ Sem	Subject Name (Subject Code) Natural Language Processing Techniques (M20CS26)	No. of Hours L:3 T:0 P:0	Credits: 3
On successf	ul completion of th	is course, students will be able to:		
1	Understand approa	ches to syntax and semantics in NLP		
2	Understand approa	ches to discourse, generation, dialogue and sun	nmarization within	n NLP
3	Understand current	methods for statistical approaches to machine	translation.	
4	Understand machir	e learning techniques used in NLP, including h	nidden Markov mo	odels
5	Understand the Lar	nguage model and probabilistic context-free gra	ammars, clustering	g and
6	unsupervised metho	ods, log-linear and discriminative models	ulti lingual autom	
0	summerization	chine Translation, muttingual miormation, m	uni inguai autom	atic
Course	Year /Semester	Subject Name (Subject Code)	No. of Hours	Credits: 3
Outcome	III Som	Cyber Security (M20CS27)	I •3 T•0 P•0	
Outcome	in bein		2.5 1.01.0	
On successf	ful completion of th	his course, students are able to:		
1	Outline key terms a	and concepts in cyber law, intellectual property	and cyber crimes	
2	Explore the vulner	abilities, threats and cybercrimes posed by crir	ninals.	
3	Identify various sec	curity challenges phased by mobile devices.		
4	Identify various typ	bes of tools and methods used in cybercrime, de	evelops the secure	counter
	methods to maintai	n security protection		
5	Analyze and evaluated	ate the cyber security needs of an organization		
6	Design operational	and strategic cyber security risk management j	policies in order to	adequately
	protect an organiza	tion's critical information and assets	1	
Course	Year /Semester	Subject Name (Subject Code)	No. of Hours	Credits: 3
Outcome	III Sem	Deep Learning (M20CS28)	L:3 T:0 P:0	
After the o	completion of this o	course, the students should be able to		
1	Ability to understa	nd the concepts of Neural Networks		
2	Ability to understa	nd the concepts of Deep Learning		
3	Ability to select the	e Learning Networks in modeling real world sy	vstems	
4	Ability to use an ef	ficient algorithm for Deep Models		
5	Ability to apply optimization strategies for large scale applications			
6	Ability to apply the	e Deep Learning models for Speech Recognitio	on, NLP and Other	Applications
Course	Year /Semester	Subject Name (Subject Code)	No. of Hours	Credits: 3
Outcome	III Sem	Advanced Optimization (M20MA01)	L:3 T:0 P:0	
On successf	ul completion of th	is course, students will be able to:		
1	Describe problem of	clearly, identify and analyzetheindividual funct	ions.	
2	Analyze study on solving optimization problem.			

3	Translate verbal formula on optimization problem			
4	Design algorithms, reliably to find an approximate solution			
5	Compare the performance of an algorithm			
6	Discovery, study, u	inderstandand solve optimization techniques us	sing algorithms	
Course	Year /Semester	Subject Name (Subject Code)	No. of Hours	Credits: 3
Outcome	III Sem	Waste Management (M20CE27)	L:3 T:0 P:0	
On success	ful completion of th	nis course, students are able to:		
1	Compare the subje	ct from the technical, legal and economical poi	ints.	
2	Learn solid waste r	nanagement		
3	Describe environm	ent for sound management.		
4	Understand a muni	cipal solid waste management system		
5	Plan a solid waste	management system for decision makers		
6	Design an incinerat	tion facility		
Course	Year /Semester	Subject Name (Subject Code)	No. of Hours	Credits: 3
Outcome	III Sem	Embedded System Design (M20VL07)	L:3 T:0 P:0	
After the o	completion of this c	course, the students should be able to		
1	Describe embedded	d systems, design, technology to explain its me	trics or challenges	
2	Designcustomsing	e-purposeprocessorsusingcombinationalaswel	lassequentiallogic	
3	Discuss about optin	mizing single – purpose processors. Discuss ab	out the basic archi	tecture and
	operation of genera	al purpose processors.		
4	Define and distinguish between a timer and a counter, various types of timers and UniversalAsynchronousReceiver/Transmitter.ExplaincontrollersforLCD,KeypadandStepper Motor			
5	Discuss common n	nemory types ROM, RAM, advanced RAM. E	xplain microproces	ssor
6	Explain basics of it	itration methods, various protocols like serial,	parallel	System
0	architecture	inerrupts, areinteetures irke Kound Kooni, Kea	I – Thie Operating	System
Course	Year /Semester	Subject Name (Subject Code)	No. of Hours	Credits: 10
Outcome	III Sem	Project / Dissertation Phase-I()	L:0 T:0 P:20	
1	Identify the problem	by applying acquired knowledge.		
2	Analyze and categori	ze executable project modules.		
3	Choose efficient tools for designing project modules.			
4	Combine all the modules through effective team work after efficient testing.			
5	Elaborate the completed task and compile the project report.			

## **IV-SEMESTER**

Course Outcome	Year/Semester I Sem	Subject Name (Subject Code) Project / Dissertation Phase-II	No. of Hours L:0 T:0 P:32	Credits: 16
		(M20A114)		
On successf	ul completion of th	is course, students will be able to:		
1	Identify the problem	by applying acquired knowledge.		
2	Analyze and categori	ze executable project modules.		
3	Choose efficient to	ols for designing project modules.		
4	Combine all the mo	odules through effective team work after eff	cient testing.	
5	Elaborate the com	pleted task and compile the project report.		

## COURSE OUTCOMES FOR M.TECH-CSE R20 FOR THE YEAR 2020-2021

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Course	Year/Semester	Subject Name (Subject Code)	No. of Hours	Credits: 3	
Outcome	I Sem		L:3 T:0 P:0		
		Data Structures and			
		Algorithms(M20CS01)			
On success	ful completion of th	is course, students will be able to:			
1	Define knowledge l	pasic on data structures to store and retrieve an	ordered or unorde	ered data. Such	
	as, arrays, linked lis	sts, trees, heaps, and hash tables .			
2	Develop knowledg to perform operatio	Develop knowledge on applications of data structures having the ability to implement algorithms o perform operation as create, insert, delete, search, and sorting.			
3	Learn to analyze an	nd to compare efficiency of an algorithm.			
4	Understand the basi	ic concepts of latest techniques.			
5	Ability to have con	cepts on tree and graphs.			
6	Implement various	projects on these data structures and plan B-Ti	rees to implement	different	
	various operations		L.		
Course	Voor /Somostor	Subject Name (Subject Code)	No. of Hours	Credits:3	
Course	I cal /Semester	Software Process and Project Management	L:3 T:0 P:0		
Outcom	1 Sem	(M20CS02)			
e		(11202502)			
On success	ful completion of th	nis course, students are able to:			
1	Discuss and plan to	execute projects based on required standards.			
2	Understand the ran	ge of tools used on project management.			
3	Analyze the concept	ots related on project governance and methodol	logies.		
4	Apply critical analy	ysis on solving problems and planning process.			
5	Describe planning,	Risk and issues management			
6	Plan process, pragr	natic planning service delivery and quality assu	urance		
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:3	
Outcome	I Sem	Cloud computing (M20CS03)	L+3 T+0 P+0		
After the	completion of this of	course, the students should be able to			
1	Discuss main conce	epts, key strengths, and limitations for cloud co	omputing.		
2	Develop the archite PaaS, JaaS, public	ecture along with specific infrastructure on clou cloud, private cloud, hybrid cloud, etc.	id computing, incl	uding SaaS,	
3	Explain the issues	on cloud computing along with security, privac	y, and interoperab	oility	
4	Choose and use the	e appropriate technology, methods on these issu	ies.		
5	Identify problems,	and explain, analyze, and evaluate various clou	id computing solu	tions.	
6	Provide the approp	riate solutions on cloud computing based on th	e application.		
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits: 3	
Outcome	I Sem	Python Programming(M20CS04)	L:3 T:0 P:0		
1	Defining the fund	lamentals of writing Python scripts			

2	Expressing the Core Python scripting elements such as variables and flow control structures.
3	Apply Python functions to facilitate code reuse.
4	Extending how to work with lists and sequence data.
5	Implement file operations such as read and write
6	Implementing and Adapting the code robust by handling errors and exceptions properly.

Course	Year/Semester	Subject Name (Subject Code)	No. of Hours	Credits: 3		
Outcome	I Sem	Internet of Things (M20CS05)	L:3 T:0 P:0			
On successf	ful completion of th	nis course, students will be able to:				
1	Describe the basic	terminology, latest technology along with its a	applications.			
2	Discuss the protoc	cols based on the concepts such as machine to n	nachine			
3	Illustrate the IOT	devices using Python Scripting Language				
4	Develop an applications of IoT devices	Develop an application with Raspberry PI platform which can be widely used in many applications of IoT devices				
5	Implement it wide	mplement it widely that can be used in many applications of IoT devices.				
6	Design a web appl	ication framework on REST ful web API.				
Course Outcome	Year /SemesterI Sem	Subject Name (Subject Code) Mathematical Foundations of Computer Science (M20CS06)	No. of Hours L:3 T:0 P:0	Credits:3		
On success	ful completion of tl	his course, students are able to:		<u> </u>		
1	Evaluate the notior	as of propositions, predicate formulae, Rules of	f inference.			
2	Illustrate and descr	ibe various types of Relations and Functions.				
3	Apply knowledge of Multinomial.	Apply knowledge of Mathematics, Combinations & Permutations, Binomial Multinomial.				
4	theorems, Pigeon h	ole principles.				
5	Develop to solve the	ne recurrence relations by using various method	ds.			
6	Perceive the basic	concepts of graph theory and apply for real tim	e examples.	•		
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:3		
Outcome	I Sem	Artificial Intelligence (M20CS07)	L:3 T:0 P:0			
After the o	completion of this o	course, the students should be able to				
1	Remember various assumptions etc	s AI concepts like the AI technique, level of mo	odels, there underl	ying		
2	Understand the cor	ncepts of AI search techniques				
3	Apply knowledge Representation techniques.					
4	Analyze different s	Analyze different structures of representation				
5	Evaluate AI search techniques					

6	Understand the concepts of Natural Language Processing.				
Course Outcome	Year / semester I Sem	Subject Name (Subject Code) Network Security and Cryptography (M20CS08)	No. of Hours L:3 T:0 P:0	Credits: 3	
1	Identifies various	s types of vulnerabilities, attacks, mechanisms a	and security servic	es.	
2	Compare and cor	ntrast symmetric and asymmetric encryption al	gorithms.		
3	Implementation of	f message authentication, hashing algorithms a	nd able to underst	and kerberos	
4	Explore the attack	as and controls associated with IP, transport lev	el, web and E-ma	il security.	
5	Develop intrusion types of firewalls.	detection system, solutions for wireless netwo	rks and designing	of various	
6	Understand the v cryptographic tec	arious wireless network vulnerabilities and imp hniques to improve wireless network security.	plements different	types of	
Course Outcome	Year/Semester I Sem	Subject Name (Subject Code) Research Methodology & IPR (M20MC01)	No. of Hours L:2 T:0 P:0	Credits: 2	
On successf	ful completion of th	is course, students will be able to:			
1	Acquire knowledge	e on Research Design and statistical methods ir	n research.		
2	Analyze the variou Data Representatio	Analyze the various methods in Data Collection, Data Organization and different approaches of Data Representation			
3	Understand all the	basic concepts required to prepare			
	<ul><li>a. Research synops</li><li>b. Dissertation</li><li>c. Writing a good response</li></ul>	<ul><li>a. Research synopsis</li><li>b. Dissertation</li><li>c. Writing a good research proposa</li></ul>			
4	Interpret the Scope	of Patent Rights and Administration of Patent	System.		
Course Outcome	Year /Semester I Sem	Subject Name (Subject Code) English for Research Paper Writing (M20AC01)	No. of Hours L:2 T:0 P:0	Credits:0	
On success	ful completion of th	nis course, students are able to:			
1	Obtain complete kr research paper , its	nowledge on Definition of a research paper, Pu s Scope and Benefits.	rpose of writing a	ny	
2	Understand the star	ndard English formats .for scripting the best res	search paper.		
3	Analyze all the Qua plagiarism	alitative and Quantitative Research Methodolo	gies and the ethics	of	
4	Explain the detailed study on paper write	Explain the detailed process of writing and publishing any research paper and perform a case study on paper writing.			
Course Outcome	Year / semester I Sem	Subject Name (Subject Code) Data Structures and Algorithms Lab (M20CS09)	No. of Hours L:0 T:0 P:4	Credits:2	
After the o	completion of this o	course, the students should be able to			

1	Analyze algorithms efficiency .			
2	Summarize and imp	plement various searching and sorting techniqu	les.	
3	Demonstrate stack	, queue and linked list with various operations		
4	Implement different trees and graphs concepts.			
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:2
Outcome	I Sem	Cloud computing Lab (M20CS10)	L:0 T:0 P:4	
1	Develop the architecture along with specific infrastructure on cloud computing, including SaaS, PaaS, IaaS, public cloud, private cloud, hybrid cloud, etc.			
2	Explain the issues on cloud computing along with security, privacy, and interoperability			
3	Identify problems, and explain, analyze, and evaluate various cloud computing solutions.			
4	Provide the approp	priate solutions on cloud computing based on t	he application.	

Course Outcome	Year/Semester I Sem	Subject Name (Subject Code) Python Programming Lab (M20CS11)	No. of Hours L:0 T:0 P:4	Credits: 2
On successf	ul completion of th	is course, students will be able to:	I	
1	Expressing the Cor	e Python scripting elements such as variables a	and flow control st	ructures.
2	Apply Python func	tions to facilitate code reuse		
3	Extending how to	work with lists and sequence data.		
4	Implement file ope and exceptions pro	rations such as read and write and Adapting the perly.	e code robust by h	andling errors
Course	Year /Semester	Subject Name (Subject Code)	No. of Hours	Credits:2
Outcome	I Sem	Internet of Things Lab (M20CS12)	L:0 T:0 P:4	
On successf	ful completion of t	his course, students are able to:	I	
1	Demonstrate the starting of Raspberry Pi and practice Linux commands in command terminal windows			
2	Develop and run al	l basic python programs on Raspberry Pi		
3	Build real time app	lications on Light an LED using Python progra	amming	
4	Experiment with ir humidity, smoke.	nplementation of intruder system and various s	ensors like temper	ature,
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:3
Outcome	II Sem	Advanced Web Programming (M20CS13)	L:3 T:0 P:0	
After the c	completion of this o	course, the students should be able to		
1	Apply three-tier are	chitecture concepts and advanced database tech	iniques in web app	lications.
2	Use object-oriented techniques in Web programming.			
3	Develop rich intera	active environments for the Web.		
4	Create sites that utilize data validation techniques and secure code.			
5	Build sites that use session management.			
6	Creating rich interactive web applications.			

Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits: 3			
Outcome	II Sem	Soft Computing Techniques (M20CS14)	L:3 T:0 P:0				
1	Understand the fuzzy logic concepts of fuzziness involved in fuzzy set theory						
2	Explain the concepts of fuzzy sets, knowledge representation using fuzzy rules.						
	approximate reasoning, fuzzy inference systems, and fuzzy logic.						
3	Build the fundamental theory, concepts of neural networks						
4	Identify different neural network architectures, algorithms, applications along their limitations.						
5	Classify different learning rules, architectures to learn several neural network paradigms along with its applications						
6	Deploy different ap	pplications of these models to solve engineering	5.				
Course	Year/Semester	Subject Name (Subject Code)	No. of Hours	Credits: 3			
Outcome	II Sem	Network Programming (M20CS15)	L:3 T:0 P:0				
On successf	ul completion of th	is course, students will be able to:					
1	Determine Linux u	tilities .					
2	Identify file handling techniques and signals.						
3	Explain what is IPC and network programming in Java.						
4	Learn how processes communicate with each other across a Computer Network.						
5	Develop Network	programming using TCP/UDP sockets.					
6	Implement Real Time and current trends in client server Application.						
Course	Year /Semester	Subject Name (Subject Code)	No. of Hours	Credits:3			
Course Outcome	Year /Semester II Sem	Subject Name (Subject Code) Machine Learning (M20CS16)	No. of Hours L:3 T:0 P:0	Credits:3			
Course Outcome On successf	Year /Semester II Sem ful completion of th	Subject Name (Subject Code) Machine Learning (M20CS16) his course, students are able to:	No. of Hours L:3 T:0 P:0	Credits:3			
Course Outcome On successf	Year /Semester II Sem ful completion of th Discuss different a	Subject Name (Subject Code) Machine Learning (M20CS16) nis course, students are able to: oplication on Machine Learning problems.	No. of Hours L:3 T:0 P:0	Credits:3			
Course Outcome On successf 1 2	Year /Semester II Sem ful completion of th Discuss different a Describe various al	Subject Name (Subject Code) Machine Learning (M20CS16) nis course, students are able to: pplication on Machine Learning problems. gorithms on Machine Learning mentioning its	No. of Hours L:3 T:0 P:0 strengths and wea	Credits:3			
Course Outcome On successf 1 2 3	Year /Semester II Sem ful completion of th Discuss different a Describe various al Illustrate the basic	Subject Name (Subject Code) Machine Learning (M20CS16) nis course, students are able to: oplication on Machine Learning problems. gorithms on Machine Learning mentioning its theory focused on Machine Learning.	No. of Hours L:3 T:0 P:0	Credits:3			
Course Outcome On successf 1 2 3 4	Year /Semester II Sem ful completion of th Discuss different aj Describe various al Illustrate the basic Improve the perfor	Subject Name (Subject Code) Machine Learning (M20CS16) nis course, students are able to: oplication on Machine Learning problems. gorithms on Machine Learning mentioning its theory focused on Machine Learning. mance of Machine Learning algorithms with di	No. of Hours L:3 T:0 P:0 strengths and wea	Credits:3 knesses			
Course Outcome On successf 1 2 3 4 5	Year /Semester II Sem ful completion of th Discuss different a Describe various al Illustrate the basic Improve the perfor Analyze current res	Subject Name (Subject Code) Machine Learning (M20CS16) nis course, students are able to: oplication on Machine Learning problems. gorithms on Machine Learning mentioning its theory focused on Machine Learning. mance of Machine Learning algorithms with disearch papers.	No. of Hours L:3 T:0 P:0 strengths and wea	Credits:3 knesses			
Course Outcome On successf 1 2 3 4 5 6	Year /Semester II Sem ful completion of th Discuss different ap Describe various al Illustrate the basic Improve the perfor Analyze current res Understand the late	Subject Name (Subject Code) Machine Learning (M20CS16) nis course, students are able to: oplication on Machine Learning problems. gorithms on Machine Learning mentioning its theory focused on Machine Learning. mance of Machine Learning algorithms with di search papers. est issues raised by current researchers.	No. of Hours L:3 T:0 P:0 strengths and wea	Credits:3 knesses			
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Course Outcome On successf 1 2 3 4 5 6 Course Outcome After the o	Year /Semester II Sem ful completion of th Discuss different a Describe various al Illustrate the basic Improve the perfor Analyze current res Understand the late Year / semester I Sem completion of this of	Subject Name (Subject Code)         Machine Learning (M20CS16)         nis course, students are able to:         oplication on Machine Learning problems.         gorithms on Machine Learning mentioning its         theory focused on Machine Learning.         mance of Machine Learning algorithms with disearch papers.         est issues raised by current researchers.         Subject Name (Subject Code)         Digital Forensics (M20CS17)         course, the students should be able to	No. of Hours L:3 T:0 P:0 strengths and wea fferent parameters No. of Hours L:3 T:0 P:0	Credits:3 knesses S. Credits:3			
Course Outcome On successf 1 2 3 4 5 6 Course Outcome After the o	Year /Semester II Sem Ful completion of the Discuss different and Describe various al Illustrate the basic Improve the perfor Analyze current rese Understand the late Year / semester I Sem Completion of this of	Subject Name (Subject Code) Machine Learning (M20CS16) nis course, students are able to: oplication on Machine Learning problems. gorithms on Machine Learning mentioning its theory focused on Machine Learning. mance of Machine Learning algorithms with di search papers. est issues raised by current researchers. Subject Name (Subject Code) Digital Forensics (M20CS17) course, the students should be able to ensics related to investigative process.	No. of Hours L:3 T:0 P:0 strengths and wea ifferent parameters No. of Hours L:3 T:0 P:0	Credits:3 knesses S. Credits:3			
Course Outcome On successf 1 2 3 4 5 6 Course Outcome After the o 1 2	Year /Semester II Sem ful completion of th Discuss different a Describe various al Illustrate the basic Improve the perfor Analyze current res Understand the late Year / semester I Sem completion of this of Explain the legal is	Subject Name (Subject Code)         Machine Learning (M20CS16)         nis course, students are able to:         oplication on Machine Learning problems.         gorithms on Machine Learning mentioning its         theory focused on Machine Learning.         mance of Machine Learning algorithms with disearch papers.         est issues raised by current researchers.         Subject Name (Subject Code)         Digital Forensics (M20CS17)         course, the students should be able to         ensics related to investigative process.         sues to prepare, perform digital forensic analyse	No. of Hours L:3 T:0 P:0 strengths and wea fferent parameters No. of Hours L:3 T:0 P:0	Credits:3 knesses s. Credits:3 vestigator's			
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Course Outcome On successf 1 2 3 4 5 6 Course Outcome After the o 1 2 3 4	Year /Semester II Sem Ful completion of the Discuss different ap Describe various al Illustrate the basic Improve the perfor Analyze current res Understand the late Year / semester I Sem Completion of this of Discuss digital fore Explain the legal is position Demonstrate the ter Elaborate digital for	Subject Name (Subject Code)         Machine Learning (M20CS16)         nis course, students are able to:         opplication on Machine Learning problems.         gorithms on Machine Learning mentioning its         theory focused on Machine Learning.         mance of Machine Learning algorithms with disearch papers.         est issues raised by current researchers.         Subject Name (Subject Code)         Digital Forensics (M20CS17)         course, the students should be able to         ensics related to investigative process.         sues to prepare, perform digital forensic analys         chniques, usage of digital forensics tools.         rensics in detail.	No. of Hours L:3 T:0 P:0 strengths and wea ifferent parameters No. of Hours L:3 T:0 P:0	Credits:3 knesses s. Credits:3 vestigator's			

6	Develop techniques used on Data Analysis, cybercrime.							
Course Outcome	Year / semester II Sem	Subject Name (Subject Code) Block Chain Technology(M20CS18)	No. of Hours L:3 T:0 P:0	Credits: 3				
1	Introduce the fundamentals of blockchain, history, technology and decentralization.							
2	Revise cryptographic concepts and its use in blockchain.							
3	Define bitcoin and	understand structure of blockchain						
4	Understand alterna	Understand alternatives to proof of work						
5	Introduce smart co	ntracts, solidity and Web3 to implement block	chain					
6	Understand applications of blockchain and its challenges							
Course Outcome	Year/Semester II Sem	Subject Name (Subject Code) Genetic Algorithms and Applications (M20CS18)	No. of Hours L:3 T:0 P:0	Credits: 3				
On success	On successful completion of this course, students will be able to:							
1	Explain the princip	les of Evolutionary Computation and Genetic	Algorithms.					
2	Apply the concepts of Evolutionary Computation Methods to find solutions for complex problems							
3	Describe the applications of Genetic Programming							
4	Analyze with different parameters on Evolutionary Algorithms							
5	Understand the diff	ferent methods in Machine Learning and Gene	tic Algorithms					
6	Summarize the current scenario of research and application in Evolutionary Genetic Algorithms and Computing							
Course	Year /Semester	Subject Name (Subject Code)	No. of Hours	Credits:3				
Outcome	II Sem	Data Science (M20CS20)	L:3 T:0 P:0					
On successful completion of this course, students are able to:								
1	Describe a Data Sc	ience, skill sets available for a data scientist						
2	Discuss the terms Statistical Inference, its significance to explore data analysis							
3	Understand Data Science Process and its components interact.							
4	Adapt APIs tools to understand the Web data.							
5	Illustrate EDA and the Data Science as a case study.							
6	Plan a effective visualization on given data.							
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:0				
Outcome	I Sem	Stress Management (M20AC02)	L:2 T:0 P:0					
After the	completion of this o	course, the students should be able to	•					
1	Maintain a stress awareness log. Include identification of causes, symptoms, and analysis of							
	effects Cathar information on current strass management techniques and evaluate personal relevance							
2	effects Gather information	on current stress management techniques and	evaluate personal	relevance				

4	Choose an adaptable stress management plan for academic success incorporating selected						
	techniques.						
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits: 2			
Outcome	I I Sem	(M20CS21)	L:0 T:0 P:4				
1	Design and develop static and dynamic web pages with good aesthetic sense of designing and latest technical know-how's.						
2	Understand the Web Application Terminologies, Internet Tools and other web services.						
3	Learn how to link and publish web sites.						
4	Learn Database Connectivity to web applications						
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits: 2			
Outcome	I I Sem	Network Programming Lab (M20CS22)	L:0 T:0 P:4				
1	Understand the cor	acepts of Socket commands.					
2	Implement Connec	tion-Oriented Service using standard ports.					
3	Define Connection	less and Connection Oriented Service.					
4	Plan a case study on client and server and construct a Remote Command Execution using sockets.						
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits: 2			
Outcome	I I Sem	Machine Learning Lab (M20CS23)	L:0 T:0 P:4				
1	Discuss different application on Machine Learning problems.						
2	Describe various algorithms on Machine Learning mentioning its strengths and weaknesses.						
3	Improve the performance of Machine Learning algorithms with different parameters.						
4	Understand the latest issues raised by current researchers.						
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits: 2			
Outcome	I I Sem	Digital Forensics Lab (M20CS24)	L:0 T:0 P:4				
1	Understand the methods available for retrieving the lost data.						
2	Classify the various mobile forensic techniques and how to handle them.						
3	Identify the different Open-source intelligence techniques						
4							
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits: 2			
Outcome	I I Sem	Mini Project with seminar (M20CS25)	L:0 T:0 P:2				
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#### **III-SEMESTER**

Course Outcome	Year/Semester ∎ Sem	Subject Name (Subject Code) Natural Language Processing Techniques (M20CS26)	No. of Hours L:3 T:0 P:0	Credits: 3		
On successf	ul completion of th	nis course, students will be able to:	•			
1	Understand approa	ches to syntax and semantics in NLP.				
2	Understand approa	ches to discourse, generation, dialogue and sur	nmarization within	n NLP.		
3	Understand current	t methods for statistical approaches to machine	translation.			
4	Understand machir	ne learning techniques used in NLP, including	hidden Markov mo	odels		
5	Understand the Language model and probabilistic context-free grammars, clustering and unsupervised methods, log-linear and discriminative models.					
6	Understand the Machine Translation, multilingual information, multi lingual automatic summerization					
Course	Year /Semester	Subject Name (Subject Code)	No. of Hours	Credits: 3		
Outcome	III Sem	Cyber Security (M20CS27)	L:3 T:0 P:0			
On successf	ful completion of the	his course, students are able to:				
1	Outline key terms	and concepts in cyber law, intellectual property	and cyber crimes			
2	Explore the vulner	abilities, threats and cybercrimes posed by crin	ninals			
3	Identify various se	curity challenges phased by mobile devices.				
4	Identify various typ methods to maintai	Identify various types of tools and methods used in cybercrime, develops the secure counter methods to maintain security protection.				
5	Analyze and evaluate the cyber security needs of an organization					
6	Design operational	and strategic cyber security risk management	policies in order to	o adequately		
	protect an organiza	tion's critical information and assets.				
Course Outcome	Year /Semester III Sem	Subject Name (Subject Code) Deep Learning (M20CS28)	No. of Hours L:3 T:0 P:0	Credits: 3		

After the o	completion of this o	course, the students should be able to		
1	Ability to understand the concepts of Neural Networks			
2	Ability to understa	nd the concepts of Deep Learning		
3	Ability to select the	e Learning Networks in modeling real world sy	stems	
4	Ability to use an ef	ficient algorithm for Deep Models		
5	Ability to apply op	timization strategies for large scale applications	s	
6	Ability to apply the	e Deep Learning models for Speech Recognitio	n, NLP and Other	Applications
Course	Year /Semester	Subject Name (Subject Code)	No. of Hours	Credits: 3
Outcome	III Sem	Advanced Optimization (M20MA01)	L:3 T:0 P:0	
On successf	ul completion of th	is course, students will be able to:		
1	Describe problem	clearly, identify and analyzethe individual funct	tions.	
2	Analyze study on s	olving optimization problem.		
3	Translate verbal fo	rmula on optimization problem.		
4	Design algorithms,	reliably to find an approximate solution		
5	Compare the perfo	rmance of an algorithm.		
6	Discovery, study, u	inderstand and solve optimization techniques us	sing algorithms.	
Course	Year /Semester	Subject Name (Subject Code)	No. of Hours	Credits: 3
Outcome	III Sem	Waste Management (M20CE27)	L:3 T:0 P:0	
On suggess	 ful completion of t	his course, students are able to:		
OII SUCCESSI	iui completion of th	ns course, students are able to.		
1	Compare the subje	ct from the technical, legal and economical poin	nts.	
2	Learn solid waste 1	nanagement.		
3	Describe environm	ent for sound management		
4	Understand a muni	cipal solid waste management system.		
5	Plan a solid waste	management system for decision makers.		
6	Design an incinera	tion facility.		
Course	Year /Semester	Subject Name (Subject Code)	No. of Hours	Credits: 3
Outcome	III Sem	Embedded System Design (M20VL07)	L:3 T:0 P:0	
After the o	completion of this o	course, the students should be able to		
1	Describe embedde	d systems, design, technology to explain its met	trics or challenges	
2	Designcustomsingle-purposeprocessorsusingcombinationalaswellassequentiallogic.			
5	operation of generation	al purpose processors.	but the basic archi	lecture and
4	Define and disting	high between a timer and a counter various tun	as of timors and	
	Universal Asynchro	nousReceiver/Transmitter Explaincontrollersfo	orl CD Keynad an	d Stenner
	Motor.		need, need pade an	a stepper
5	Discuss common n	nemory types ROM, RAM, advanced RAM. Ex	plain microproces	ssor
	interfacing and art	pitration methods, various protocols like serial,	parallel.	~
6	Explain basics of in architecture.	nterrupts, architectures like Round Robin, Real	– Time Operating	System

Course Outcome	Year /Semester III Sem	Subject Name (Subject Code) Dissertation Phase-I (M20CS29)	No. of Hours L:0 T:0 P:20	Credits: 10
1				
2				
3				
4				
5				

### **IV-SEMESTER**

Course Outcome	Year/Semester I Sem	Subject Name (Subject Code)	No. of Hours L:0 T:0 P:32	Credits: 16
0	 	Dissertation Phase-II (M20CS30)		
Un successi	ui completion of th	us course, students will be able to:		
1				
2				
3				
4				
5				

### COURSE OUTCOMES FOR M.TECH-CYBER SECURITY R20 FOR THE YEAR 2018-2020

Course	Year/Semester	Subject Name (Subject Code)	No. of Hours	Credits: 3
Outcome	I Sem	Mathematical Foundation for Cyber	L:3 T:0 P:0	
		Security (M20CY01)		
On successf	ul completion of th	is course, students will be able to:		
1	Define the concepts r	elated to the basics of group theory.		
2	Develop understandir	ng of number theory algorithms.		
3	Discover different o	operations on algebraic structure		
4	Derive the probabil	ity density function of transformation of rando	om variables.	
5	Develop understan	ding of Bayesian framework.		
Course	Year /Semester	Subject Name (Subject Code)	No. of Hours	Credits:3
Outcom	I Sem	Network Security and Cryptography	L:3 T:0 P:0	
e		(M20CS08)		
On successi	tul completion of th	ns course, students are able to:		
1	Identifies various types of vulnerabilities, attacks, mechanisms and security services			
2	Compare and contrast	st symmetric and asymmetric encryption algorithms		
3	Implementation of m	essage authentication, hashing algorithms and able	to understand kerbe	ros
4	Explore the attacks a	nd controls associated with IP, transport level, web	and E-mail security	
5	Develop intrusion de firewalls.	tection system, solutions for wireless networks and	designing of various	s types of
6	Understand the vario techniques to improv	us wireless network vulnerabilities and implements e wireless network security.	different types of ci	ryptographic
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:3
Outcome	I Sem	Cloud computing (M20CS03)	L:3 T:0 P:0	
After the o	completion of this o	course, the students should be able to		
1	Discuss main concep	ts, key strengths, and limitations for cloud computin	ng.	
2	. Develop the archite	cture along with specific infrastructure on cloud cor	nputing, including S	SaaS, PaaS,
3	Explain the issues of	on cloud computing along with security, privac	y, and interoperal	oility
4	Choose and use the appropriate technology, methods on these issues			
5	Identify problems, and explain, analyze, and evaluate various cloud computing solutions.			
6	Provide the appropriate solutions on cloud computing based on the application.			
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits: 3
Outcome	I Sem	Python Programming (M20CS04)	L:3 T:0 P:0	
1	Defining the funda	mentals of writing Python scripts.	1	
2	Expressing the Cor	Expressing the Core Python scripting elements such as variables and flow control structures		
L		. 10		

3	Apply Python functions to facilitate code reuse.
4	Extending how to work with lists and sequence data.
5	Implement file operations such as read and write
6	Implementing and Adapting the code robust by handling errors and exceptions properly.

Course	Year/Semester	Subject Name (Subject Code)	No. of Hours	Credits: 3
Outcome	I Sem	Internet of Things (M20CS05)	L:3 T:0 P:0	
On successf	ul completion of th	is course, students will be able to:		
1	Describe the basic te	erminology, latest technology along with its application	tions.	
2	Discuss the protocol	s based on the concepts such as machine to machine	е.	
3	Illustrate the IOT of	levices using Python Scripting Language.		
4	Develop an applications of Io	ation with Raspberry PI platform which can be Γ devices.	widely used in ma	any
5	Implement it wide	ly that can be used in many applications of IoT	devices	
6	Design a web appl	ication framework on REST ful web API.		
Course Outcome	Year /SemesterI Sem	Subject Name (Subject Code) Secure Software Design and Development (M20CY02)	No. of Hours L:3 T:0 P:0	Credits:3
On successf	iul completion of th	nis course, students are able to:		
1	Differentiate betw	een various software vulnerabilities.		
2	Explain the Software	process vulnerabilities for an organization		
4	Explain the Interrelat	te security and software development process.		
5	Discuss the Case stud	dy of DNS server, DHCP configuration and SQL in	jection attack.	
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:3
Outcome	I Sem	Operating System Security(M20CY03)	L:3 T:0 P:0	
After the o	completion of this of	course, the students should be able to		
1	Explain the overview	of operating system		
2	Demonstrate the Acc	ess control matrix, access control list and Lampson	's access matrix	
3	Identify the Encryp	tion Techniques, Authentication and Password	d Security issues	
4	Identify the Encrypti	on Techniques and apply the real time applications	•	
5	Know the role and re both a Linux and Wi	sponsibilities of a system administrator and Create ndows platform	and administer user	accounts on
Course Outcome	Year / semester I Sem	Subject Name (Subject Code) Artificial Intelligence (M20CS07)	No. of Hours L:3 T:0 P:0	Credits: 3
1	Remember various AI concepts like the AI technique, level of models, there underlying			

	assumptions etc			
2	Understand the concepts of AI search techniques			
3	Apply knowledge Representation techniques			
4	Analyze different s	tructures of representation		
5	Evaluate AI search	techniques		
6	Understand the cor	cepts of Natural Language Processing		
Course	Vear/Semester	Subject Name (Subject Code)	No. of Hours	Credits: 2
Outcome	I Sem	Network Security and Cryptography Lab (M20CY04)	L:0 T:0 P:4	
On successf	ul completion of th	is course, students will be able to:		
1	Implement the cipher	techniques.		
2	Apply the mathemati	cal foundation required for various cryptographi c a	algorithms.	
3	Develop the variou	s security algorithms.		
4	Use different open source tools for network security and analysis			
Course	Year /Semester	Subject Name (Subject Code)	No. of Hours	Credits:2
Outcome	I Sem	Cloud computing Lab(M20CS10)	L:0 T:0 P:4	
On successf	ful completion of th	nis course, students are able to:		
1	Develop the archit	ecture along with specific infrastructure on clo	oud computing,	
	including SaaS, Paa	S, IaaS, public cloud, private cloud, hybrid clou	ud,etc.	
2	Explain the issues on	cloud computing along with security, privacy, and	interoperability	
3	Identify problems, a	nd explain, analyze, and evaluate various cloud con	nputingsolutions.	
4	Provide the appropria	ate solutions on cloud computing based on theapplic	cation.	
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:2
Outcome	I Sem	Python Programming Lab (M20CS11)	L:0 T:0 P:4	
After the o	completion of this o	course, the students should be able to		
1	Expressing the Core	Python scripting elements such as variables and flo	w control structures.	
2	Apply Python function	ons to facilitate code reuse		
3	Extending how to v	vork with lists and sequence data.		
4	Implement file opera exceptions properly.	tions such as read and write and Adapting the code	robust by handling o	errors and
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:2
Outcome	I Sem	Internet of Things Lab (M20CS12)	L:0 T:0 P:4	
1	Demonstrate the s window.	tarting of Raspberry Pi and practice Linux c	commands in com	mand terminal
2	Develop and run all basic python programs on RaspberryPi			
3	Build real time app	lications on Light an LED using Pythonprogra	mming	
4	Experiment with implementation of intruder system and various sensors like temperature, humidity, smoke.			

Course	Year/Semester	Subject Name (Subject Code)	No. of Hours	Credits: 0
Outcome	I Sem	Research Methodology and IPR(M20MC01)	L:2 T:0 P:0	
outcome				
On success	ful completion of th	is course, students will be able to:		
1	Acquire knowledge of	on Research Design and statistical methods in resear	ch.	
2	Analyze the various Representation	methods in Data Collection, Data Organization and	different approache	s of Data
3	Understand all the	basic concepts required to prepare		
	a. Research synops	is		
	b. Dissertation			
	c. Writing a good re	esearch proposal		
4	Interpret the Scope	e of Patent Rights and Administration of Paten	t System	
Course Outcome	Year /Semester I Sem	Subject Name (Subject Code) English for Research Paper Writing	No. of Hours L:2 T:0 P:0	Credits:0
		(M20AC01)		
0				
On success	ful completion of th	ns course, students are able to:		
1	Obtain complete k	nowledge on Definition of a research paper, Pu	urpose of writing a	any
	research paper, it	s Scope and Benefits.		
2	Understand the stand	ard English formats .for scripting the best research	paper.	
3	Analyze all the Quali	itative and Quantitative Research Methodologies an	d the ethics of plagi	arism
4	Explain the detailed paper writing	process of writing and publishing any research pape	r and perform a case	e study on
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:3
Outcome	II Sem	Cyber Security (M20CS27)	L:3 T:0 P:0	
After the	completion of this o	ourse the students should be able to		
1	Outline key terms and	concepts in other law intellectual property and cy	ber crimes	
2	Explore the uninershi	litics, threats and subcratimes posed by ariminals	ber ernnes.	
2	Explore the vulnerabl	unities, threats and cybercrities posed by critiniais.		
	Identify various sec	of tools and methods used in subgraving develops	the secure counter	mathada ta
	maintain security prot	tection.	the secure counter	methous to
5	Analyze and evaluate	the cyber security needs of an organization.		
6	Design operational and strategic cyber security risk management policies in order to adequately protect an organization's critical information and assets.			
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits: 3
Outcom	II Sem	Web Application and Penetrating Testing (M20CY05)	L:3 T:0 P:0	
e				
1	Explain threats, vul	nerabilities and breaches to design database		
2	Discuss Relational D	Data Model and concurrency controls and locki	ing, SQL extension	is to
	security			
3	Demonstrate the Brow	wser security principles.		

4	4 How to provide software centric security and mobile web browser security in real time				
5	Construct the penetra	Construct the penetrating testing workflows with examples.			
Course	Year/Semester	Subject Name (Subject Code)	No. of Hours	Credits: 3	
Outcom	II Sem		L:3 T:0 P:0		
e		Machine Learning (M20CS16)			
		• • • • • • • • • • •			
On successi	<b>Ul completion of th</b>	lis course, students will be able to:			
2	Discuss unicient app	orithms on Machine Learning mentioning its strengt	hs and weaknesses		
			ins and weathresses.		
3	Illustrate the basic	theory focused on Machine Learning.			
4	Improve the perfor	mance of Machine Learning algorithms with d	ifferent paramete	ers.	
5	Analyze current res	search papers.			
6	Understand the lat	est issues raised by current researchers.	1		
Course	Year /Semester	Subject Name (Subject Code)	No. of Hours	Credits:3	
Outcome	II Sem	Digital Forensics (M20CS17)	L:5 1:0 P:0		
On success	 ful completion of th	nis course, students are able to:			
On success	ful completion of th	is course, students are able to.			
1	Discuss digital fore	nsics related to investigative process.			
2	Explain the legal iss	sues to prepare, perform digital forensic analys	sis based on thein	vestigator's	
	position				
3	Demonstrate the t	echniques, usage of digital forensics tools.			
4	Elaborate digital fo	rensics in detail.			
5	Analyze the state o	f the practice, gaps in technology, policy, and	legal issues		
6	Develop technique	s used on Data Analysis, cybercrime.			
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:3	
Outcome	I Sem	Blockchain Technology (M20CS18)	L·3 T·0 P·0	creatiste	
After the	a pompletion of this c	pourse, the students should be able to			
1	Introduce the fund	amentals of blockchain, history technology an	nd decentralization	n	
2	Revise cryptograph	ic concepts and its use in blockchain			
3	Define hitcoin and	understand structure of blockchain			
4	Understand altern	atives to proof of work			
5	Introduce smart co	ntracts, solidity and Web3 to implement block	chain		
6	Lindorstand applic	views of blockchain and its shallongos			
0					
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits: 3	
Outcome	II Sem	(M20CY06)	L:3 T:0 P:0		
1	Understand key ter	rms and concepts in cyber law, intellectual pro	perty and cybercr	imes,	
	trademarks and do	main theft			
2	Determine comput	er technologies, digital evidence collection, an	d evidentiary rep	orting in	

	orensic acquisition.				
3	Secure both clean	and corrupted systems, protecting personal da	ata, securing simp	e computer	
	networks, and safe	networks, and safe Internet usage.			
4	Incorporate approa	aches for incident analysis and response.			
Course	Year/Semester	Subject Name (Subject Code)	No. of Hours	Credits: 3	
Outcome	II Sem	Firewall and VPN Security (M20CY07)	L:3 T:0 P:0		
On successf	ul completion of th	is course, students will be able to:			
1	To show the funda	mental knowledge of Firewalls and it types			
2	Construct a VPN to Authorization	allow Remote Access, Hashing, connections w	vith Cryptography	and VPN	
3	Elaborate the knov Detection	vledge of depths of Firewalls, Interpreting firev	wall logs, alerts, Ir	trusion and	
4	Infer the design of	Control Systems of SCAD, DCS, PLC's and ICS's			
5	Evaluate the SCAD	A protocols like RTU, TCP/IP, DNP3, OPC,DA/H	AD		
Course	Vear /Semester	Subject Name (Subject Code)	No. of Hours	Credits:3	
Outcome	II Som	Big Data Analytics (M20CY08)	L:3 T:0 P:0		
Outcome	II Selli				
On successf	ful completion of the	nis course, students are able to:			
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2					
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5					
6					
Course	Veen/gemeeten	Subject Name (Subject Code)	No of House	Creditar	
Course	Tear / semester	Ethical Hacking and Cyber Security Lab	No. of Hours	Creans:2	
Outcome	I Sem	(M20CY09)	L:0 1:0 P:4		
After the o	completion of this o	course, the students should be able to			
1					
2					
3					
4					
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits: 2	
Outcome	I I Sem	Digital Forensics Lab (M20CS24)	L:0 T:0 P:4		
1	Understand the meth	ods available for retrieving the lost data.		l	
2	Classify the various	mobile forensic techniques and how to handle them.			
3	Identify the different Open-source intelligence techniques				

4	Demonstrate how to develop certification for Cyber Forensic.					
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits: 2		
Outcome	I I Sem	Machine Learning Lab (M20CS23)	L:0 T:0 P:4			
1	Discuss different app	lication on Machine Learning problems				
2	Describe various algo	orithms on Machine Learning mentioning its streng	ths and weaknesses.			
3	Improve the performance of Machine Learning algorithms with different parameters					
4	Understand the latest	issues raised by current researchers.				
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits: 2		
Outcome	I I Sem	Block Chain Techology Lab(M20CY10)	L:0 T:0 P:4			
1	Explain design princ	iples of Bitcoin and Ethereum				
2	Explain Nakamoto co	onsensus.				
3	Explain the Simplif	Explain the Simplified Payment Verification protocol.				
4	List and describe diff	ferences between proof-of-work and proof-of-stake	consensus			
5	Interact with a block	chain system by sending and reading transactions.				
6	Design, build, and de	ploy a distributed application				
7	Evaluate security, pr	ivacy, and efficiency of a given Blockchain system.				
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits: 2		
Outcome	I I Sem	Mini Project with seminar (M20CY11)	L:0 T:0 P:4			
1						
2						
3						
4						
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits: 0		
Outcome	I I Sem	Stress Management(M20AC02)	L:2 T:0 P:0			
1	Maintain a stress awa	areness log. Include identification of causes, sympto	oms, and analysis of	effects		
2	Gather information on current stress management techniques and evaluate personal relevance.					
3	Practice specific te	chniques, track effectiveness, and revise to me	eet personal prefe	rences.		
4	Choose an adaptable	stress management plan for academic success incom	rporating selected te	chniques.		

### **III-SEMESTER**

Course Outcom	Year/Semester ∎ Sem	Subject Name (Subject Code) Information Warfare(M20CY12)	No. of Hours L:3 T:0 P:0	Credits: 3	
On success	Full completion of t	his course, students will be able to:	ortain to informat	ion warfaro	
1		of data, information and knowledge as they pe			
2	Apply strategies of using information as a weapon and a target				
3	Apply the principles of offensive and defensive information warfare for a given context				
4	Discuss the social,	legal and ethical implications of information w	arfare		
5	Evaluate contempo environment	prary information warfare concepts for their ap	oplication in a cor	porate	
Course	Year /Semester	Subject Name (Subject Code)	No. of Hours	Credits: 3	
Outcom	III Sem	Intrusion Detection (M20CY13)	L:3 T:0 P:0		
е					
On success	ful completion of t	his course, students are able to:	I		
1					
1	Understating of val	rious types of intruders and intrusion detection	n systems.		
2	Implementation of	Intrusion detection architecture.			
3	Identifying the Sec	urity threats and risk assessment.			
4	Exploring tools use	d for intrusion detection system			
5	Develop the under	standing of organizations standards and its leg	al issues.		
Course	Year /Semester	Subject Name (Subject Code)	No. of Hours	Credits: 3	
Outcom	III Sem	Social, Web and Mobile Analytics	L:3 T:0 P:0		
e		(M20CY14)			
After the	completion of this	course, the students should be able to			
1	Apply best practice	es in Search Engine Optimization			
2	Apply ethical princ	iples to the use of web and social media data			
3	Use different tool f	or capturing data from various resources			
4	Perform Mobile Ap	plication analysis using different tool and tech	niques		
5	Analysis report ger	neration and presentations.			
Course	Year /Semester	Subject Name (Subject Code)	No. of Hours	Credits: 3	
Outcom	III Sem	Advanced Optimization (M20MA01)	L:3 T:0 P:0		
е					
On success	ful completion of t	his course, students will be able to:	1		

1	Describe problem clearly, identify and analyze the individual functions.					
2	Analyze study on se	olving optimization problem				
3	, Translate verbal fo	Translate verbal formula on optimization problem.				
4	Design algorithms, reliably to find an approximate solution					
5	Compare the perfo	rmance of an algorithm.				
6	Discovery, study, u	nderstandand solve optimization techniques	using algorithms			
Course	Year /Semester	Subject Name (Subject Code)	No. of Hours	Credits: 3		
Outcom	III Sem	Waste Management (M20CE27)	L:3 T:0 P:0			
e						
On success	ful completion of t	his course, students are able to:				
1	•	,				
1	Compare the subject	ct from the technical, legal and economical po	oints.			
2	Learn solid waste r	nanagement.				
3	Describe environm	ent for sound management				
4	Understand a muni	cipal solid waste management system.				
5	Plan a solid waste 1	nanagement system for decision makers.				
6	Design an incinerat	tion facility.				
Course	Year /Semester	Subject Name (Subject Code)	No. of Hours	Credits: 3		
Outcom	III Sem	Embedded System Design (M20CE27)	L:3 T:0 P:0			
e						
After the	completion of this	course, the students should be able to				
After the	<b>completion of this</b> Describe embedded	<b>course, the students should be able to</b> 1 systems, design, technology to explain its mo	etrics or challenges			
After the 1 2	completion of this Describe embedded Design custom sing	<b>course, the students should be able to</b> I systems, design, technology to explain its mo gle–purpose processors using combinational as	etrics or challenges s well as sequential	logic.		
After the           1           2           3	completion of this Describe embedded Design custom sing Discuss about optin	course, the students should be able to d systems, design, technology to explain its me gle–purpose processors using combinational as nizing single – purpose processors. Discuss al	etrics or challenges s well as sequential bout the basic archi	logic. tecture and		
After the           1           2           3	<b>completion of this</b> Describe embedded Design custom sing Discuss about optin operation of genera	course, the students should be able to l systems, design, technology to explain its mage-purpose processors using combinational as nizing single – purpose processors. Discuss al l purpose processors.	etrics or challenges s well as sequential bout the basic archi	logic. tecture and		
After the           1           2           3           4	completion of this Describe embedded Design custom sing Discuss about optin operation of genera Define and distingu	course, the students should be able to 1 systems, design, technology to explain its me gle–purpose processors using combinational as nizing single – purpose processors. Discuss al 1 purpose processors. 1 ish between a timer and a counter, various type	etrics or challenges s well as sequential bout the basic archi pes of timers and U	logic. tecture and		
After the           1           2           3           4           5	completion of this Describe embedded Design custom sing Discuss about optin operation of genera Define and distingu Asynchronous Rec	<b>course, the students should be able to</b> I systems, design, technology to explain its me gle–purpose processors using combinational as nizing single – purpose processors. Discuss al I purpose processors. ish between a timer and a counter, various typ eiver/Transmitter.Explain controllers for LCD	etrics or challenges s well as sequential bout the basic archi pes of timers and U 0,Keypad and Stepp	logic. tecture and niversal per Motor.		
After the           1           2           3           4           5	completion of this Describe embedded Design custom sing Discuss about optin operation of genera Define and distingu Asynchronous Rec Discuss common m interfacing and art	course, the students should be able to 1 systems, design, technology to explain its me gle–purpose processors using combinational as nizing single – purpose processors. Discuss al 1 purpose processors. ush between a timer and a counter, various type eiver/Transmitter.Explain controllers for LCD memory types ROM, RAM, advanced RAM. E pitration methods various protocols like seria	etrics or challenges s well as sequential bout the basic archi pes of timers and U 0,Keypad and Stepp Explain microproces	logic. tecture and niversal per Motor. ssor		
After the 1 2 3 4 5 6	completion of this Describe embedded Design custom sing Discuss about optin operation of genera Define and distingu Asynchronous Rec Discuss common m interfacing and arb Explain basics of in	course, the students should be able to l systems, design, technology to explain its mage-purpose processors using combinational as nizing single – purpose processors. Discuss al l purpose processors. hish between a timer and a counter, various type eiver/Transmitter.Explain controllers for LCD memory types ROM, RAM, advanced RAM. E pitration methods, various protocols like serial hterrupts, architectures like Round Robin, Rea	etrics or challenges s well as sequential bout the basic archi pes of timers and U 0,Keypad and Stepp Cxplain microproces 1, parallel. 1 – Time Operating	logic. tecture and niversal per Motor. ssor g System		
After the           1           2           3           4           5           6	completion of this Describe embedded Design custom sing Discuss about optin operation of genera Define and distingu Asynchronous Rec Discuss common n interfacing and art Explain basics of in architecture.	course, the students should be able to I systems, design, technology to explain its mage-purpose processors using combinational as nizing single – purpose processors. Discuss al I purpose processors. hish between a timer and a counter, various type eiver/Transmitter.Explain controllers for LCD nemory types ROM, RAM, advanced RAM. E pitration methods, various protocols like seria nterrupts, architectures like Round Robin, Rea	etrics or challenges s well as sequential bout the basic archi pes of timers and U D,Keypad and Stepp Explain microproces 1, parallel. 1 – Time Operating	logic. tecture and niversal per Motor. ssor g System		
After the           1           2           3           4           5           6           Course	completion of this Describe embedded Design custom sing Discuss about optin operation of genera Define and distingu Asynchronous Rec Discuss common m interfacing and art Explain basics of in architecture. Year /Semester	course, the students should be able to I systems, design, technology to explain its mage-purpose processors using combinational as nizing single – purpose processors. Discuss al I purpose processors. hish between a timer and a counter, various type eiver/Transmitter.Explain controllers for LCD memory types ROM, RAM, advanced RAM. Explain terrupts, architectures like Round Robin, Rea Subject Name (Subject Code)	etrics or challenges s well as sequential bout the basic archi pes of timers and U D,Keypad and Stepp Explain microproces 1, parallel. 1 – Time Operating No. of Hours	logic. tecture and iniversal per Motor. ssor g System Credits: 10		
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#### **IV-SEMESTER**

Course Outcome	Year/Semester I Sem	Subject Name (Subject Code) Project / Dissertation Phase-II (M20CY16)	No. of Hours L:0 T:0 P:32	Credits: 16
On successf	ul completion of th	nis course, students will be able to:		
1				
2				
3				
4				
5				

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	SWAMBHARA EDUCATION	DEPARTMENT	OF CIVIL ENG	NEERING
<u>CO</u>	URSE OUTCOME	CS (CO's) FOR B.TECH –	CIVIL ENGINEER	ING (R20)
Course Outcome	Year / Semester : I / I-Sem	<b>Subject Name (Code):</b> Linear Algebra and Vector Calculus (B20MA04)	No. of Hours : L: 3 T: 1 P: 0	Credits: 4
After the co	ompletion of this cour	se, the students should be ab	ble to	-
1	Understand the princ using multiple metho	iples of matrix to calculate the ds.	characteristics of system	m of linear equations
2	Determine Eigen valu	ues, Eigenvectors of matrices.		
3	Evaluate limits of sin	gle-variable functions graphica	ally and computationall	у.
4	Analyze improper int	egrals using Beta and Gamma	functions.	
5	Calculate Partial deri surface and volume i	vatives, extreme of functions of the test of test	of multiple variables. Co orems.	D5: Analyse line,
Course Outcome	Year / Semester : I / I-Sem	Subject Name (Code): Applied Physics (B20PH04)	No. of Hours : L: 3 T: 1 P: 0	Credits: 4
After the co	ompletion of this cour	rse, the students should be ab	ole to	
1	Use the laws of mech rigid bodies.	nanics to determine the equilibr	rium condition of partic	les and
2	Explain the elastic pr	operties of materials.		
3	Understands the basi	c concepts in Nondestructive te	echniques and their app	lications.
4	Explain the knowleds their remedies.	ge of waves and the factors affe	ecting acoustics of build	dings and
5	Calculate geometric	properties like Centre of gravity	y moment of inertia and	l mass
Course Outcome	Year / Semester : I / I-Sem	<b>Subject Name (Code):</b> Basic Mechanical Engineering (B20ME05)	No. of Hours : L: 3 T: 0 P: 0	Credits: 3
After the co	ompletion of this cour	rse, the students should be ab	ole to	
1	Identify the Various	Energy sources and IC engines	systems.	
2	Apply the Metal rem	oval process using Lathe, drilli	ng and Milling operation	ons.
3	Compare the applicat	tion and usage of various engin	neering Materials.	
4	Analyze the Principle	e of operation of Impulse and r	eaction turbine.	
5	Discuss the importan	ce of engineering materials.		
Course Outcome	Year / Semester : I / I-Sem	Subject Name (Code): Programming for Problem Solving (B20CS01)	No. of Hours : L: 4 T: 0 P: 0	Credits: 4
After the co	ompletion of this cour	rse, the students should be ab	le to	

1	1				
1	Understanding how problems are posed and how they can be analyzed for obtaining solutions.				
2	Learning of sequencing, branching, looping and decision making statements to solve scientific and engineering problems.				
3	Implementing differe problems.	nt operations on arrays and cre	eating and using of func	tions to solve	
4	Understanding and ex	xploring the various methods o	of memory allocations.		
5	Ability to design and methodology.	implement different types of f	ile structures using stan	dard	
Course Outcome	Year / Semester : I / I-Sem	<b>Subject Name (Code):</b> Physics Lab (B20PH05)	No. of Hours : L: 0 T: 0 P: 3	Credits: 1.5	
After the co	mpletion of this cour	se, the students should be ab	ole to		
1	Estimate the frequence	cy of tuning for and AC supply	with the help of stretch	ned strings.	
2	Analyze as well as co	ompare the intensity distributio	n of interference and di	ffraction patterns.	
3	Draw the characteristics of electrical and electronic circuits and evaluate the dependent parameters.				
4	Explore and understa	nd the applications of semicon	ducting devices.		
5	Evaluates the wavele	ngth and radius of curvature of	f Plano convex lens by l	Newton's rings.	
Course Outcome	Year / Semester : I / I-Sem	<b>Subject Name (Code):</b> Programming for Problem Solving Lab (B20CS02)	No. of Hours : L: 0 T:0 P: 3	Credits: 1.5	
After the co	mpletion of this cour	se, the students should be ab	ble to		
1	Understand basic stru of variables, control s	acture of the C Programming, of structures and all related conce	data types, declaration a pts.	nd usage	
2	Ability to understand executable form.	any algorithm and Write the C	C programming code in		
3	Implement Programs to solve real time pro	using functions, pointers and a blems.	arrays, and use the pre-p	processors	
4	Ability to use file stru	actures and implement program	ns on files		
Course Outcome	Year / Semester : I / I-SemSubject Name (Code): Engineering Workshop (B20ME04)No. of Hours : L: 0 T:0 P: 2Credits: 1				
After the co	mpletion of this cour	rse, the students should be ab	ole to		
1	Know the fundament	al knowledge of various trades	and their usage in real	time Applications.	
2	Compare Foundry, W	Velding, Black smithy, Fitting,	Machine shop and hous	se wiring.	
3	Understand the basis engineeringand mech	for analyzing power tools in c anical engineering.	onstruction and wood w	vorking, electrical	
4	Apply basic concepts of computer hardware for assembly and disassembly.				

Course Outcome	Year / Semester : I / I-Sem	Subject Name (Code): Induction Program (B20MC01)	No. of Hours : L: 0 T: 0 P: 0	Credits: 0
After the co	mpletion of this cour	se, the students should be ab	le to	
1		NA		
Course Outcome	Year / Semester : I / II-Sem	<b>Subject Name (Code):</b> Differential Calculus and Transforms (B20MA06)	No. of Hours : L: 3 T: 1 P: 0	Credits: 4
After the completion of this course, the students should be able to				
1	Apply the fundament	al concepts of ordinary differe	ntial equations toreal tin	ne problems.
2	Find the complete sol concepts in solving p	lution of a non homogeneous d hysical problems of Engineerin	lifferential equationsand	l applying its
3	Evaluate initial value technique.	problems and boundary value	problems using Laplace	e transforms
4	Expand the algebraic	and transcendental functions b	by applying Fourier Series	ies.
5	Apply the concepts o	f Partial Differential Equations	s to Engineering problem	ns.
Course Outcome	Year / Semester : I / II-Sem	Subject Name (Code): Applied Chemistry (B20CH03)	No. of Hours : L: 4 T: 0 P: 0	Credits: 4
After the co	mpletion of this cour	se, the students should be ab	le to	
1	The knowledge of me	plecular batteries and corrosior	1	
2	The knowledge of wa	ater treatment.		
3	The knowledge of po	lymers and their uses.		
4	The required knowle	dge of principles and concepts	of phase rule and surface	ce chemistry.
5	The knowledge of ma	aterials and their uses.		
Course Outcome	Year / Semester : I / II-Sem	<b>Subject Name (Code):</b> Engineering Mechanics (B20CE01)	No. of Hours : L: 3 T: 1 P: 0	Credits: 4
After the co	mpletion of this cour	rse, the students should be ab	le to	
1	Understand concepts	of resultant force and moment	Systems.	
2	Analyze problems rel	lated to friction developed in m	notion of bodies.	
3	Calculate centroid an	d moment of inertia for simple	and composite sections	3.
4	Apply concepts of me	echanics to solve problems of 1	rigid body motion.	
5	Understand the applie	cation of Work Energy method	for plane motion probl	ems.
Course Outcome	Year / Semester : I / II-Sem	Subject Name (Code): Basic Electrical and Electronics Engineering (B20EE01)	No. of Hours : L: 3 T: 0 P: 0	Credits: 3
After the co	mpletion of this cour	rse, the students should be ab	le to	
1	Analyze circuit theor power.	ems, mesh and nodal analysis,	series and parallel netw	orks, Electrical

2	Gain knowledge on AC circuits, reactance, Impedance, Susceptance and Admittance and Power			
	Factor			
3	Learn the working principle of DC motors, Transformers.			
4	Study the characteristics of PN Junction diode and zener diode.			
5	Learn the basic of Ai	mplifiers and Rectifiers.		
Course Outcome	Year / Semester : I / II-Sem	Subject Name (Code): English for Effective communication (B20EN01)	No. of Hours : L: 2 T: 0 P: 0	Credits: 2
After the co	mpletion of this cour	rse, the students should be ab	le to	
1	Skim and scan the di	gital text to summarize it for fu	ture reference.	
2	Read the text to make	e notes according to their needs	3.	
3	Use English language	e effectively in spoken and writ	tten forms.	
4	Communicate confid	ently in various contexts and di	ifferent cultures.	
5	Acquire basic profici and speaking skills.	ency in English including read	ing and listening compr	ehension, writing
Course Outcome	Year / Semester : I / II-Sem	<b>Subject Name (Code):</b> Python Programming Lab (B20CS07)	No. of Hours : L: 0 T: 1 P: 2	Credits: 2
After the co	mpletion of this cour	rse, the students should be ab	le to	
1	Expressing the Core	Python scripting elements such	as variables and flow o	control structures.
2	Apply Python function	ons to facilitate code reuse.		
3	Extending how to we	ork with lists and sequence data	l.	
4	Implement file operation handling errors and e	tions such as read and write and exceptions properly.	d Adapting the code rol	oust by
Course Outcome	Year / Semester : I / II-Sem	Subject Name (Code): Engineering Drawing (B20ME01)	No. of Hours : L: 0 T: 0 P: 4	Credits: 2
After the co	mpletion of this cour	rse, the students should be ab	le to	
1	Understand various c	commands, object properties in	AUTOCAD.	
2	Analyse the Projection	ons of Points and solids.		
3	Estimate the use of d	rawings, dimensioning, scales	and conic sections.	
4	Compare the Conver	sion of Isometric views to Orth	ographic views.	
Course Outcome	Year / Semester : II / III-Sem	<b>Subject Name (Code):</b> Probability Distribution and Numerical Methods (B20MA08)	No. of Hours : L: 3 T: 1 P: 0	Credits: 4
After the co	mpletion of this cour	rse, the students should be ab	le to	
1	Use probability theor	ry for modelling uncertainty in	engineering problems	
2	Develop discrete and	continuous probability distribution	ution and its application	IS.

3	Construct confidence interval estimates for population parameters to test the hypothesis.			
4	Find a better approximate root of a given equation.			
5	Compute the differential equation using Numerical techniques.			
Course Outcome	Year / Semester : II / III-Sem	Subject Name (Code): Strength of Materials - 1 (B20CE02)	No. of Hours : L: 3 T: 0 P: 0	Credits: 3
After the co	ompletion of this cour	rse, the students should be ab	le to	
1	Determine the stresse	s and strains in the members.		
2	Draw shear force and	Bending moment diagram for	determinate beams.	
3	Identify the flexural a	and shear stresses for various s	ections.	
4	Evaluate the slope an	d deflection of determinate bea	ams.	
5	Identify the concept of	of torsion and spring subjected	to loading	
Course Outcome	Year / Semester : II / III-Sem	Subject Name (Code): Fluid Mechanics (B20CE03)	No. of Hours : L: 3 T: 0 P: 0	Credits: 3
After the co	ompletion of this cour	se, the students should be ab	le to	
1	Learn the fundamenta	als of fluids and the principles	of manometer.	
2	Compute dimensiona	l flow in a pipe applying contin	nuity equation.	
3	Calculate the flow pa	rameters by Euler's and Berno	ulli's equation.	
4	Differentiate laminar	and turbulent flow and various	s losses in pipe flow.	
3	Determine Boundary	layer thickness, Drag-Lift forc	ces.	
Course Outcome	Year / Semester : II / III-Sem	Subject Name (Code): Surveying (B20CE04)	No. of Hours : L: 3 T: 0 P: 0	Credits: 3
After the co	ompletion of this cour	se, the students should be ab	le to	
1	Identify the classification	tion of surveying and instrume	ents used.	
2	Calculate the horizon	tal and vertical angle using Ta	cheometric surveying.	
3	Understand the proce	ess of control surveying and ad	justments.	
4	Know the concept of	Hydrographic and Astronomic	cal surveying.	
	Understand the princ	iples of Total station and GPS	surveying.	
Course Outcome	Year / Semester : II / III-Sem	<b>Subject Name (Code):</b> Construction Materials (B20CE05)	No. of Hours : L: 3 T: 0 P: 0	Credits: 3
After the co	ompletion of this cour	se, the students should be ab	le to	
1	Compare the properti	es of most common and advan	ced building materials.	
2	Understand the typic	al and potential applications of	lime, cement and aggre	gates.
3	Know the Rudiments	of production of concrete.		
4	Understand application	on of timbers and other materia	als.	

5	Understand the importance of modern material for construction.			
Course Outcome	Year / Semester : II / III-Sem	Subject Name (Code): Strength of Materials Lab (B20CE06)	No. of Hours : L:0T:0P: 2	Credits: 1
After the completion of this course, the students should be able to				
1	Identity the bending	benavior of beams using benur	ng test.	
2	Determine the benavi	or of material under torsion.		
3	Determine the hardne	ess of materials using different	tests.	
4	Find out the characte	ristic of material under compre	ession, impact and shear	test.
Course Outcome	Year / Semester : II / III-Sem	<b>Subject Name (Code):</b> Surveying Lab (B20CE07)	No. of Hours : L: 0 T: 0 P: 3	Credits: 1.5
After the co	mpletion of this cour	rse, the students should be ab	le to	
1	Calculate area of give	en plot/points using chain surv	ey.	
2	Determine the angle/	distance of given points using	compass survey.	
3	Find out the angle, di	stance and height of the given	points using theodolite	surveying.
4	Determine the distant	ce of the given points using To	tal station.	
Course Outcome	Year / Semester : II / III-Sem	Subject Name (Code): English Language and Interactive Communication Skills Lab (B20EN02)	No. of Hours : L: 0 T: 0 P: 3	Credits: 1.5
After the co	mpletion of this cour	se, the students should be ab	le to	
1	Understand the nuan activities.	ces of English language throug	h audio-visual experien	ce and group
2	Speak with clarity an	d confidence which in turn enh	ances their employabili	ty skills.
3	Develop their listenir language and improv	ng skills so that they may appre e their pronunciation.	ciate its role in develop	ing LSRW skills
4	Involve the students	in speaking activities in various	s contexts.	
Course Outcome	Year / Semester : II / III-Sem	Subject Name (Code): Project Based Learning - 1 (B20CE08)	No. of Hours : L:0T:0P: 2	Credits: 1
After the co	mpletion of this cour	rse, the students should be ab	le to	
1	NA			
Course Outcome	Year / Semester : II / III-Sem	Subject Name (Code): Human Values and Professional Ethics (B20MC04)	No. of Hours : L: 2 T: 0 P: 0	Credits: 0
After the completion of this course, the students should be able to				

1	It ensures students su skills.	It ensures students sustained happiness through identifying the essentials of human values and skills.			
2	It facilitates a correct	It facilitates a correct understanding between profession and happiness.			
3	It helps students under behavior and enrichir	It helps students understand practically the importance of trust, mutually satisfying human behavior and enriching interaction with nature.			
4	Ability to develop ap professional and pers	propriate technologies and mar onal life.	nagement patterns to cre	eate harmony in	
Course Outcome	Year / Semester : II / IV-Sem	<b>Subject Name (Code):</b> Strength Materials - 2 (B20CE09)	No. of Hours : L: 3 T: 0 P: 0	Credits: 3	
After the co	mpletion of this cour	se, the students should be ab	le to		
1	Analyse the fixed and	l continuous beams.			
2	Evaluate the direct an	d bending stresses of different	structures.		
3	Determine the critical	l load of columns and stresses	developed in thick and	thin cylinders.	
4	Understand the conce	ept of principal stresses and stra	ain energy.		
5	Analyze the unsymmetry	etrical bending of beams and sl	hear centre for different	t section.	
Course Outcome	Year / Semester : II / IV-Sem	<b>Subject Name (Code):</b> Hydraulics and Hydraulic Machinery (B20CE10)	No. of Hours : L: 3 T: 0 P: 0	Credits: 3	
After the co	mpletion of this cour	rse, the students should be ab	le to		
1	Apply fundamental k	nowledge in open-channel hyd	raulics in Civil Enginee	ering.	
2	Describe dimensional	l analysis and similarity to deve	elop hydraulic model.		
3	Understand about the	turbo-machines and its efficie	ncy.		
4	Gain knowledge of h	ydraulic turbines and their oper	rational design.		
5	Evaluate the perform	ance of centrifugal pump			
Course Outcome	Year / Semester : II / IV-Sem	<b>Subject Name (Code):</b> Structural Analysis - 1 (B20CE11)	No. of Hours : L: 3 T: 0 P: 0	Credits: 3	
After the co	mpletion of this cour	se, the students should be ab	le to		
1	Analyze continuous t strain energy method	beams, pin-jointed indeterminal	te plane frames and rigi	d plane frames by	
2	Anaryse continuous t	cams and rigid frames by stop	e derection method.		
3	with and without swa	ept of moment distribution and y.	anaryse continuous dea	ms and rigid frames	
4	matrix flexibility met	hod.	commuous ocams and r	igiu manies using	
5	Understand the concept of matrix stiffness method and analyse of continuous beams, pin jointed trusses and rigid plane frames.				
Course Outcome	Year / Semester : II / IV-Sem	Subject Name (Code): Engineering Geology (B20CE12)	No. of Hours : L: 2 T: 0 P: 0	Credits: 2	

After the co	mpletion of this cour	se, the students should be ab	le to		
1	Understand the importance of geological knowledge such as earth, earthquake, volcanism and				
1	the action of various geological agencies.				
2	Gain basics knowled	Gain basics knowledge on properties of minerals.			
3	Gain knowledge abou	it types of rocks, their distribut	tion and uses.		
4	Understand the method	ods of study on geological strue	cture.		
5	Understand the applic	cation of geological investigati	on in projects such as d	ams, tunnels,	
5	bridges, roads, airpor	t and harbor.			
Course Outcome	Year / Semester : II / IV-Sem	<b>Subject Name (Code):</b> Construction Techniques And Practices (B20CE13)	No. of Hours : L: 3 T: 0 P: 0	Credits: 3	
After the co	mpletion of this cour	se, the students should be ab	le to		
1	Know the different co	onstruction techniques and stru	ctural systems.		
2	Understand various to	echniques and practices in mas	onry construction, floor	ring, and roofing.	
3	Plan the requirements	s for substructure construction.			
4	Know the methods ar	nd techniques involved in const	truction of various type	s of super structures.	
5	Select, maintain and construction sites.	operate hand and power tools a	and equipment used in t	he building	
Course Outcome	Year / Semester : II / IV-Sem	Subject Name (Code): Fluid Mechanics & Hydraulic Machinery Lab (B20CE14)	No. of Hours : L: 0 T: 0 P: 2	Credits: 1	
After the co	mpletion of this cour	se, the students should be ab	le to		
1	Calibrate flow measu	ring devices used in pipes, cha	nnels and tank.		
2	Demonstrate practica characterize laminar	l understanding of the minor as and turbulent flows.	nd friction losses in pip	e flows and	
3	Demonstrate practica other miscellaneous h	l working of Hydraulic machin hydraulics machines.	es- different types of T	urbines, Pumps, and	
4	Compare results of an	nalytical models with actual be	havior of real fluid flov	vs.	
Course Outcome	Year / Semester : II / IV-Sem	Subject Name (Code): Engineering Geology Lab (B20CE15)	No. of Hours : L: 0 T: 0 P: 2	Credits: 1	
After the co	mpletion of this cour	se, the students should be ab	le to		
1	Learn about the group practical application	nd surface features based on m in civil engineering.	ap patterns of contour v	with emphasis on	
2	Identify physical and mechanical properties of rocks and minerals and its application in civil				
3	Measure strike and di	ip of the bedding planes.			
4	Interpret and draw se beds, folds, faults.	Interpret and draw sections for geological maps showing horizontal beds, vertical beds, inclined beds, folds, faults.			
G	V /C	Subject Name (Code):	NI CII		
Outcome	Y ear / Semester : II / IV-Sem	Building Drawing Lab - CAD (B20CE16)	No. of Hours : L: 0 T: 1 P: 2	Credits: 2	

After the co	mpletion of this cour	se, the students should be ab	le to	
1	Understand the usage	e of AutoCAD commands.		
2	Able to draw the Plan	n, Section and elevation of the	building structures.	
3	Understand the 2D &	a 3D building elements.		
4	Detail the building co	omponents in Auto CAD drawi	ngs.	
Course	Veen / Conceptor	Subject Name (Code):	No. of House	
Outcome	i ear / Semester	Project Based Learning - 2	NO. OF HOURS : $\mathbf{I} \cdot \mathbf{O} \mathbf{T} \cdot \mathbf{O} \mathbf{D} \cdot 2$	Credits: 1
Outcome	. 11 / 1 v -Sem	(B20CE17)	L. 0 1. 01. 2	
After the co	mpletion of this cour	se, the students should be ab	le to	
1		NA		
Course	Year / Semester	Subject Name (Code):	No. of Hours ·	
Outcome	: III / V-Sem	Design of Steel Structures	L: 3 T: 0 P: 0	Credits: 3
		(B20CE18)		
After the co	mpletion of this cour	se, the students should be ab	le to	
1	Recognize the design	philosophy of steel structures	and connections.	-
2	Select the suitable se	ction shape and size for tensior	n and compression mem	lbers.
3	Able to calculate ulti	mate load of steel beams and p	ortal frames using plast	ic analysis.
3				
4	Able to design beams	s, Built-up beams and plate gird	lers.	
5	Identify and compute	the design trusses on Industria	al structures.	
Course	Vear / Semester	Subject Name (Code):	No. of Hours :	
Outcome	· III / V-Sem	Geotechnical Engineering	L: 3 T: 0 P: 0	Credits: 3
		(B20CE19)		
After the co	completion of this course, the students should be able to			
1	Identify the propertie	s and characteristics of soils.		
2	Analyze permeability	and seepage through soils.	1	
3	Ability to analyze the	e stress distribution and consoli	dation settlement.	
4	A bla to know site in	iples of snear strength of soils.	a of coile	
5	Able to know site inv	estigation methods and Testing	g of solls.	
Course	Year / Semester	Subject Name (Code):	No. of Hours :	Creaditor 2
Outcome	: III / V-Sem	(B20CE20)	L: 3 T: 0 P: 0	Creans: 5
After the co	 mnletion of this cour	(B20CE20)	le to	
1	Acquire knowledge of	on the concrete mix proportion	ng and manufacturing.	
2	Understand the prope	erties of concrete in fresh and h	lardened state.	
2	Admity to know deve	Iopment of High Strength and	High Performance Cond	crete.
3				
4	Onderstand the impo	tranee of durability of concrete		
5	Identify special conc	rete and Quality Control during	g construction.	
		Subject Name (Code):		
Course	Year / Semester	Hydrology and Water	No. of Hours :	C 14 2
Outcome	: III / V-Sem	Resource Engineering	L: 3 T: 0 P: 0	Creatts: 3
		(B20CE21)		
After the co	mpletion of this cour	se, the students should be ab	le to	
1	Define the key driver	s on water resources and hydro	ological processes.	
2	Apply the knowledge	e of hydrological models to sur	face water problems.	
3	Explain the concept of	of Flood and Drought and mana	agement strategies.	
4	Describe the importa	nce and design water storage re	eservoirs.	

5 Apply the concepts of groundwater for wat	er resources management.
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AAGI	EVICOLLEGE	VAAGDEVI COLLEGE OF ENGINEERING Autonomous		
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and the	E Contraction	Bollikunta, Warangal Urban-506 005 (T.S)		
	SWAMBHARA LOUCATION	DEPARTMENT	OF CIVIL ENGI	NEERING
<u>CC</u>	OURSE OUTCOME	CS (CO's) FOR B.TECH –	CIVIL ENGINEER	ING (R22)
Course Outcome	Year / Semester : I / I-Sem	Subject Name (Code): Matrices and Calculus (B22MA01)	No. of Hours : L: 3 T: 1 P: 0	Credits: 4
After the co	ompletion of this cour	rse, the students should be ab	ole to	
1	Write the matrix repr system of equations.	esentation of a set of linear equ	uations and to analyse the	ne solution of the
2	Find the Eigen values	s and Eigen vectors.		
3	Reduce the quadratic	form to canonical form using	orthogonal transformati	ons.
4	Solve the application	s on the mean value theorems.	·····	
5	Evaluate the imprope	r integrals using Beta and Gan	nma functions.	• .
6	Find the extreme value	ies of functions of two variable	es with/ without constra	ints.
7	Evaluate the multiple	integrals and apply the concer	ot to find areas, volumes	5.
Course Outcome	Year / Semester : I / I-Sem	Subject Name (Code): Applied Physics (B22PH01)	No. of Hours : L: 3 T: 1 P: 0	Credits: 4
After the co	ompletion of this cour	rse, the students should be ab	ole to	
1	Understand physical	world from fundamental point	of view by the concepts	s of Quantum.
2	Mechanics and visual classification of solid	lize the difference between cor ls.	nductor, semiconductor,	and an insulator by
3	Identify the role of se	emiconductor devices in scienc	e and engineering Appl	ications.
4	Explore the fundame applications.	ntal properties of dielectric, ma	agnetic materials and en	ergy for their
5	Appreciate the featur	es and applications of Nanoma	aterials.	
6	Understand various a	spects of Lasers and Optical fi	bre and their application	ns in diverse fields.
Course Outcome	Year / Semester : I / I-Sem	<b>Subject Name (Code):</b> C Programming and Data Structures (B22CS06)	No. of Hours : L: 3 T: 0 P: 0	Credits: 3
After the co	ompletion of this cour	se, the students should be ab	ole to	
1	Understand the vario	us steps in Program developme	ent.	
2	Explore the concepts	of control statements and func	ctions in C Programming	g Language.
3	Understand the conce	epts of pointers and its applicat	tions.	
4	Ability to design and	implement different types of f	ile structures.	
5	Apply data structures and sorting algorithm	such as stacks, queues in prob	blem solving and analyz	e various searching

Course Outcome	Year / Semester : I / I-Sem	Subject Name (Code): Engineering Workshop (B22ME01)	No. of Hours : L: 0 T: 1 P: 3	Credits: 2.5
After the co	mpletion of this cour	rse, the students should be ab	le to	
1	Study and practice or	machine tools and their opera	tions	
2	Practice on manufact	uring of components using wor	rkshop trades including	pluming, fitting,
3	Identify and apply su	itable tools for different trades	of Engineering process	ses including
4	Apply basic electrica	l engineering knowledge for ho	ouse wiring practice.	
Course Outcome	Year / Semester : I / I-Sem	Subject Name (Code): English for Skill Enhancement (B22EN01)	No. of Hours : L: 2 T: 0 P: 0	Credits: 2
After the co	mpletion of this cour	rse, the students should be ab	le to	
1	Understand the import	rtance of vocabulary and senter	nce structures.	
2	Choose appropriate v communication.	ocabulary and sentence structu	res for their oral and w	ritten
3	Demonstrate their un	derstanding of the rules of fund	ctional grammar.	
4	Develop comprehens	ion skills using known and unk	known passages.	
5	Take an active part in various contexts.	n drafting paragraphs, letters, es	ssays, abstracts, précis a	and reports in
Course Outcome	Year / Semester : I / I-Sem	Subject Name (Code): Elements of Civil Engineering (B22CE01)	No. of Hours : L:0T:0 P: 2	Credits: 1
After the co	mpletion of this cour	rse, the students should be ab	le to	
1	Understand the import	rtance of vocabulary and senter	nce structures.	
2	Choose appropriate v communication.	ocabulary and sentence structu	res for their oral and w	ritten
3	Demonstrate their un	derstanding of the rules of fund	ctional grammar.	
4	Develop comprehens	ion skills using known and unk	known passages.	
5	Take an active part in various contexts.	n drafting paragraphs, letters, es	ssays, abstracts, précis a	and reports in
Course Outcome	Year / Semester : I / I-Sem	Subject Name (Code): Applied Physics Laboratory (B22PH02)	No. of Hours : L: 0 T:0 P: 3	Credits: 1.5
After the co	mpletion of this cour	rse, the students should be ab	le to	
1	Know the determinat	ion of the Planck"s constant us	sing Photo electric effec	t and identify the
2	Appreciate quantum	physics in semiconductor device	ces and optoelectronics.	
3	Gain the knowledge	of applications of dielectric cor	nstant.	
4	Understand the variat	tion of magnetic field and beha	vior of hysteresis curve	2.
5	Gain the knowledge	of decay of charge and determi	ne time constant of RC	circuit.
Course Outcome	Year / Semester : I / I-Sem	Subject Name (Code): C Programming and Data Structures Laboratory (B22CS07)	No. of Hours : L: 0 T: 0 P: 2	Credits: 1

After the co	mpletion of this cour	rse, the students should be ab	le to			
1	Develop modular and	l readable C Programs				
2	Solve problems using	g strings, functions. Handle dat	a in files.			
3	Implement stacks, qu	leues using arrays.				
4	To understand and an	halyze various searching and so	orting algorithms.			
Course Outcome	Year / Semester : I / I-Sem	Subject Name (Code): English Language and Communication Skills Laboratory (B22EN02)	No. of Hours : L: 0 T: 0 P: 2	Credits: 1		
After the co	mpletion of this cour	rse, the students should be ab	ole to			
1	Understand the nuan activities.	ces of English language throug	h audio- visual experier,	nce and group		
2	Neutralize their accer	nt for intelligibility.				
3	Develop their listenir language and improv	ng skills so that they may appre e their pronunciation.	ciate its role in develop	ing LSRW skills of		
4	Involve in speaking a	activities in various contexts.				
5	Speak with clarity an	d confidence which in turn enh	nance their employabilit	y skills		
Course Outcome	Year / Semester : I / I-Sem	Subject Name (Code): Environmental Science (B22CH03)	No. of Hours : L: 3 T: 0 P: 0	Credits: 0		
After the co	mpletion of this cour	rse, the students should be ab	ole to			
1	Based on this course, on the basis of ecolog sustainable developm	, the Engineering graduate will gical principles and environment	understand /evaluate / o ntal regulations which i	develop technologies n turn helps in		
Course Outcome	Year / Semester : I / II-Sem	Subject Name (Code): Ordinary Differential Equations and Vector Calculus (B22MA02)	No. of Hours : L: 3 T: 1 P: 0	Credits: 4		
After the co	mpletion of this cour	rse, the students should be ab	ole to			
1	Identify whether the	given differential equation of f	irst order is exact or not	t.		
2	Solve higher differen problems.	ntial equation and apply the con	cept of differential equa	ation to real world		
3	Extend the basic concepts of differential calculus to vector functions in a simple and natural fashion.					
4	Extend the basic concepts of differential calculus to vector functions in a simple and natural fashion.					
5	Evaluate the line, sur	Evaluate the line, surface and volume integrals and converting them from one to another.				
Course Outcome	Year / Semester : I / II-Sem	Subject Name (Code): Engineering Chemistry (B22CH01)	No. of Hours : L: 3 T: 1 P: 0	Credits: 4		
After the co	mpletion of this cour	rse, the students should be ab	ole to			

1	Students will acquire the basic knowledge of electrochemical procedures related to corrosion and its control.			
2	The students are able industrial purposes.	to understand the basic proper	rties of water and its usa	age in domestic and
3	They can learn the fu materials.	ndamentals and general proper	ties of polymers and oth	her engineering
4	They can predict pote good engineers and e	ential applications of chemistry ntrepreneurs.	and practical utility in	order to become
Course Outcome	Year / Semester : I / II-Sem	<b>Subject Name (Code):</b> Computer Aided Engineering Graphics (B22ME03)	No. of Hours : L: 1 T: 0 P: 4	Credits: 3
After the co	ompletion of this cour	se, the students should be ab	le to	
1	Apply computer aide types of solids.	d drafting tools to create 2D ar	nd 3D objects sketch co	nics and different
2	Appreciate the need of	of Sectional views of solids and	d Development of surfa	ces of solids.
3	Read and interpret engineering drawings.			
4	Conversion of orthographic projection into isometric view and vice versa manually and by using computer aided drafting.			
Course Outcome	Year / Semester : I / II-Sem	Subject Name (Code): Applied Mechanics (B22CE02)	No. of Hours : L: 3 T: 0 P: 0	Credits: 3
After the co	ompletion of this cour	se, the students should be ab	le to	
1	Understand concepts	of resultant force and moment	Systems.	
2	Analyze problems rel	lated to friction developed in m	notion of bodies.	
3	Calculate centroid an	d moment of inertia for simple	and composite sections	5.
4	Apply concepts of m	echanics to solve problems of 1	rigid body motion.	
5	Understand the appli-	cation of Work Energy method	for plane motion probl	ems.
Course Outcome	Year / Semester : I / II-Sem	<b>Subject Name (Code):</b> Surveying (B22CE04)	No. of Hours : L: 2 T: 0 P: 0	Credits: 2
After the co	ompletion of this cour	rse, the students should be ab	le to	
	Understand the working principles of survey instruments.			
1	Understand the work	ing principles of survey instrur	ments.	
1 2	Understand the work Identify data collection	ing principles of survey instrur on methods and prepare field n	nents. otes.	
1 2 3	Understand the work Identify data collection Calculate angles, dist	ing principles of survey instru- on methods and prepare field n cances and levels and compute	nents. otes. areas using theodolite.	
1 2 3 4	Understand the work Identify data collection Calculate angles, dist Calculate the horizon	ing principles of survey instru- on methods and prepare field n ances and levels and compute tal and vertical angle using Ta	nents. otes. areas using theodolite. cheometric surveying.	

Course Outcome	Year / Semester : I / II-Sem	<b>Subject Name (Code):</b> Python Programming Laboratory (B22CS04)	No. of Hours : L: 0 T: 1 P: 2	Credits: 2
After the co	mpletion of this cour	se, the students should be ab	le to	
1	Develop the applicati	on specific codes using pythor	l.	
2	Understand Strings, I	Lists, Tuples and Dictionaries i	n Python.	
3	Understand the struct	ture of exception handling for a	all general purpose exce	eptions.
4	Verify programs usin Systems using Pythor	g modular approach, file I/O, I n.	Python standard library.	Implement Digital
Course Outcome	Year / Semester : I / II-Sem	Subject Name (Code): Engineering Chemistry Laboratory (B22CH02)	No. of Hours : L: 0 T: 0 P: 2	Credits: 1
After the co	mpletion of this cour	rse, the students should be ab	le to	
1	Able to determine the	e hardness of water		
2	Able to perform methods such as conductometry, and potentiometry in order to find out the			
3	Students are able to prepare polymers like bakelite and nylon-6,6.			
4	Estimations saponific	cation value, and viscosity of lu	ibricant oils.	
Course Outcome	Year / Semester : I / II-Sem	<b>Subject Name (Code):</b> Surveying Laboratory - I (B22CE05)	No. of Hours : L: 0 T: 0 P: 2	Credits: 1
After the co	mpletion of this cour	se, the students should be ab	le to	
1	Student will be able t	o prepare Map and Plan for rec	quired site with suitable	scale.
2	Student will be able t	o prepare contour Map and Est	timate the Quantity of e	arthwork required
	for formation level for	or Road and Railway Alignmen	it.	
3	Particular Area and e	o judge which type of instrume stimate the area	ent to be used for carry	ng out survey for a
4	Student will be able t map.	o judge the profile of ground b	y observing the availab	le existing contour
Course Outcome	Year / Semester : II / III-Sem	<b>Subject Name (Code):</b> Probability and Statistics (B22MA03)	No. of Hours : L: 3 T: 1 P: 0	Credits: 4
After the co	mpletion of this cour	se, the students should be ab	le to	
1	After learning the con	ntents of this paper the student	must be able to	
2	Apply the concepts o	f probability and distributions	to some case studies.	
3	Correlate the concept	s of one unit to the concepts in	other units.	
Course Outcome	Year / Semester : II / III-Sem	Subject Name (Code): Building Materials, Construction and Planning (B22CE06)	No. of Hours : L: 3 T: 0 P: 0	Credits: 3

After the co	mpletion of this cour	rse, the students should be ab	le to				
1	Comprehend different types of construction material.						
2	Understand the manu	nacturing of Cement and role of	or Admixtures.				
3	identity the concept of	or ounding components and ser	vices.				
4	Know the importance	or masonry and formwork.					
5	Plan a building based	on the factors and principles of	of planning.				
Course Outcome	Year / Semester : II / III-Sem	Subject Name (Code): Engineering Geology (B22CE07)	No. of Hours : L: 3 T: 0 P: 0	Credits: 3			
After the co	mpletion of this cour	se, the students should be ab	le to				
1	Understand the impor	rtance of geological knowledge	e in civil engineering po	int of view.			
2	Gain basics knowled	ge on properties of mineralogy	and petrology.				
3	Gain knowledge abou	it structural geology.					
4	Understand the effect	ts of earthquakes and importan	ce of geophysical studie	es.			
5	Understand the application of geological investigation in projects such as dams, Reservoirs and tunnels						
Course Outcome	Year / Semester : II / III-Sem	<b>Subject Name (Code):</b> Strength of Materials – I (B22CE08)	No. of Hours : L: 3 T: 0 P: 0	Credits: 3			
After the co	mpletion of this cour	se, the students should be ab	le to				
1	Determine the stresse	es and strains in the members.					
2	Draw shear force and	Bending moment diagram for	determinate beams.				
3	Identify the flexural a	and shear stresses for various s	ections.				
4	Evaluate the slope an	d deflection of determinate bea	ams.				
5	Identify the concept of	of principal stresses and theory	of failures.				
Course Outcome	Year / Semester : II / III-Sem	Subject Name (Code): Fluid Mechanics (B22CE09)	No. of Hours : L: 3 T: 0 P: 0	Credits: 3			
After the co	mpletion of this cour	se, the students should be ab	le to				
1	Understand the broad	l principles of fluid statics,					
2	Learn the concept of	fluid kinematics and dynamics					
3	Understand the meas	urement of flow in pipes and n	otches.				
4	Understand classification	tions of flow losses through pi	pes.				
5	Apply the continuity,	momentum and energy princip	oles.				
Course Outcome	Year / Semester : II / III-Sem	pply the continuity, momentum and energy principles.ear / Semester (I / III-SemSubject Name (Code): Surveying Laboratory - II (B22CE10)No. of Hours : L: 0 T: 1 P: 2Credits: 2					

After the co	mpletion of this cour	se, the students should be ab	le to	
1	Calculate area of give	en plot/points using theodolite	survey.	
2	Determine the angle/	distance of given points using t	theodolite survey.	
3	Find out the area, dis	tance and elevation of the give	n points using total stat	ion.
4	Determine the height	and plot curve using Total stat	tion.	
Course Outcome	Year / Semester : II / III-Sem	Subject Name (Code): Strength of Materials Laboratory (B22CE11)	No. of Hours : L: 0 T: 0 P: 2	Credits: 1
After the co	mpletion of this cour	se, the students should be ab	le to	
1	Identify the bending	behavior of beams using bending	ng test.	
2	Determine the behavi	ior of material under torsion.		
3	Determine the hardne	ess of materials using different	tests.	
4	Find out the characte	ristic of material under compre	ssion, impact and shear	test.
Course Outcome	Year / Semester : II / III-Sem	Subject Name (Code): Computer Aided Drafting Laboratory (B22CE12)	No. of Hours : L: 0 T: 0 P: 2	Credits: 1
After the co	mpletion of this cour	se, the students should be ab	le to	
1	Plan buildings as per	NBC.		
2	Draw brick bonds, Pl	an, Section and Elevation of bu	uildings.	
3	Develop residential b	ouilding and public building as	per the building by-law	S.
4	Draw Electrical layou	ut, Plumbing layout for building	gs.	
Course Outcome	Year / Semester : II / III-Sem	<b>Subject Name (Code):</b> Logical Reasoning and Quantitative Aptitude (B22MC08)	No. of Hours : L: 3 T: 0 P: 0	Credits: 0
After the co	mpletion of this cour	se, the students should be ab	le to	
1		NA		
Course Outcome	Year / Semester : II / IV-Sem	Subject Name (Code): Basic Electrical and Electronics Engineering (B22EE19)	No. of Hours : L: 3 T: 0 P: 0	Credits: 3
After the co	mpletion of this cour	se, the students should be ab	le to	
1	To analyze and solve	electrical circuits using networ	rk laws and theorems.	
2	To understand and ar	alyze basic Electric and Magn	etic circuits.	
3	To study the working	g principles of Electrical Machi	nes.	
4	To introduce comport	ents of Low Voltage Electrical	l Installations.	
5	To identify and chara	acterize diodes and various type	es of transistors.	
Course Outcome	Year / Semester : II / IV-Sem	<b>Subject Name (Code):</b> Concrete Technology (B22CE13)	No. of Hours : L: 3 T: 0 P: 0	Credits: 3

After the co	mpletion of this cour	rse, the students should be ab	le to			
1	Acquire knowledge on the testing of aggregates and its properties.					
2	Understand the prope	Understand the properties of concrete in fresh state.				
3	Comprehend the prop	perties of concrete in hardened	concrete.			
4	Ability to know the c	oncept of Elasticity, Creep and	l Shrinkage.			
5	Identify different type	es of admixtures and special co	oncrete.			
Course Outcome	Year / Semester : II / IV-Sem	Subject Name (Code): Strength of Materials – II (B22CE14)	No. of Hours : L: 3 T: 0 P: 0	Credits: 3		
After the co	mpletion of this cour	se, the students should be ab	le to			
1	Understand the conce	ept of torsion of circular shafts	and springs.			
2	Determine the critical	l load of columns.				
3	Evaluate the direct an	nd bending stresses of different	structures.			
4	Determine the stresse	es developed in thick and thin c	ylinders.			
5	Analyze the unsymmetry	etrical bending of beams and sl	hear centre for different	section.		
Course Outcome	Year / Semester : II / IV-Sem	<b>Subject Name (Code):</b> Hydraulics and Hydraulics Machinery (B22CE15)	No. of Hours : L: 3 T: 0 P: 0	Credits: 3		
After the co	fter the completion of this course, the students should be able to					
1	Apply fundamental knowledge in open-channel hydraulics in Civil Engineering.					
2	Describe dimensional analysis and similarity to develop hydraulic model.					
3	Understand about the turbo-machines and its efficiency					
4	Gain knowledge of hydraulic turbines and their operational design.					
5	Evaluate the perform	ance of centrifugal pumps.				
Course Outcome	Year / Semester : II / IV-Sem	Subject Name (Code): Structural Analysis - I (B22CE16)	No. of Hours : L: 3 T: 0 P: 0	Credits: 3		
After the co	mpletion of this cour	rse, the students should be ab	le to			
1	Analyze pin-jointed p	plane frames by different method	ods.			
2	Analyze three hinged	arches and understand the con	ncept of energy theorem	s.		
3	Understand the Indet	erminate beams with rotation o	of a support.			
4	Analyze the beams us	sing three moments and slope c	leflection method.			
5	Understand the conce	ept of moving loads and influer	nce lines.			
Course Outcome	Year / Semester : II / IV-Sem	Subject Name (Code): Fluid Mechanics and Hydraulics Machinery Laboratory (B22CE17)	No. of Hours : L: 0 T: 0 P: 2	Credits: 1		
After the co	mpletion of this cour	se, the students should be ab	le to			
1	Describe the basic me	easurement techniques of fluid	mechanics and its appl	ication.		
2	Demonstrate practica	l understanding of the minor a	nd friction losses in pip	e flows.		
3	Discover practical we Pumps and other mise	orking of Hydraulic machines- cellaneous hydraulics machines	different types of Turbi s.	nes,		
4	Compare results of an	nalytical models with actual be	havior of real fluid flow	/8.		
Course Outcome	Year / Semester : II / IV-Sem	Subject Name (Code): Basic Electrical and Electronics Engineering Laboratory (B22EE20)	No. of Hours : L: 0 T: 0 P: 2	Credits: 1		

After the co	mpletion of this cour	rse, the students should be ab	ole to	
1	To analyze and solve	electrical circuits using netwo	rk laws.	
2	To understand and an	nalyze basic Electric and Magn	etic circuits.	
3	To study the working	principles of Electrical Machi	ines.	
4	To identify and chara	cterize diodes and various type	es of transistors.	
Course Outcome	Year / Semester : II / IV-Sem	Subject Name (Code): Concrete Technology Laboratory (B22CE18)	No. of Hours : L: 0 T: 0 P: 2	Credits: 1
After the co	mpletion of this cour	se, the students should be ab	ole to	
1	Acquire knowledge of	on the properties of cement and	l aggregate.	
2	Evaluate the workabi	lity of fresh Concrete.		
3	Determine the streng	th characteristics of hardened c	concrete.	
4	Gain knowledge of N	Ion-destructive test on concrete	2.	
Course Outcome	Year / Semester : II / IV-Sem	Subject Name (Code): Real-time Research Project/ Field-Based Project (B22CE19)	No. of Hours : L: 0 T: 0 P: 4	Credits: 2
After the co	mpletion of this cour	se, the students should be ab	ole to	
1		NA		
Course Outcome	Year / Semester : II / IV-Sem	Subject Name (Code): Gender Sensitization Laboratory (B22MC07)	No. of Hours : L: 0 T: 0 P: 2	Credits: 0
After the co	mpletion of this cour	se, the students should be ab	ole to	
1	Students will have de contemporary India.	eveloped a better understanding	g of important issues rel	ated to gender in
2	Students will be sensitized to basic dimensions of the biological, sociological, psychological and legal aspects of gender. This will be achieved through discussion of materials derived from research, facts, everyday life, literature and films.			
3	Students will attain a finer grasp of how gender discrimination works in our society and how to counter them.Students will acquire insights into the gendered division of labour and its relation to politics and economics.			
4	Students will develop a sense of appreciation of women in all walks of life. Men and women students and professionals will be better equipped to work and live in harmony.			
5	Through providing ad protection and relief to gender violence.	ccounts of studies and moveme to women, the textbook will en	ents as well as the new l npower students to und	aws that provide erstand and respond



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## <u>Course Outcomes for B.Tech – ECE-R20 for the academic year</u> 2020-2021 onwards

Course	Semester		L: 3 T: 1 P: 0 C:	
Outcome	I Sem	(B20MA01) Linear Algebra & Calculus	4	
After the c	After the completion of this course, the students should be able to			
1	Understand the prine equations using mul	ciples of matrix to calculate the characteristics of syst tiple methods.	em of linear	
2	Determine Eigen va	lues, Eigenvectors of matrices.		
3	Analyse the nature of	of sequence and series to identify the convergence.		
4	Evaluate limits of si	ngle-variable functions graphically and computationa	llly.	
5	Calculate Partial der	ivatives, extreme of functions of multiple variables.	•	
Course	Semester	(B20CS01) Programming for Problem		
Outcome	I Sem	Solving	L: 4 T: 0 P: 0 C: 4	
After the co	mpletion of this cours	se, the students should be able to		
1	Understanding how solutions.	problems are posed and how they can be analyzed fo	r obtaining	
2	Learning of sequence scientific and engine	ing, branching, looping and decision making stateme eering problems.	nts to solve	
3	Implementing difference problems.	rent operations on arrays and creating and using of fu	nctions to solve	
4	Understanding and e	exploring the various methods of memory allocations		
5	Ability to design and methodology.	d implement different types of file structures using sta	andard	
Course	Semester	( <b>B20PH01</b> ) Modorn Physics		
Outcome	I Sem	(B201 H01) Modern 1 hysics		
After the co	mpletion of this cours	e, the students should be able to		
1	Understands the bas	sic principles and hypothesis of quantum mechanics.		
2	Analyse and apply the	he concepts of wave optics for accurate determination	n of the	
	interference in thin f	films, Newton's rings and the diffraction in single slit	etc.	
3	Describes the character various fields.	eteristics and working of lasers and their applications	in	
4	Classify the material	Is on the basis of energy band gap, and evaluates the	carrier	
	concentration of giv	en semiconductors for device applications.		
5	Apply the concepts of	of the light propagation in optical fibres in optical		
Course	Someston			
Course	Semester	(B20CH02) Chemistry	L: 3 T: 0 P: 0 C: 3	
Outcome	I Sem			
After the co	mpletion of this cours	e, the students should be able to gain		
1	The knowledge of e	lectrochemical cells, different batteries		
2	The required princip	les and concepts of corrosion, control methods.		
3	The knowledge of w	vater treatment.		
4	The knowledge of p	olymers and their importance in day to day life.		
5	The required principles and concepts of passive devices.			



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Course	Semester	( <b>B20ME01</b> ) Engineering Drawing	J	L:0T:0P:4C:2			
Outcome	I Sem		•				
After the completion of this course, the students should be able to							
1	Understand various commands, modify the applications and object properties in AUTOCAD.						
2	Analyse the Projections of Points and solids.						
3	Estimate the use of drawings, dimensioning, scales and conic sections.						
4	Compare the Conver	ompare the Conversion of Isometric views to Orthographic views.					
Course	Semester	(B20PH05) Physics Lab		L: 0 T: 0 P: 3 C:			
Outcome	I Sem			1.5			
After the completion of this course, the students should be able to							
1	Estimate the frequency of tuning for and AC supply with the help of stretched strings.						
2	Analyze as well as compare the intensity distribution of interference and diffraction Patterns.						
3	Draw the characteristics of electrical and electronic circuits and evaluate the dependent Parameters.						
4	Explore and understand the applications of semiconducting devices.						
5	Evaluates the wavelength and radius of curvature of Plano convex lens by Newton's rings.						
Course	Semester	(B20CS02) Programming for Prob	lem	L: 0 T: 0 P: 3 C:			
Outcome	I Sem	Solving Lab		1.5			
After the co	mpletion of this cours	e, the students should be able to					
1	Understand basic str	ucture of the C Programming, data types, de	eclaration	and usage of			
	variables, control str	ructures and all related concepts.					
2	Understand any algorithm and Write the C programming code in executable form.						
3	Implement Program real time problems.	s using functions, pointers and arrays, and us	se the pre	-processors to solve			
4	Ability to use file str	ructures and implement programs on files.					
Course	Semester	(B20MA02) Differential Equations & Vector Calculus 4		L: 3 T: 1 P: 0 C:			
Outcome	II Sem			4			
After the completion of this course, the students should be able to							
1	Apply the fundamental concepts of ordinary differential equations to real time problems.						
2	Find the complete so	olution of a non homogeneous differential ec	quations a	nd applying its			
	concepts in Engineering problems.						
3	Evaluate the multiple integrals in various coordinate systems.						
4	Apply the concepts of gradient, divergence and curl to formulate Engineering problems.						
5	Analyse line, surface and volume integrals using fundamental theorems.						
Course	Semester	(B20EC01) Basic Electronic devices	L: (	3 T: 1 P: 0 C: 4			
Outcome	11 Sem						
After the co	After the completion of this course, the students should be able to						
1	Analyze the characteristics of the PN junction diode and Zener diode.						
2	Design the rectifiers with and without filters for specified DC voltage.						
3	Illustrate the voltage-current characteristics of Junction Transistor and different						



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1	configurations of Transistor.				
4	Design and analyze the different biasing circuits and amplifier circuits.				
5	Acquire knowledge about the construction, theory and characteristics of FET and MOSFET.				
Course	Semester				
Outcome	II Sem	(B20EE03) Electrical Circuits	L: 3 T: 0 P: 0 C: 3		
After the co	mpletion of this cours	e, the students should be able to			
1	I earn basics of electrical circuits such as laws transformation and network theorems and				
_	network reduction techniques.				
2	Generate voltage and current waveforms for 3 phase AC circuits and study the relationship				
	between Voltage and current in star and delta connections.				
3	Analyze two port networks with ABCD parameters.				
4	Analyze the steady state and transient operation of series and parallel RLC circuits.				
5	Classify various types for filters and attenuators and study their characteristics.				
Course	Semester	ž			
Orteore	II Som	(B20CS05) Basic Python programming	L: 3 T: 0 P: 0 C: 3		
Outcome	11 Sem				
After the co	mpletion of this cours	e, the students should be able to			
1	Defining the fundamentals of writing Python scripts.				
2	Expressing the Core Python scripting elements such as variables and flow control structures.				
3	Apply Python functions to facilitate code reuse.				
4	Extending how to w	Extending how to work with lists and sequence data.			
5	Adapting the code robust by handling errors and exceptions properly.				
Course	Semester	(B20EN02) English Language and Interactive	L: 0 T: 0 P: 3 C:		
Outcome	II Sem	Communication Skills Lab	1.5		
After the co	mpletion of this cours	e, the students should be able to			
1.	Understand the nuances of English language through audio-visual experience and group				
1	,•••,•	activities.			
	activities.	1 (*1 1'1' / 1 /1' 1 1	·1·, 1·11		
2.	activities. Speak with clarity an	nd confidence which in turn enhances their employab	ility skills.		
<u>2.</u> 3.	activities. Speak with clarity and Develop their listenir	nd confidence which in turn enhances their employab ag skills so that they may appreciate its role in developing their propunciation	ility skills. ng LSRW skills		
2. 3.	activities. Speak with clarity and Develop their listening language and improve Involve the students in	nd confidence which in turn enhances their employab og skills so that they may appreciate its role in developir e their pronunciation.	ility skills. ng LSRW skills		
2. 3. 4.	activities. Speak with clarity an Develop their listenir language and improv Involve the students i	nd confidence which in turn enhances their employab ng skills so that they may appreciate its role in developir e their pronunciation. n speaking activities in various contexts.	ility skills. ng LSRW skills		
2. 3. 4. Course	activities. Speak with clarity and Develop their listenir language and improv Involve the students i Semester	nd confidence which in turn enhances their employab ng skills so that they may appreciate its role in developin e their pronunciation. n speaking activities in various contexts. (B20EC02) Basic Electronic Devices Lab	ility skills. ng LSRW skills L: 0 T: 0 P: 3 C:		
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2. 3. 4. Course Outcome After the co 1 2 3 4 Course Outcome After the co 1 2	activities. Speak with clarity an Develop their listenir language and improv Involve the students i Semester II Sem mpletion of this cours Demonstrate the cha Analyze different re Demonstrate V-I cha Design simple electr Semester II Sem mpletion of this cours Expressing the Core Apply Python functi	nd confidence which in turn enhances their employab ag skills so that they may appreciate its role in developine e their pronunciation. In speaking activities in various contexts. (B20EC02) Basic Electronic Devices Lab e, the students should be able to reacteristics and operation of Semiconductor diodes. ctifier circuits. aracteristics of BJT, FET and UJT. conic circuits. (B20CS09) Basic Python programming Lab e, the students should be able to Python scripting elements such as variables and flow ons to facilitate code reuse.	ility skills. ng LSRW skills L: 0 T: 0 P: 3 C: 1.5 L: 0 T: 0 P: 3 C: 1.5 v control structures.		
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Course	Semester	( <b>B20ME03</b> ) Engineering & IT Workshop	L: 0 T: 0 P: 3 C:				
Outcome	II Sem	(D20MIL05) Engineering & TT Workshop	1.5				
After the completion of this course, the students should be able to							
1	Know the fundamental knowledge of House wiring and soldering and their usage in real time Applications.						
1							
2	Gain knowledge on electronic components and measuring instruments.						
3	Use basic concepts of computer hardware for assembly and disassembly.						
4	Use Microsoft tools for exercise.						
Course	Semester	(B20MA09) Numerical Methods and	L: 3 T: 1 P: 0 C: 4				
Outcome	III Sem	<b>Complex Variables</b>					
After the co	completion of this course, the students should be able to						
1	Find a better approximate root of a given equation using appropriate iterative method.						
2	Evaluate the integration to solve the differential equations using numerical techniques.						
3	Analyse the complex function with reference to their analyticity.						
4	Expand the complex functions by using Taylor's and Laurent's series.						
5	Evaluate the real int	Evaluate the real integrals and transforms the functions from one plane to another plane.					
Course	Semester	(B20EC03) Signals and Systems	L: 3 T: 0 P: 0 C:				
Outcome	III Sem	(D2012003) Signais and Systems	3				
After the co	the completion of this course, the students should be able to						
1	Apply the knowledge of vectors, orthogonal basis to signals. Analyze the spectral characteristics of Continuous-time periodic signals using Fourier series.						
2	Demonstrate and apply Fourier transform on various signals.						
3	Apply the Laplace transform and Fourier transform for the analysis of continuous-time signals.						
4	Analyse systems based on their properties and determine the response of LTI system.						
5	Understand the conc	cepts of convolution and correlation of signals.					
Course	Semester	( <b>B20EC04</b> ) Electronic Circuits Analysis	L: 3 T: 0 P: 0 C:				
Outcome	III Sem	(B20EC04) Electronic Circuits Analysis	3				
After the co	After the completion of this course, the students should be able to						
1	Construct and analyz	e the Low frequency model of transistor and evaluate	the h-parameters.				
2	Analyze the single ar	nd multi stage amplifiers in high frequency region.					
3	Design and construct the negative feedback amplifiers and oscillators according to the required specifications.						
4	Determine the efficie	encies of large signal amplifiers.					
5	Compare and contrast various tuned amplifiers.						
Course	Semester	(B20EC05) Switching Theory and Logic	L: 3 T: 0 P: 0 C:				
Outcome	III Sem	Design	3				
After the co	ompletion of this co	urse, the students should be able to					
1	Utilize and explain the functionality of logic gates (AND, NAND, OR, NOR, XOR, XNOR, NOT).						
2	Design different combinational circuits using minimization techniques.						
3	Explain various flip flops and design various registers.						
4	Analyze and design basic sequential circuits and counters.						
5	Analyze and minimize completely specified and incompletely specified sequential machines.						
Course Outcome	Semester III Sem	(B20EE10) Electrical Technology	L: 3 T: 0 P: 0 C: 3				


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After the co	ompletion of this co	urse, the students should be able to			
1	Study the basics of magnetic circuits and its analysis.				
2	Understand the principle of operation of DC machines and their applications.				
3	Analyze the construction, types, performance and its applications				
4	Understand the rotati	Understand the rotating magnetic field, operation and characteristics.			
5	Understand the opera	tion of AC machines.			
Course	Semester	(B20EN01) English for Effective	L: 2 T: 0 P: 0 C:		
Outcome	III Sem	Communication	2		
After the co	ompletion of this co	urse, the students should be able to			
1	Skim and scan the di	gital text to summarize it for future reference.			
2	Read the text to make	e notes according to their needs.			
3	Use English language	e effectively in spoken and written forms.			
4	Communicate confid	ently in various contexts and different cultures.			
5	Acquire basic profici speaking skills.	ency in English including reading and listening cor	nprehension, writing and		
Course	Semester	(B20EC06) Electronic Circuits Analysis	L. O.T. O.D. 2 C. 1 5		
Outcome	III Sem	Lab	L: 0 1: 0 P: 5 C: 1.5		
After the co	ompletion of this co	urse, the students should be able to			
1	Understand the con	cept of multistage amplifiers, analysis of multi	stage amplifier and plot		
1	frequency response.				
2	Design, construct and	l test amplifier circuits and interpret the results.			
3	Operate electronic te	st equipment and hardware/software tools to charac	terize the behaviour		
4	Synthesize and evaluate single stage and multi stage amplifiers.				
· ·	Bynniesize and evalu	ale single stage and multi stage ampriners.			
Course	Semester	(B20EC07) Electronic Simulation EDA	L:0T:0P:3C:15		
Course Outcome	Semester III Sem	(B20EC07) Electronic Simulation EDA Tools Lab	L: 0 T: 0 P: 3 C: 1.5		
Course Outcome After the co	Semester III Sem ompletion of this co	(B20EC07) Electronic Simulation EDA Tools Lab urse, the students should be able to	L: 0 T: 0 P: 3 C: 1.5		
Course Outcome After the co 1	Semester III Sem ompletion of this co Illustrate different ty	(B20EC07) Electronic Simulation EDA Tools Lab urse, the students should be able to pes of signals and methods of generating them usi	L: 0 T: 0 P: 3 C: 1.5 ng MATLAB.		
Course Outcome After the co 1 2	Semester III Sem Ompletion of this co Illustrate different ty Demonstrate the imp	(B20EC07) Electronic Simulation EDA Tools Lab urse, the students should be able to pes of signals and methods of generating them usi portance of convolution and correlation for different	L: 0 T: 0 P: 3 C: 1.5 ng MATLAB. nt applications.		
Course Outcome After the co 1 2 3	Semester III Sem ompletion of this co Illustrate different ty Demonstrate the imp Simulate various dig	(B20EC07) Electronic Simulation EDA Tools Lab urse, the students should be able to pes of signals and methods of generating them usi portance of convolution and correlation for differen- gital circuits.	L: 0 T: 0 P: 3 C: 1.5 ng MATLAB. nt applications.		
Course Outcome After the co 1 2 3 4	Semester III Sem Ompletion of this co Illustrate different ty Demonstrate the imp Simulate various dig Design and develop	(B20EC07) Electronic Simulation EDA Tools Lab urse, the students should be able to pes of signals and methods of generating them usi portance of convolution and correlation for different gital circuits. functional analysis of combinational & sequentia	L: 0 T: 0 P: 3 C: 1.5 ng MATLAB. nt applications. al circuits.		
Course Outcome After the co 1 2 3 4 Course Outcome	Semester III Sem ompletion of this co Illustrate different ty Demonstrate the imp Simulate various dig Design and develop Semester III Sem	(B20EC07) Electronic Simulation EDA Tools Lab urse, the students should be able to pes of signals and methods of generating them usi portance of convolution and correlation for differen gital circuits. functional analysis of combinational & sequentia (B20EC08) Project Based Learning-1	L: 0 T: 0 P: 3 C: 1.5 ng MATLAB. nt applications. al circuits. L: 0 T: 0 P: 2 C: 1		
Course Outcome After the co 1 2 3 4 Course Outcome After the co	Semester III Sem Semester III Sem Semester the imp Simulate various dig Design and develop Semester III Sem Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester Semester	(B20EC07) Electronic Simulation EDA Tools Lab urse, the students should be able to pes of signals and methods of generating them usi portance of convolution and correlation for different gital circuits. functional analysis of combinational & sequentia (B20EC08) Project Based Learning-1 urse, the students should be able to	L: 0 T: 0 P: 3 C: 1.5 ng MATLAB. nt applications. al circuits. L: 0 T: 0 P: 2 C: 1		
Course Outcome After the co 1 2 3 4 Course Outcome After the co 1	Semester III Sem ompletion of this co Illustrate different ty Demonstrate the imp Simulate various dig Design and develop Semester III Sem ompletion of this co Apply the fundament	(B20EC07) Electronic Simulation EDA Tools Lab urse, the students should be able to pes of signals and methods of generating them usi portance of convolution and correlation for different gital circuits. functional analysis of combinational & sequentia (B20EC08) Project Based Learning-1 urse, the students should be able to al and engineering concepts in projects.	L: 0 T: 0 P: 3 C: 1.5 ng MATLAB. nt applications. al circuits. L: 0 T: 0 P: 2 C: 1		
Course Outcome After the co 1 2 3 4 Course Outcome After the co 1 2	Semester III Sem ompletion of this co Illustrate different ty Demonstrate the imp Simulate various dig Design and develop Semester III Sem ompletion of this co Apply the fundament Develop the skills tha	(B20EC07) Electronic Simulation EDA Tools Lab urse, the students should be able to pes of signals and methods of generating them usi portance of convolution and correlation for different gital circuits. functional analysis of combinational & sequentia (B20EC08) Project Based Learning-1 urse, the students should be able to al and engineering concepts in projects. at include critical thinking, communication and creation	L: 0 T: 0 P: 3 C: 1.5 ng MATLAB. nt applications. al circuits. L: 0 T: 0 P: 2 C: 1		
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Autonomous

5	Design the time base generators and sampling gates with the knowledge of basic principles.			
Course	Semester	(B20EC13) Analog and Digital		
Outcome	IV Sem	Communications	L: 5 1:0P:0C: 5	
After the co	ter the completion of this course, the students should be able to			
1	Analyze and simulate the concepts of AM and AM Demodulation in communication.			
2	Interpret with various	Interpret with various angle modulation and demodulation systems.		
3	Demonstrate the unde	erstanding of various baseband transmission techni	ques.	
4	Demonstrate the unde	erstanding of various digital modulation and democ	lulation techniques.	
5	Explain different err convolution codes.	or detection and error correction codes like block	k codes, cyclic codes and	
Course	Semester	(B20EC14) Electromagnetic Theory and	I. 2 T. 0 D. 0 C. 2	
Outcome	IV Sem	<b>Transmission Lines.</b>	L: 5 1:0P:0C: 5	
After the co	ompletion of this co	urse, the students should be able to		
1	Apply vector calcult Law, Coulomb's lay	us to electrostatic fields in different engineering a to find fields and potentials for a variety of situ	situations. Use Gauss's ations including charge	
	distributions.	· ·		
2	Explain, illustrate & situations.	can apply the concept of Magnetostatics in diffe	rent engineering	
	Analyze & explain t	he concept of conductors, dielectrics & capacitand	ce, electromagnetic waves	
3	characteristics & tern	characteristics & terminologies and; be able to compute the Pointing vector and identify the power		
	flow direction.			
4	Study time varying	Maxwell's equations and their applications is ele	ctromagnetic problems.	
5	Describes the transi	nission lines with equivalent circuit and explain different engineering situations	in their characteristics &	
	use its knowledge in different engineering situations.			
Course	Somostor	( <b>B20EC15</b> ) <b>Drobability</b> Theory and		
Course	Semester IV Sem	(B20EC15) Probability Theory and Stochastic Process	L: 3 T: 0 P: 0 C: 3	
Course Outcome	Semester IV Sem	(B20EC15) Probability Theory and Stochastic Process	L: 3 T: 0 P: 0 C: 3	
Course Outcome After the co	Semester IV Sem ompletion of this cor Understand the basic	(B20EC15) Probability Theory and Stochastic Process urse, the students should be able to concepts of probability theory and random process	L: 3 T: 0 P: 0 C: 3	
Course Outcome After the co 1 2	Semester IV Sem ompletion of this co Understand the basic Solve simple enginee	(B20EC15) Probability Theory and Stochastic Process urse, the students should be able to concepts of probability theory and random process ring problems with the knowledge of two dimension	L: 3 T: 0 P: 0 C: 3	
Course Outcome After the co 1 2 3	Semester IV Sem ompletion of this co Understand the basic Solve simple enginee Compare and contras	(B20EC15) Probability Theory and Stochastic Process urse, the students should be able to concepts of probability theory and random process ring problems with the knowledge of two dimension t the various random processes.	L: 3 T: 0 P: 0 C: 3 ses. onal random variables.	
Course Outcome After the co 1 2 3 4	Semester IV Sem ompletion of this co Understand the basic Solve simple enginee Compare and contras Analyze the autocorr	(B20EC15) Probability Theory and Stochastic Process urse, the students should be able to concepts of probability theory and random process ring problems with the knowledge of two dimension t the various random processes.	L: 3 T: 0 P: 0 C: 3 ses. onal random variables.	
Course Outcome After the co 1 2 3 4 5	Semester IV Sem ompletion of this con Understand the basic Solve simple enginee Compare and contras Analyze the autocorre Understand concepts	(B20EC15) Probability Theory and Stochastic Process urse, the students should be able to concepts of probability theory and random process ring problems with the knowledge of two dimension t the various random processes. elation and cross correlation functions and their pro- of information theory and Shannon law.	L: 3 T: 0 P: 0 C: 3 ses. onal random variables.	
Course Outcome After the co 1 2 3 4 5 Course	Semester IV Sem ompletion of this con Understand the basic Solve simple enginee Compare and contras Analyze the autocorre Understand concepts Semester	(B20EC15) Probability Theory and Stochastic Process urse, the students should be able to concepts of probability theory and random process ring problems with the knowledge of two dimension t the various random processes. elation and cross correlation functions and their pro- of information theory and Shannon law.	L: 3 T: 0 P: 0 C: 3 ses. onal random variables.	
Course Outcome After the co 1 2 3 4 5 Course Outcome	Semester IV Sem ompletion of this co Understand the basic Solve simple enginee Compare and contras Analyze the autocorr Understand concepts Semester IV Sem	(B20EC15) Probability Theory and Stochastic Process urse, the students should be able to concepts of probability theory and random process ring problems with the knowledge of two dimension t the various random processes. elation and cross correlation functions and their pro- of information theory and Shannon law. (B20EC16) Computer Organization	L: 3 T: 0 P: 0 C: 3 ses. onal random variables. operties. L: 3 T: 0 P: 0 C: 3	
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CourseOutcomeAfter the co12345CourseOutcomeAfter the co12345CourseOutcomeAfter the co12345CourseOutcomeAfter the co12	Semester IV Sem ompletion of this con Understand the basic Solve simple enginee Compare and contras Analyze the autocorre Understand concepts Semester IV Sem ompletion of this con Understand the conce Explain the I/O and re Understand the conce Explain the I/O and re Understand the conce Semester IV Sem ompletion of this con Understand the conce Semester IV Sem ompletion of this con Understand the applie Demonstrate basic lo	(B20EC15) Probability Theory and Stochastic Process urse, the students should be able to concepts of probability theory and random process ring problems with the knowledge of two dimension t the various random processes. elation and cross correlation functions and their pro- of information theory and Shannon law. (B20EC16) Computer Organization urse, the students should be able to ental organization of a computer system. epts of register transfer logic and arithmetic operati- epts of Hardwired control and micro programmed con- nemory organization in depth. epts of parallel processing, pipelining and inter pro- (B20EC17) Pulse and Digital Circuits Lab urse, the students should be able to cations of diode as integrator, differentiator, clippen gic gates and sampling gates	L: 3 T: 0 P: 0 C: 3 Ses. Description of the set of th	



Autonomous

4	Design and analyze UJT relaxation oscillator and boot-strap sweep circuits			
Course Outcome	Semester IV Sem	(B20EC18) Analog and Digital Communications lab	L: 0 T: 0 P: 3 C: 1.5	
After the c	ompletion of this co	urse, the students should be able to		
1	Understand the different types of modulation techniques.			
2	Understanding the m	ultiplexing and coding schemes.		
3	Assess different digit	tal modulation and demodulation techniques.		
4	Apply suitable modu	lation schemes and coding for various applications	•	
Course Outcome	Semester IV Sem	(B20EC19) Hardware Design Lab	L: 0 T: 0 P: 2 C: 1	
After the c	ompletion of this co	urse, the students should be able to		
1	Design their own pro	jects on PCB up to industrial grade.		
2	Understand the Desig	gn concepts of various Analog circuits and their app	olications.	
3	Design and analyze t	he different Digital logic circuits.		
4	Understand the Ardu	ino Uno board and to interface various real time ap	plication circuits.	
Course Outcome	Semester IV Sem	(B20EC20) Project Based Learning-2	L: 0 T: 0 P: 2 C: 1	
After the c	ompletion of this co	urse, the students should be able to		
1	Apply the fundament	tal and engineering concepts in projects.		
2	Develop the skills the	at include critical thinking, communication and crea	ativity.	
3	Identify meaningful	connections across content of the course.		
4	Design and develop l	earning concept models for societal perceptive.		
5	Develop team work a	among multidisciplinary environment and engages	lifelong learning.	
Course	Semester	(B20EC23) Linear & Digital IC		
Outcome	V Sem	Applications	L: 3 1:0P:0C: 3	
After the c	ompletion of this co	urse, the students should be able to		
1	Understand the operation	ational amplifiers with linear integrated circuits.		
2	Classify various activ Op-Amp.	ve filter configurations based on frequency response	se and construct using 741	
3	Design and describe	the concepts of timer using IC 555, basic principle	of PLL.	
4	Understand various A	ADC and DAC techniques		
5	Design Combination	al and Sequential circuits using ICs.		
Course Outcome	Semester V Sem	(B20EC24) Digital Signal Processing	L: 3 T: 0 P: 0 C: 3	
After the c	ompletion of this co	urse, the students should be able to		
1	Identify the different	types of the discrete signals and systems.		
2	Understand the DFT,	, FFT and interrelation between DFT and various tr	ansforms.	
3	Understand the chara techniques.	cteristics of FIR filters and classify the different ty	pes of windowing	
4	Design a I IR digital	filters for a given specifications and Apply the kno	wledge to real world	
5	Understand different	types of signal processing architectures.		
Course	Semester	(DODEC25) Construct Secretarian	I. 2 T. A.D. A.C. 2	
Outcome	V Sem	(B20EC25) Control Systems	L: 5 1: 0 P: 0 C: 3	
After the c	ompletion of this co	urse, the students should be able to		
1	Understand the conce	ept of feedback and analyze the control system com	ponents by their	



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	Mathematical modeling.			
2	A new various time domain techniques to assess the system performance			
3	Apply various time domain techniques to assess the system performance.			
4	Formulate different types of analysis in frequency domain to explain the nature of stability of the			
5	Test system Controllability and Observability using state space representation and applications of			
	state space representation to various systems.			
Course	Semester	(B20EC26) Electronic Measurements and	L: 3 T: 0 P: 0 C: 3	
Outcome	V Sem	Instrumentation (Professional Elective – I)		
After the co	ompletion of this co	urse, the students should be able to		
1	Describe the fundar	nental concepts, different terminology related	to measurements and	
	principles of instru	nentation.		
2	Explain the operation	ons of the various instruments required in meas	surements.	
3	Apply the measurer	nent techniques for different types of tests.		
4	Select specific instru	ment for various parameters measurement.		
5	Apply knowledge of	of different oscilloscopes like CRO, DSO and d	isplay devices.	
Course	Somostor	(B20EC27) Computer Networks		
Outcome	V Som	(Professional Flactive – I)	L: 3 T: 0 P: 0 C: 3	
Outcome	V Dem	(1 Tolessional Elective – 1)		
After the co	ompletion of this co	urse, the students should be able to		
1	Will be in a position	n to understand World Wide internet concepts.		
2	Should be able to der	nonstrate and explore the basics of Computer Netw	orks and various	
Z	protocols.			
3	Will be in position	to administrate a network and flow of informat	ion.	
4	Able to contrast dif	ferent internetworking protocols.		
5	Able to demonstrate	e different Internet Transport Protocols.		
Course	Semester	(B20EC28) Basic JAVA Programming	I. 2 T. 0 D. 0 C. 2	
Outcome	V Sem	(Professional Elective – I)		
After the co	ompletion of this co	urse, the students should be able to		
1	Understand the use	of OOP concepts and solve real world problem	ns using OOP	
1	techniques.	1 1	C	
2	Solve the inter-disc	iplinary applications using the concept of inher	ritance.	
3	Understand the mul	tithreading concepts and develop efficient app	lications.	
4	Design GUI based ap	plications and develops applets for web application	18.	
5	Develop program u	sing JDBC connectivity to access data from da	tabase and execute	
	different queries to			
~	a t			
Course	Semester	(B20MB01) Managerial Economics &	L: 3 T: 0 P: 0 C: 3	
Outcome	V Sem	Financial Analysis		
After the co	ompletion of this co	urse the students should be able to		
1	Understand the nati	re scope and importance of Managerial Econo	omics	
1	Know what is dema	and analyze demand and how elasticity of dem	and is used for pricing	
2	decisions and to ev	aluate methods for forecasting demand	and is used for pricing	
	Know how production	n function is carried out to achieve least cost comb	ination of Inputs and how	
3	to analyze cost	in remember is carried out to achieve least cost comb	mation of inputs and now	
4	Understand the chara	cteristics of different kinds of markets and outline	different form of business	
5	Organization and ana	lyze how capital budgeting techniques are used for	investment decisions.	



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Course	Somostor	(B20EC29) Linear & Digital IC		
Outcome	V Som	<b>Applications Lab</b>	L: 0 T: 0 P: 2 C: 1	
Outcome	v Sem	•••		
After the co	ompletion of this course, the students should be able to			
1	Design circuits using	operational amplifiers for various applications.		
2	Understand the differ	ent logical gates & decoders, flip-flops.		
3	Apply the knowledge	e of OP-AMPS to design various analog circuits.		
4	Compare linear and c	ligital integrated IC's.		
Course Outcome	Semester V Sem	(B20EC30) Digital Signal Processing Lab	L: 0 T: 0 P: 3 C: 1.5	
After the co	ompletion of this co	urse, the students should be able to		
1	Analyze signals using	g the discrete Fourier transform (DFT).		
2	Understand Convolution	tion process.		
3	Understand FFT algo	rithm for efficient computation of DFT.		
4	Design IIR & FIR fil	ters.		
Course	Semester	(B20EN03) Advanced English		
Outcome	V Sem	Communication skills lab	L: 0 1: 0 P: 3 C: 1.5	
After the co	ompletion of this co	urse, the students should be able to		
1	Participate in grour	discussion to present their viewpoints briefly	and effectively.	
-	Inculcate flair for w	writing and felicity in written expression in Rés	umé / Curriculum Vitae	
2	/ reports	inting and renerty in written expression in Res		
3	Porticipata confidar	atly with appropriate body language in interview	<b>N</b> 20	
3	Falticipate confider	huilding shills and conshilition for offective de	ws.	
4	Ennance their team	building skills and capabilities for effective de	cision making.	
Course Outcome	V Sem	(B20EC31) Project Based Learning-3	L:0 T:0 P:2 C:1	
After the co	ompletion of this co	urse, the students should be able to		
1	Apply the fundament	al and engineering concepts in projects.		
2	Develop the skills that include critical thinking, communication and creativity.			
3	Identify meaningful of	connections across content of the course.		
	Design and develop learning appeart models for accietal percentive			
4	Design and develop l	earning concept models for societal perceptive.		
4 5	Design and develop l Develop team work a	earning concept models for societal perceptive. mong multidisciplinary environment and engages	lifelong learning.	
4 5 Course	Design and develop l Develop team work a	earning concept models for societal perceptive. mong multidisciplinary environment and engages (B20EC32) Microprocessors &	lifelong learning.	
4 5 Course Outcome	Design and develop l Develop team work a Semester VI Sem	earning concept models for societal perceptive. mong multidisciplinary environment and engages (B20EC32) Microprocessors & Microcontrollers	lifelong learning. L: 3 T: 0 P: 0 C: 3	
4 5 Course Outcome	Design and develop l Develop team work a Semester VI Sem	earning concept models for societal perceptive. mong multidisciplinary environment and engages (B20EC32) Microprocessors & Microcontrollers wrse, the students should be able to	lifelong learning. L: 3 T: 0 P: 0 C: 3	
4 5 Course Outcome After the co	Design and develop I Develop team work a Semester VI Sem ompletion of this co	earning concept models for societal perceptive. mong multidisciplinary environment and engages (B20EC32) Microprocessors & Microcontrollers urse, the students should be able to	L: 3 T: 0 P: 0 C: 3	
4 5 Course Outcome After the co 1	Design and develop I Develop team work a Semester VI Sem ompletion of this co Illustrate the	earning concept models for societal perceptive. mong multidisciplinary environment and engages 1 (B20EC32) Microprocessors & Microcontrollers urse, the students should be able to internal organization of	L: 3 T: 0 P: 0 C: 3 bopular 8086/8051	
4 5 Course Outcome After the co 1	Design and develop 1 Develop team work a Semester VI Sem ompletion of this co Illustrate the microprocessors/mi	earning concept models for societal perceptive. mong multidisciplinary environment and engages 1 (B20EC32) Microprocessors & Microcontrollers urse, the students should be able to internal organization of participation of p	lifelong learning.         L: 3 T: 0 P: 0 C: 3         popular       8086/8051	
4 5 Course Outcome After the co 1	Design and develop I Develop team work a Semester VI Sem ompletion of this co Illustrate the microprocessors/mi Contrast hardware a	earning concept models for societal perceptive. mong multidisciplinary environment and engages 1 (B20EC32) Microprocessors & Microcontrollers urse, the students should be able to internal organization of participation of p	L: 3 T: 0 P: 0 C: 3 popular 8086/8051	
4 5 Course Outcome After the co 1 2	Design and develop I Develop team work a Semester VI Sem ompletion of this co Illustrate the microprocessors/mi Contrast hardware a Design microproce	earning concept models for societal perceptive. mong multidisciplinary environment and engages 1 (B20EC32) Microprocessors & Microcontrollers urse, the students should be able to internal organization of participation of p	L: 3 T: 0 P: 0 C: 3 popular 8086/8051 develop microcontroller	
4 5 Course Outcome After the co 1 2	Design and develop I Develop team work a Semester VI Sem ompletion of this co Illustrate the microprocessors/mi Contrast hardware a Design microproce based systems for r	earning concept models for societal perceptive. mong multidisciplinary environment and engages 1 (B20EC32) Microprocessors & Microcontrollers urse, the students should be able to internal organization of participation of p	L: 3 T: 0 P: 0 C: 3 popular 8086/8051 develop microcontroller	
4 5 Course Outcome After the co 1 2 3	Design and develop I Develop team work a Semester VI Sem ompletion of this co Illustrate the microprocessors/mi Contrast hardware a Design microproce based systems for r Understand microc	earning concept models for societal perceptive. mong multidisciplinary environment and engages 1 (B20EC32) Microprocessors & Microcontrollers urse, the students should be able to internal organization of participation of p	L: 3 T: 0 P: 0 C: 3 popular 8086/8051 develop microcontroller	
4 5 Course Outcome After the co 1 2 2 3 4	Design and develop I Develop team work a Semester VI Sem ompletion of this co Illustrate the microprocessors/mi Contrast hardware a Design microproce based systems for r Understand microco Explain the Memory	earning concept models for societal perceptive. mong multidisciplinary environment and engages I (B20EC32) Microprocessors & Microcontrollers urse, the students should be able to internal organization of participation of participation of participation of participation of participation and software interaction and integration. soors and microcontrollers based systems and eal time applications. ontroller 8051 and its programming. organization classification and their applications.	L: 3 T: 0 P: 0 C: 3 popular 8086/8051 develop microcontroller	
45CourseOutcomeAfter the co12345	Design and develop I Develop team work a Semester VI Sem ompletion of this co Illustrate the microprocessors/mi Contrast hardware a Design microproce based systems for r Understand microcy Explain the Memory Assess programming	earning concept models for societal perceptive. mong multidisciplinary environment and engages I (B20EC32) Microprocessors & Microcontrollers urse, the students should be able to internal organization of participation of internal organization of participation. ssors and microcontrollers based systems and eal time applications. ontroller 8051 and its programming. organization classification and their applications. interfacing etc of various devices with microproce	L: 3 T: 0 P: 0 C: 3 popular 8086/8051 develop microcontroller ssors and external world.	
4 5 Course Outcome After the co 1 2 2 3 4 5 Course	Design and develop I Develop team work a Semester VI Sem ompletion of this co Illustrate the microprocessors/mi Contrast hardware a Design microproce based systems for r Understand microco Explain the Memory Assess programming Semester	earning concept models for societal perceptive. mong multidisciplinary environment and engages 1 (B20EC32) Microprocessors & Microcontrollers urse, the students should be able to internal organization of participation of p	L: 3 T: 0 P: 0 C: 3 popular 8086/8051 develop microcontroller ssors and external world.	
45CourseOutcomeAfter the co12345CourseOutcome	Design and develop I Develop team work a Semester VI Sem ompletion of this co Illustrate the microprocessors/mi Contrast hardware a Design microproce based systems for r Understand microco Explain the Memory Assess programming Semester VI Sem	earning concept models for societal perceptive. mong multidisciplinary environment and engages I (B20EC32) Microprocessors & Microcontrollers urse, the students should be able to internal organization of participation of p	L: 3 T: 0 P: 0 C: 3 popular 8086/8051 develop microcontroller ssors and external world. L: 3 T: 0 P: 0 C: 3	
45CourseOutcomeAfter the co12345CourseOutcomeAfter the co	Design and develop I Develop team work a Semester VI Sem ompletion of this co Illustrate the microprocessors/mi Contrast hardware a Design microproce based systems for r Understand microcc Explain the Memory Assess programming Semester VI Sem mpletion of this cours	earning concept models for societal perceptive. mong multidisciplinary environment and engages I (B20EC32) Microprocessors & Microcontrollers urse, the students should be able to internal organization of participation of internal organization of participation of internal organization of participation of internal organization and integration. ssors and microcontrollers based systems and eal time applications. ontroller 8051 and its programming. organization classification and their applications. interfacing etc of various devices with microproce (B20EC33) VLSI Design se, the students should be able to	L: 3 T: 0 P: 0 C: 3 popular 8086/8051 develop microcontroller ssors and external world. L: 3 T: 0 P: 0 C: 3	
45CourseOutcomeAfter the co12345CourseOutcomeAfter the co1	Design and develop I Develop team work a Semester VI Sem ompletion of this co Illustrate the microprocessors/mi Contrast hardware a Design microproce based systems for r Understand microco Explain the Memory Assess programming Semester VI Sem mpletion of this course Design digital appli	earning concept models for societal perceptive. mong multidisciplinary environment and engages 1 (B20EC32) Microprocessors & Microcontrollers urse, the students should be able to internal organization of partice internal organization and integration. ssors and microcontrollers based systems and eal time applications. ontroller 8051 and its programming. organization classification and their applications. interfacing etc of various devices with microproce (B20EC33) VLSI Design se, the students should be able to iccations using Verilog HDL	L: 3 T: 0 P: 0 C: 3 popular 8086/8051 develop microcontroller ssors and external world. L: 3 T: 0 P: 0 C: 3	



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	<b>D</b> · · · · ·			
3	Design the layout of circuits using various design rules. Develop and design the gate level circuits			
4	Gain the knowledge to design data path subsystems like Adders, Shifters, and ALUs etc.			
5	Illustrate different programmable logic devices and CMOS testing.			
Course Outcome	Semester VI Sem	(B20EC34) Antennas & Wave Propagation	L: 3 T: 0 P: 0 C: 3	
After the co	ompletion of this co	urse, the students should be able to		
1	Define the parameter design of an antenna.	s like antenna efficiency, beam efficiency, radiation	n resistance etc. in the	
2	Explain antenna array antenna pattern meas	vs, illustrate antenna measurements and arrange a sourcements in the laboratory.	etup to carry out the	
3	Understand the desig independent and Ape	n issues and operation of fundamental antennas like rture antennas.	e Yagi-Uda, Frequency	
4	Classify the different estimate the parameter	wave propagation mechanisms, determine their chars involved.	aracteristic features and	
5	Analyze the structure frequency, Maximum	of Ionosphere for the wave propagation and Solve usable frequency and Skip distance.	problems on Critical	
Course	Somostor			
Outcome	VI Sem	(B20EC35) Design of Fault Tolerant Systems (Professional Elective – II)	L: 3 T: 0 P: 0 C:3	
After the c	ompletion of this co	urse, the students should be able to		
1	Understand various c	oncepts of Fault modeling, fault diagnosis, and test	Pattern Generation.	
2	Design fault tolerant	systems based on modular redundancy techniques.		
3	Gain knowledge of Basic concepts of self checking circuits and able to design fault safe circuits.			
4	Understand the conce BIST technique.	epts of Design for Testability with various testabilit	y measures including	
5	Study the various Sta	ndard IEEE Test Access Methods required for testi	ng the digital circuits.	
Course Outcome	Semester VI Sem	(B20EC36) Fiber Optical Communications (Professional Elective – II)	L: 3 T: 0 P: 0 C: 3	
After the co	ompletion of this cou	urse, the students should be able to		
1	Understand and analy	ze the constructional parameters of opticalfibres.		
2	Design an optical sys	tem.		
3	Estimate the losses du	ue to attenuation, absorption, scattering and bendin	g.	
4	Compare various opti	cal detectors and choose suitable one for different	applications.	
5	Develop the concepts	of optical system design.		
Course Outcome	Semester VI Sem	(B20EC37) Digital Image Processing (Professional Elective – II)	L: 3 T: 0 P: 0 C: 3	
After the co	ompletion of this co	urse, the students should be able to		
1	Gain the knowledge of	of digital image fundamentals and image transform	S.	
2	Understand image en	hancement in spatial and frequency domain.		
3	Understand the differ	ent methods to restore an image.		
4	Analyze image segme	entation techniques and morphological image proce	essing techniques.	



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5	Analyze the different	image compression techniques.		
Course Outcome	Semester VI Sem	(B20EC38) Radar Systems (Professional Elective – III)	L: 3 T: 0 P: 0 C: 3	
After the co	ompletion of this course, the students should be able to			
1	Illustrate the importance of radar fundamentals and analysis of the radar equation.			
2	Understand the work	ing principle of CW and FM-CW radar and its appl	ications.	
3	Understand the work	ing principle of MTI and pulse Doppler radar.		
4	Understand the differ	ent radar tracking methods.		
5	Understand the radar	receivers and also extraction of radar signal from n	oisy signal.	
Course Outcome	Semester VI Sem	(B20EC39) Speech Processing	L: 3 T: 0 P: 0 C: 3	
	, - , - , - , - , - , - , - , - , - , -	(Professional Elective – III)		
After the co	ompletion of this co	urse, the students should be able to		
1	Learn the fundament	als of digital speech processing.		
2	Demonstrate the diffe	erent time domain models of speech processing.		
3	Understand the conce	epts of linear predictive coding for speech processing	lg.	
4	Analyze the different	techniques of speech processing		
5	Make use of different	t speech and speaker recognition techniques and Hi	dden Markov.	
Course Outcome	Semester VI Sem	(B20EC40) Machine learning (Professional Elective – III)	L: 3 T: 0 P: 0 C: 3	
After the co	ompletion of this co	urse, the students should be able to		
1	Discuss different app	lication on Machine Learning problems.		
2	Describe various algo	prithms on Machine Learning mentioning its streng	ths and weaknesses.	
3	Illustrate the basic the	Illustrate the basic theory focused on Machine Learning models and Learning Techniques		
4	Improve the perform	ance of Machine Learning algorithms with different	t parameters.	
5	Analyze Probabilistic	models and features of Machine Learning.	1	
Course Outcome	Semester VI Sem	(B20EC41) VLSI & e-CAD Lab	L: 0 T: 0 P:2 C:1	
After the co	ompletion of this co	urse, the students should be able to		
1	Acquire knowledge of	on High end Simulation tools like Mentor Graphics,	Tanner EDA etc.	
2	Design digital circuit	s at different levels using programming concepts.		
3	Implement any type	of digital systems.		
4	Program any availabl	e FPGA and CPLD using implementation tool.		
Course Outcome	Semester VI Sem	(B20EC42) Microprocessors & Microcontrollers Lab	L: 0 T: 0 P:2 C:1	
After the c	ompletion of this co	urse, the students should be able to		
1	Demonstrate experim	nentally basic programming of Microprocessor.		
2	Recall the microproc	essor interfacing with various peripherals for variou	is applications.	
3	Apply the basic prog	ramming of microcontroller.		
4	Examine microproce	ssor interfacing with various peripherals for various	s applications.	
Course	Semester		L:0T:0P:2C:1	
Outcome	VI Sem	(B20EC43) Project Based Learning-4		
After the co	ompletion of this co	urse, the students should be able to		



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1	Apply the fundamental and engineering concepts in projects.			
2	Develop the skills that include critical thinking, communication and creativity.			
3	Identify meaningful connections across content of the course.			
4	Design and develop learning concept models for societal perceptive.			
5	Develop team work among multidisciplinary environment and engages lifelong learning.			
Course	Semester (B20MC05) Logical Reasoning and			
Outcome	VI Sem	Quantitative Aptitude	L: 2 T: 0 P: 0 C: 0	
After the c	ompletion of this co	urse, the students should be able to		
1	Apply quantitative reproblems.	easoning and mathematical analysis methodologie	s to understand and solve	
2	Apply quantitative manipulate equations	correctly arrive at meaningful conclusions rega and formulas in order to solve for the desired varia	rding their answers and able.	
3	Interpret given infor data, and apply the m	mation correctly, determine which mathematical odel correctly.	model best describes the	
4	Correctly apply math conclusions when sol	hematical language and notation to explain the r ving problems using mathematical or statistical tec	easoning underlying their hniques.	
5	Improve their mather	natical skills in various general aspects to solve rea	l time problems.	
Course Outcome	Semester VII Sem	(B20EC44) Microwave Engineering	L: 3 T: 0 P: 0 C: 3	
After the co	ompletion of this co	urse, the students should be able to		
1	Understand the signif	ficance of microwaves and microwave transmission	lines.	
2	Identify the different	wave guide components and applications		
3	Analyze the characteristics of various microwave tubes.			
4	Learn the different ty	pes of microwave solid state devices.		
5	Gain knowledge of m	nicrowave Measurement.		
Course	Semester			
Outcome	VII Sem	(B20EC45) Embedded Systems	L: 3 1:0P:0C: 3	
After the co	ompletion of this co	urse, the students should be able to		
1	Understand and desig	n embedded systems.		
2	Understand the archit	tecture of Arm processors.		
3	Develop a system usi	ng IO devices and interfacing to external world.		
4	Understand types of	nemory.		
5	Understand embedde	d firmware design approaches.		
Course Outcome	Semester VII Sem	(B20EC46) Wireless and Mobile Communication (Professional Elective – IV)	L: 3 T: 0 P: 0 C: 3	
After the co	ompletion of this co	urse, the students should be able to		
1	Estimate the impairm	ents due to multi path fading channel.		
2	Explain an Importance	e of the fundamental techniques to overcome the d	ifferent fading effects.	
3	Distinguish the co-ch	annel and Non co-channel interference.	-	
4	Inspect cell coverage	for signal and traffic, diversity techniques and mol	oile antennas.	
5	Relate and explain the handoff.	ne functioning of frequency management, Channe	l assignment and types of	
Course	Semester		L: 3 T: 0 P: 0 C: 3	



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Outcome	VII Sem	(B20EC47) CMOS Circuit Design		
		(Professional Elective – IV)		
After the completion of this course, the students should be able to				
1	Understand the fundamentals of VLSI design flow & interchange formats of VLSI design tools.			
2	Develop the understanding to analyze circuit characterization & its performance estimation.			
3	Develop the understa families In VLSI.	nding to analyze the combinational circuit design u	sing various circuit	
4	Apply the knowledge	of sequential circuit design in VLSI for various de	sign applications.	
5	Analyze low power d	esign strategies suitable for various design applicat	ions in VLSI.	
Course Outcome	Semester VII Sem	(B20EC48) Artificial Intelligence (Professional Elective – IV)	L: 3 T: 0 P: 0 C: 3	
After the co	ompletion of this cou	urse, the students should be able to		
1	Remember various assumptions etc	AI concepts like the AI technique, level of 1	nodels, there underlying	
2	Understand the conce	epts of AI search techniques		
3	Apply knowledge Re	presentation techniques		
4	Analyze different stru	actures of representation		
5	Evaluate AI search te	chniques, Create Expert systems		
Course	Somoston			
Outcome	VII Som	(B20EC49) Sensor Networks	L: 3 T: 0 P: 0 C: 3	
Outcome	v II Selli	(Professional Elective – V)		
After the c	ompletion of this co	urse, the students should be able to		
1	Understand the overview of sensor & networks.			
2	Explore the various architectures of sensors & network			
3	Understand the various	us protocols in sensor networks.		
4	Identify the infrastruc	cture and establishment of sensor networks.		
5	Explore various sense	or network platforms and tools.		
Course Outcome	Semester VII Sem	(B20EC50) Satellite Communication (Professional Elective – V)	L: 3 T: 0 P: 0 C: 3	
After the co	ompletion of this co	urse, the students should be able to		
1	Understand the histo communication	prical background, basic concepts and frequency	y allocations for satellite	
2	Understand the satell system.etc.	lite sub systems like Telemetry, tracking, comma	nd and monitoring power	
3	Understand various S	atellite Multiple Access techniques		
4	Understand the earth	station technology and terrestrial interface network	S.	
5	Understand the applic	cations of Satellites and GPS system.		
~	<b>a</b>			
Course	Semester	(B20EC51) Robotics and Automation	L: 3 T: 0 P: 0 C: 3	
Outcome	VII Sem	(Professional Elective – V)		
1	Understand the basic	components and specifications used in robotics and	1 automation.	
-	Understand and imple	ement the different types of motors and sensors dur	ing designing of robotics	
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3	Use manipulators, Actuators and Grippers and their design considerations in robotics and automation.			
4	Understand the basic concepts of AVR microcontrollers.			
5	Implement the programming and interfacing concepts of AVR microcontroller in robotic designing.			
Course Outcome	Semester VII Sem	(B20EC52) MICROWAVE ENGINEERING LAB	L: 0 T: 0 P:2 C: 1	
1	Demonstrate a microv	wave bench for measuring microwave parameters.		
2	Measure parameters l	ike attenuation, VSWR, etc.,		
3	Gain knowledge about applications	at Various components used for Microwave commu	unication and their	
4	Analyze the character	ristics of all microwaves engineering component		
Course Outcome	Semester VII Sem	(B20EC53) EMBEDDED SYSTEMS LAB	L: 0 T: 0 P: 2 C: 1	
1	Develop the program	ming concepts of 8bit, 16bit, and 32 bit micro cont	rollers.	
2	Understand working	principle and programming concepts of ARM proc	essor	
3	Understand types of 1	nemory, interacting to external world and		
4	Analyze the different time applications.	I/O devices and their interfacing concepts, under	stand the concepts of real	
Course Outcome	Semester VII Sem	(B20EC54) MINI PROJECT AND INTERNSHIP	L: 0 T: 0 P: 0 C: 2	
1				
	Demonstrate a sound	technical knowledge of their selected project topic		
2	Demonstrate a sound Identify and summari work and relate them	technical knowledge of their selected project topic ze an appropriate list of literature review, analyze j to current project.	previous researchers'	
2	Demonstrate a sound Identify and summari work and relate them Present the project ou presentation skills.	technical knowledge of their selected project topic ze an appropriate list of literature review, analyze j to current project. Itlining the approach and expected results using go	previous researchers' od oral and written	
1 2 3 4	Demonstrate a sound Identify and summari work and relate them Present the project ou presentation skills. Apply critical and cre electronics and comm domains as well.	technical knowledge of their selected project topic ze an appropriate list of literature review, analyze p to current project. Itlining the approach and expected results using government eative thinking in the design of engineering projects nunication engineering domain but if possible to other	by previous researchers' od oral and written s not only limited to her interdisciplinary	
1 2 3 4 5	Demonstrate a sound Identify and summari work and relate them Present the project ou presentation skills. Apply critical and cre electronics and comm domains as well. Design and develop a	technical knowledge of their selected project topic ze an appropriate list of literature review, analyze p to current project. Itlining the approach and expected results using gove eative thinking in the design of engineering projects nunication engineering domain but if possible to oth functional product prototype while working in a te	by previous researchers' od oral and written s not only limited to her interdisciplinary	
1 2 3 4 5 6	Demonstrate a sound Identify and summari work and relate them Present the project ou presentation skills. Apply critical and cre electronics and comm domains as well. Design and develop a Communicate with en	technical knowledge of their selected project topic ze an appropriate list of literature review, analyze p to current project. Itlining the approach and expected results using go eative thinking in the design of engineering projects nunication engineering domain but if possible to oth functional product prototype while working in a tengineers and the community at large in written and	brevious researchers' od oral and written s not only limited to her interdisciplinary eam oral forms.	
1 2 3 4 5 6 7	Demonstrate a sound Identify and summari work and relate them Present the project ou presentation skills. Apply critical and cre electronics and comm domains as well. Design and develop a Communicate with en Consider the business	technical knowledge of their selected project topic ze an appropriate list of literature review, analyze p to current project. Itlining the approach and expected results using go eative thinking in the design of engineering projects nunication engineering domain but if possible to oth functional product prototype while working in a ten agineers and the community at large in written and context and commercial positioning of designed of	by previous researchers' od oral and written s not only limited to her interdisciplinary eam oral forms. levices or systems	
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1 2 3 4 5 6 7 <b>Course</b> <b>Outcome</b> 1 2 3 4	Demonstrate a sound Identify and summari work and relate them Present the project ou presentation skills. Apply critical and cre electronics and comm domains as well. Design and develop a Communicate with en Consider the business Semester VII Sem Demonstrate a sound Identify and summari work and relate them Formulate clearly a w Present the project ou presentation skills.	technical knowledge of their selected project topic ze an appropriate list of literature review, analyze p to current project. atlining the approach and expected results using go eative thinking in the design of engineering projects nunication engineering domain but if possible to other functional product prototype while working in a technical product prototype while working in a technical and commercial positioning of designed of (B20EC55) PROJECT PHASE – I technical knowledge of their selected project topic ze an appropriate list of literature review, analyze p to current project. ork plan and procedures.		
$ \begin{array}{c} 1 \\ 2 \\ 3 \\ 4 \\ 5 \\ 6 \\ 7 \\ \hline Course \\ \hline Outcome \\ 1 \\ 2 \\ 3 \\ 4 \\ 5 \\ \end{array} $	Demonstrate a sound Identify and summari work and relate them Present the project ou presentation skills. Apply critical and cre electronics and comm domains as well. Design and develop a Communicate with en Consider the business Semester VII Sem Demonstrate a sound Identify and summari work and relate them Formulate clearly a w Present the project ou presentation skills.	technical knowledge of their selected project topic ze an appropriate list of literature review, analyze p to current project. Attlining the approach and expected results using go exative thinking in the design of engineering projects nunication engineering domain but if possible to oth functional product prototype while working in a technical product prototype while working in a technical and commercial positioning of designed of (B20EC55) PROJECT PHASE – I technical knowledge of their selected project topic ze an appropriate list of literature review, analyze p to current project. York plan and procedures. Itlining the approach and expected results using go	previous researchers' od oral and written s not only limited to her interdisciplinary eam oral forms. levices or systems L: 0 T: 0 P: 8 C: 4 previous researchers' od oral and written	



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	domains as well.			
7	Design and develop a functional product prototype while working in a team			
8	Demonstrate the knowledge, skills and attitudes of a professional engineer when working in a team or working as a team leader.			
9	Communicate with engineers and the community at large in written and oral forms.			
10	Consider the busines	ss context and commercial positioning of designed	devices or systems	
Course	Semester VIII Som	(B20EC56) Digital Signal Processor &	L: 3 T: 0 P: 0 C: 3	
Outcome	v III Selli	Architecture (Professional Elective – VI)		
After the co	ompletion of this co	ourse, the students should be able to		
1	Understand the DFT addressing capabilit	Γ, FFT, DSP system and Explain the DSP computations.	ational building blocks and	
2	Distinguish between	the architectural features of General purpose proce	essors and DSP processors.	
3	Discuss and underst	and the TMS320C54xx Processor.		
4	Understand the Ana	log devices family of DSP devices.		
5	Analyze the interfac	e of various devices to DSP Processors.		
Course Outcome	Semester VIII Sem	(B20EC57) FPGA Architecture & Applications (Professional Elective – VI)	L: 3 T: 0 P: 0 C: 3	
After the co	ompletion of this co	ourse, the students should be able to		
1	Understand PLDs &	tis use depending on application or design		
2	Understand FPGAs	& its use depending on application		
3	Develop the underst Actel FPGAs archite	tanding to analyzes RAM programmable Xilinx & ectures for applications	z Anti-Fuse Programmable	
4	Develop the understanding to analyze PROM programmable Altera FPGAs& other commercially			
5	Apply the knowledge of FPGAs for various design applications			
Course Outcome	Semester VIII Sem	(B20EC58) Internet of Things (Professional Elective – VI)	L: 3 T: 0 P: 0 C: 3	
After the co	ompletion of this co	ourse, the students should be able to		
1	Interpret the vision	n of IOT from a global context.		
2	Perceive building	blocks of Internet of Things and its characterist	ics	
3	Learn the basic con	ncepts of Python		
4	Implement the pyt	hon programming using Raspberry.		
5	Develop Python w	eb applications and cloud servers for IOT.		
Course	Semester		I. OT. OD. 2 C. 1	
Outcome	VIII Sem	(B20EC59) TECHNICAL SEMINAR	L:01:0P:2C:1	
After the co	ompletion of this co	ourse, the students should be able to		
1	Write technical do	cuments and give oral presentations related to t	he work completed.	
2	Demonstrate the a (reading, writing, s	bility to collaborate with others as they work speaking, researching).	c on intellectual projects	
3	Explain the role o life	f self-efficacy, personal goals, and motivation	in improving academic	
4	Describe the behave	viors and characteristics of an effective learner		
5	Gain knowledge of	f fast and rapidly changing by self learning		
6	Develop the interp	ersonal skills, soft skills and creativity.		



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Course	Semester VIII Sem	(B20EC60) PROJECT PHASE - H	L: 0 T: 0 P: 16 C: 8	
After the co	ompletion of this co	urse, the students should be able to		
1	Demonstrate a sound technical knowledge of their selected project tonic			
1	Identify and summ	arize an appropriate list of literature revi	ew analyze previous	
2	researchers' work and relate them to current project.			
3	Formulate clearly a work plan and procedures			
4	Present the project outlining the approach and expected results using good oral and			
	written presentatio	n skills.	and using good order and	
5	Undertake problen	n identification, formulation and solution	•	
6	Apply critical and to electronics and interdisciplinary de	creative thinking in the design of engine communication engineering domain but i omains as well.	ering projects not only limited f possible to other	
7	Design and develo	p a functional product prototype while w	orking in a team	
8	Demonstrate the kin a team or working	nowledge, skills and attitudes of a profes ng as a team leader.	sional engineer when working	
9	Communicate with	n engineers and the community at large in	written and oral forms.	
10	Consider the busin	ess context and commercial positioning	of designed devices or systems	
Course Outcome	Semester VII or VIII Sem	(B20CE55) Disaster Preparedness Planning Management (Open Electi	& L: 3 T: 0 P: 0 C: 3	
1	Attain knowledge or	n various types, stages, phases in disaster ma	nagement	
2	Recognize various t	ypes of natural disaster, Mitigation and Man	agement Systems	
3	Know the different t	ypes of manmade disasters and its effects		
4	Explain Remote sen	sing technology and GIS in disaster mitigation	on and management.	
5	Know the concepts of	of risk, warning and forecasting methods in a	lisaster management	
Course Outcome	Semester VII or VIII Sem	(B20CE56) Environmental Managen (Open Elective)	nent L: 3 T: 0 P: 0 C: 3	
1	Comprehend the nee	ed for Environmental Management		
2	Identify the attribute	s of Environment Management system and s	standards	
3	Apply different met	nodologies for impact assessment		
4	To understand the va	arious Environment management plan		
5	Identify the technique	ies and control measures for Environment m	anagement	
Course Outcome	Semester VII or VIII Sem	(B20CE57) Urban Planning (Oper Elective)	n L: 3 T: 0 P: 0 C: 3	
1	Describe the importa	ance of proper urban planning for a healthy of	bity	
2	Apply basic method	s for urban planning		
3	Describe housing de	velopment schemes		
4	Design public transp	port and non-motorized transport facilities for	r a city	
5	Describe smart city	developments in India and abroad and its van	rious elements	



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Course Outcome	Semester VII or VIII Sem	(B20EE54) Electrical Power Utilisation and Safety (Open Elective)	L: 3 T: 0 P: 0 C: 3
1	Know about the elect	ric heating and welding	
2	Gain the knowledge of	on illumination system.	
3	Understand the electr	ical installation, estimation and costing.	
4	Understand the impor	rtance of power factor.	
5	Gain the knowledge of	on safety and protection.	
Course Outcome	Semester VII or VIII Sem	(B20EE55) Concepts of Control systems (Open Elective)	L: 3 T: 0 P: 0 C: 3
1	Understand the basic	concept control systems.	
2	Know the mathematic	cal model of the systems.	
3	Estimate the time do	main specifications and steady state error.	
4	Know the frequency	response analysis.	
5	Understand concept of	of stability.	
Course Outcome	Semester VII or VIII Sem	(B20EE56) Renewable Energy Sources (Open Elective)	L: 3 T: 0 P: 0 C: 3
1	Know about the glob	al and national energy scenario.	
2	Understand the conce	ept of solar energy.	
3	Know the basics of w	ind energy.	
4	Differentiate the hyde	el and tidal power plants.	
5	Explore the bio-mass	, geothermal and ocean energy.	
Course Outcome	Semester VII or VIII Sem	(B20ME59) Non-Conventional Energy Sources (Open Elective)	C:3 L: 3 T: 0 P: 0
1	Apply the technology Wind, ocean, biomas	to capture the energy from the renewable sources ss, geothermal.	like sun,
2	Use different renewal conventional energy	ble energy sources to produce electrical power min sources to produce electrical energy	imize the Use of
3	Identify the fact that	the conventional energy resources are depleted	
4	Understand direct end	ergy conversion	
5	Learn different metho	ods in solar energy system.	
Course	Semester		L · 3 T · 0 P · 0 C · 3
Outcome	VII or VIII Sem	(B20ME45) Robotics (Open Elective)	
1	Apply the knowledge	of robotics in real time human life applications.	
2	Analyze the concept	of CAD/CAM and automation to the robotics.	
3	Compare knowledge unloading etc.	of robot applications in manufacturing like, materi	al handling, loading and
4	Experiment the robot	ics to the spot and continuous arc welding and spra	ay painting.
5	Relate the Robot App	lication in Manufacturing.	
Course Outcome	Semester VII or VIII Sem	(B20ME33) Mechatronics	L: 3 T: 0 P: 0 C: 3
1	Use the control system	m, mechatronics design systems and measurement	systems.



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2	Work on various actuating systems.			
3	Convert the signals from one form to another form.			
4	Estimate the micro controllers and micro processors.			
5	Develop the simple programming code for PLC's.			
Course Outcome	Semester VII or VIII Sem	(B20EC37) Digital Image Processing (Open Elective)	L: 3 T: 0 P: 0 C: 3	
1	Gain the knowledge of	of digital image fundamentals and image transfor	rms.	
2	Understand image en	hancement in spatial and frequency domain.		
3	Understand the differ	ent methods to restore an image.		
4	Analyze image segme	entation techniques and morphological image pro	ocessing.	
5	Analyze the different	image compression techniques.		
Course Outcome	Semester VII or VIII Sem	(B20EC46) Wireless and Mobile Communication (Open Elective)	L: 3 T: 0 P: 0 C: 3	
1	Estimate the impairm	ents due to multi path fading channel.		
2	Explain an Importance	e of the fundamental techniques to overcome the	e different fading effects.	
3	Distinguish the co-ch	annel and Non co-channel interference.		
4	Inspect cell coverage	for signal and traffic, diversity techniques and m	nobile antennas.	
5	Relate and explain th handoff.	e functioning of frequency management, Channe	el assignment and types of	
Course Outcome	Semester VII or VIII Sem	(B20EC49) Sensor Networks (Open Elective)	L: 3 T: 0 P: 0 C: 3	
1	Understand the overv	iew of sensor &networks.		
2	Explore the various a	rchitectures of sensors & network		
23	Explore the various a Understand the various	rchitectures of sensors & network us protocols in sensor networks.		
2 3 4	Explore the various a Understand the various Identify the infrastruct	rchitectures of sensors & network us protocols in sensor networks. cture and establishment of sensor networks.		
2 3 4 5	Explore the various a Understand the various Identify the infrastruc Explore various sense	rchitectures of sensors & network us protocols in sensor networks. cture and establishment of sensor networks. or network platforms and tools.		
2 3 4 5 Course Outcome	Explore the various a Understand the variou Identify the infrastruc Explore various sense Semester VII or VIII Sem	rchitectures of sensors & network us protocols in sensor networks. eture and establishment of sensor networks. or network platforms and tools. (B20EC61) Biomedical Instrumentation (Open Elective)	L: 3 T: 0 P: 0 C: 3	
2 3 4 5 <b>Course</b> Outcome	Explore the various a Understand the various Identify the infrastruc Explore various sense Semester VII or VIII Sem Understand the funct	rchitectures of sensors & network us protocols in sensor networks. eture and establishment of sensor networks. or network platforms and tools. (B20EC61) Biomedical Instrumentation (Open Elective) ions of bio amplifiers, characteristics of medical	L: 3 T: 0 P: 0 C: 3 instruments and bio signals.	
2 3 4 5 <b>Course</b> Outcome 1 2	Explore the various a Understand the various Identify the infrastruc Explore various sense Semester VII or VIII Sem Understand the funct Discuss the various in mechanical activities	rchitectures of sensors & network us protocols in sensor networks. eture and establishment of sensor networks. or network platforms and tools. (B20EC61) Biomedical Instrumentation (Open Elective) tons of bio amplifiers, characteristics of medical nternal, external Bio electrodes and relations betw of heart.	L: 3 T: 0 P: 0 C: 3 instruments and bio signals. ween electrical and	
2 3 4 5 <b>Course</b> Outcome 1 2 3	Explore the various a Understand the various Identify the infrastruc Explore various sense Semester VII or VIII Sem Understand the funct Discuss the various in mechanical activities Compare various con	rchitectures of sensors & network us protocols in sensor networks. eture and establishment of sensor networks. or network platforms and tools. (B20EC61) Biomedical Instrumentation (Open Elective) tons of bio amplifiers, characteristics of medical nternal, external Bio electrodes and relations betw of heart. cepts of Cardiac Instrumentation and gain the kr	L: 3 T: 0 P: 0 C: 3 instruments and bio signals. ween electrical and owledge about	
2 3 4 5 <b>Course</b> Outcome 1 2 3 4	Explore the various a Understand the various Identify the infrastruc Explore various sense Semester VII or VIII Sem Understand the funct Discuss the various in mechanical activities Compare various con Analyze the Theraper	rchitectures of sensors & network us protocols in sensor networks. eture and establishment of sensor networks. or network platforms and tools. (B20EC61) Biomedical Instrumentation (Open Elective) ions of bio amplifiers, characteristics of medical nternal, external Bio electrodes and relations betw of heart. cepts of Cardiac Instrumentation and gain the kr utic Equipment and their operation.	L: 3 T: 0 P: 0 C: 3 instruments and bio signals. ween electrical and nowledge about	
2 3 4 5 <b>Course</b> Outcome 1 2 3 4 5	Explore the various a Understand the various Identify the infrastruct Explore various sense Semester VII or VIII Sem Understand the funct Discuss the various in mechanical activities Compare various com Analyze the Therapet Acquires knowledge	rchitectures of sensors & network us protocols in sensor networks. eture and establishment of sensor networks. or network platforms and tools. (B20EC61) Biomedical Instrumentation (Open Elective) tons of bio amplifiers, characteristics of medical netrnal, external Bio electrodes and relations betwork of heart. cepts of Cardiac Instrumentation and gain the kratic Equipment and their operation.	L: 3 T: 0 P: 0 C: 3 instruments and bio signals. ween electrical and owledge about EMG and EEG.	
2 3 4 5 Course Outcome 1 2 3 4 5 Course Outcome	Explore the various a Understand the various Identify the infrastruc Explore various sense Semester VII or VIII Sem Understand the funct Discuss the various in mechanical activities Compare various con Analyze the Therapeu Acquires knowledge Semester VII or VIII Sem	rchitectures of sensors & network us protocols in sensor networks. eture and establishment of sensor networks. or network platforms and tools. (B20EC61) Biomedical Instrumentation (Open Elective) ions of bio amplifiers, characteristics of medical netrnal, external Bio electrodes and relations betw of heart. cepts of Cardiac Instrumentation and gain the kr utic Equipment and their operation. about neuro-muscular Instrumentation like ECG (B20CS19) Data base Management Systems (Open Elective)	L: 3 T: 0 P: 0 C: 3 instruments and bio signals. ween electrical and towledge about EMG and EEG. L: 3 T: 0 P: 0 C: 3	
2 3 4 5 Course Outcome 1 2 3 4 5 Course Outcome 1 1	Explore the various a Understand the various Identify the infrastruc Explore various sense Semester VII or VIII Sem Understand the funct Discuss the various in mechanical activities Compare various con Analyze the Therapeu Acquires knowledge Semester VII or VIII Sem Perceive the fundame	rchitectures of sensors & network us protocols in sensor networks. eture and establishment of sensor networks. or network platforms and tools. (B20EC61) Biomedical Instrumentation (Open Elective) tons of bio amplifiers, characteristics of medical nternal, external Bio electrodes and relations betw of heart. cepts of Cardiac Instrumentation and gain the kr utic Equipment and their operation. about neuro-muscular Instrumentation like ECG (B20CS19) Data base Management Systems (Open Elective) ental concepts of database management.	L: 3 T: 0 P: 0 C: 3 instruments and bio signals. ween electrical and nowledge about EMG and EEG. L: 3 T: 0 P: 0 C: 3	
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2 3 4 5 Course Outcome 1 2 3 4 5 Course Outcome 1 2 3 4 5 Course 0 1 2 3 4 5 Course 0 1 2 3 4 5 Course 0 1 2 3 4 5 Course 0 1 2 3 4 5 Course 0 1 2 3 4 5 Course 0 1 2 3 4 5 Course 0 1 2 3 4 5 Course 0 1 2 3 4 5 Course 0 1 2 2 3 4 5 Course 0 1 2 2 3 4 5 Course 0 1 2 2 3 2 2 2 3 3 4 5 Course 0 1 2 3 3 4 5 Course 0 1 2 3 3 3 4 5 Course 0 1 2 3 3 3 3 3 3 3 3 3 3 3 3 3	Explore the various a Understand the various Identify the infrastruct Explore various sense Semester VII or VIII Sem Understand the funct Discuss the various in mechanical activities Compare various con Analyze the Therapeu Acquires knowledge Semester VII or VIII Sem Perceive the fundame Analyze database mo given case study.	rchitectures of sensors & network us protocols in sensor networks. eture and establishment of sensor networks. or network platforms and tools. (B20EC61) Biomedical Instrumentation (Open Elective) ions of bio amplifiers, characteristics of medical nternal, external Bio electrodes and relations betw of heart. cepts of Cardiac Instrumentation and gain the kr ntic Equipment and their operation. about neuro-muscular Instrumentation like ECG (B20CS19) Data base Management Systems (Open Elective) ental concepts of database management. dels & Entity Relationship models and to draw t abase Theory, and be able to write relational alge	L: 3 T: 0 P: 0 C: 3 instruments and bio signals. ween electrical and owledge about EMG and EEG. L: 3 T: 0 P: 0 C: 3 he E-R diagram for the bra expressions for queries.	



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5	Compare the basic Da methods including B-	atabase storage structures and access techniques Tree and Hashing.	: File Organization indexing
Course Outcome	Semester VII or VIII Sem	(B20CS12) Java Programming (Open Elective)	L: 3 T: 0 P: 0 C: 3
1	Understand the use of	f OOP concepts and solve real world problems u	using OOP techniques.
2	Solve the inter-discip	linary applications using the concept of inherita	nce.
3	Develop robust and fa	aster applications by applying different exceptio	n handling mechanisms.
4	Understand the multi	threading concepts and develop efficient applica	tions.
5	Design GUI based ap	plications and develops applets for web application	tions.
Course Outcome	Semester VII or VIII Sem	(B20CS55) Introduction to Network Security (Open Elective)	L: 3 T: 0 P: 0 C: 3
1	Identifies various typ	es of vulnerabilities, attacks, mechanisms and se	ecurity services.
2	Compare and contras	t symmetric and asymmetric encryption algorith	ims.
3	Implementation of me	essage authentication, hashing algorithms.	
4	Explore E-Mail secur	ity, S/MIME Functionality.	
5	Develop intrusion det	ection system and designing of various types of	firewalls.
Course Outcome	Semester VII or VIII Sem	(B20CS56) Introduction to Cloud Computing (Open Elective)	L: 3 T: 0 P: 0 C: 3
1	Ability to understand	various service delivery models of a cloud com	puting architecture.
2	Ability to understand	the ways in which the cloud can be programme	d and deployed.
3	Understanding Cloud	Computing Architecture and Management	
4	Understanding cloud	service Models.	
5	Understanding cloud	service providers.	
Course Outcome	Semester VII or VIII Sem	(B20CS37) Internet of Things (Open Elective)	L: 3 T: 0 P: 0 C: 3
1	Interpret the vision of	F IoT from global context.	
2	Perceive building blo	cks of Internet of Things and its characteristics.	
3	Learn the basic conce	epts of Python. Implement the python programm	ing using Raspberry.
4	Perceive the applicati & Sensor Networks.	on areas of IoT. Realize the revolution of Intern	et in Mobile Devices, Cloud
5	Determine the Marke IoT.	t perspective of IoT. Develop Python web applie	cations and cloud servers for
Course Outcome	Semester VII or VIII Sem	(B20CS04) Data Structures and Algorithms (Open Elective)	L: 3 T: 0 P: 0 C: 3
1	Define the basic tech	niques of algorithm analysis	
2	Examine the linear ar	nd non linear data structures.	
3	Develop Priority Que	ues and Balanced Trees.	
4	Understand Hashing	Techniques and Graph applications.	
5	Apply suitable algori	thms for sorting Technique.	
Course Outcome	Semester VII or VIII Sem	(B20AI03) Artificial Intelligence	L: 3 T: 0 P: 0 C: 3



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		(Open Elective)			
1	Possess the ability to formulate an efficient problem space for a problem expressed in English.				
2	Possess the ability to select a search algorithm for a problem.				
3	Possess the skill for r	epresenting knowledge using the appropriate tec	chnique.		
4	Possess the ability to	apply AI techniques to solve problems of Game	Playing.		
5	Possess the Expert Sy	ystems, Machine Learning and Natural Language	e Processing.		
Course Outcome	Semester VII or VIII Sem	(B20AI29) Introduction to Machine Learning (Open Elective)	L: 3 T: 0 P: 0 C: 3		
1	Explain the theory un	derlying machine learning.			
2	Learn beyond binary	classification.			
3	Recognize and imple	ment various genetic algorithms.			
4	Construct algorithms	to learn tree, to learn linear, non-linear models a	and Probabilistic models.		
5	Able to analyze the d	ata.			
Course Outcome	Semester VII or VIII Sem	(B20AI30) Neural Networks (Open Elective)	L: 3 T: 0 P: 0 C: 3		
1	Describe different ne	ural networks of various architectures			
2	Understand the feed t	forward and feed backward.			
3	Design the training of	f neural networks.			
4	Learn various learnin	g rules.			
5	Develop the testing o pattern recognition a	f neural networks and do the perform analysis o oplication.	f these networks for various		
Course Outcome	Semester VII or VIII Sem	(B20AI31) Introduction to Cyber Security (Open Elective)	L: 3 T: 0 P: 0 C: 3		
1	Outline key terms and	d concepts in cyber law, intellectual property and	d cybercrimes.		
2	Understand basic cry	ptography and stenography.			
3	Explore the vulnerab	ilities, threats and cybercrimes posed by crimina	ls.		
4	Identify various secu and methods used in protection.	rity challenges phased by mobile devices and ide cybercrime, develops the secure counter method	entify various types of tools Is to maintain security		
Course Outcome	Semester VII or VIII Sem	(B20DS24) Introduction to Data science (Open Elective)	L: 3 T: 0 P: 0 C: 3		
1	Understand the basic	concepts of Data Science.			
2	Learn about types of	data and data pre processing.			
3	Understand the techn	iques for data analytics.			
4	Learn the statistical f	undamentals related to Data Science.			
5	Understand the conce	epts of Machine Learning for Data Science.			
Course Outcome	Semester VII or VIII Sem	(B20DS25) Data Handling and Visualization (Open Elective)	L: 3 T: 0 P: 0 C: 3		
1	Understand the funda	mentals of Data Visualization.			



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2	Learn the concepts of	Visualizing Distributions			
2	Understand how to Visualizing Proportions and Nested Proportions				
3	Learn the concepts of Visualizing Associations and Time series data.				
5	Learn the concepts of Visualizing Associations and Time series data.				
Course Outcome	Semester VII or VIII Sem	(B20DS26) Introduction to Big Data (Open Elective)	L: 3 T: 0 P: 0 C: 3		
1	Understand the impor	rtance of Big Data.			
2	Learn about the types	of data and Big Data Analytics.			
3	Understand the Big I	Data technology components and applications.			
4	Learn the basics of H	adoop Eco system.			
5	Understand the map r	reduce fundamentals.			
Course Outcome	Semester VII or VIII Sem	(B20DS27) Introduction to Computer Forensics (Open Elective)	L: 3 T: 0 P: 0 C: 3		
1	Understand the definit	ition of computer forensics fundamentals.			
2	Describe the types of systems.	computer forensics technology. Analyze variou	s computer forensics		
3	Illustrate the methods	s for data recovery, evidence collection and data	seizure.		
4	Summarize duplication available digital forem	on and preservation of digital evidence. Evaluate nsics tools.	e the effectiveness of		
5	Employ fundamental	computer theory in the context of computer fore	ensics practices.		
Course Outcome	Semester VII or VIII Sem	(B20MB02) Management Science (Open Elective)	L: 3 T: 0 P: 0 C: 3		
Course Outcome	Semester VII or VIII Sem Outline the fundamer	(B20MB02) Management Science (Open Elective) ntals of management and contributions to management	L: 3 T: 0 P: 0 C: 3 ement.		
Course Outcome	Semester VII or VIII Sem Outline the fundamer Define the social Res organization structure	(B20MB02) Management Science (Open Elective) ntals of management and contributions to manage ponsibilities of an organization towards stakeho e and to identify factors influencing plant location	L: 3 T: 0 P: 0 C: 3 ement. Iders and build the suitable on and layout decisions.		
Course Outcome	Semester VII or VIII Sem Outline the fundamer Define the social Res organization structure Know importance of and Identify the basic	(B20MB02) Management Science (Open Elective) ntals of management and contributions to manage ponsibilities of an organization towards stakeho e and to identify factors influencing plant location materials management, evaluate quality of product concepts of marketing mix and Human Resource	L: 3 T: 0 P: 0 C: 3 ement. Iders and build the suitable on and layout decisions. ucts using SQC techniques ce concepts.		
Course Outcome	Semester VII or VIII Sem Outline the fundamer Define the social Res organization structure Know importance of and Identify the basic Know how PERT and managing the efforts	(B20MB02) Management Science (Open Elective) ntals of management and contributions to manage ponsibilities of an organization towards stakeho e and to identify factors influencing plant location materials management, evaluate quality of product concepts of marketing mix and Human Resource d CPM different and to construct network by pro- to accomplish a successful project.	L: 3 T: 0 P: 0 C: 3 ement. Iders and build the suitable on and layout decisions. ucts using SQC techniques ce concepts. oper planning organizing an		
Course Outcome	Semester VII or VIII Sem Outline the fundamer Define the social Res organization structure Know importance of and Identify the basic Know how PERT and managing the efforts Appraise all contemp management practice	(B20MB02) Management Science (Open Elective) natals of management and contributions to manage ponsibilities of an organization towards stakeho e and to identify factors influencing plant location materials management, evaluate quality of produ- concepts of marketing mix and Human Resource d CPM different and to construct network by pro- to accomplish a successful project. orary management practices and analyze how the s one applicable in modern business and service	L: 3 T: 0 P: 0 C: 3 ement. Iders and build the suitable on and layout decisions. ucts using SQC techniques ce concepts. oper planning organizing an uese contemporary organizations.		
Course Outcome	Semester VII or VIII Sem Outline the fundamer Define the social Res organization structure Know importance of and Identify the basic Know how PERT and managing the efforts Appraise all contemp management practice Semester VII or VIII Sem	(B20MB02) Management Science (Open Elective) ntals of management and contributions to manage ponsibilities of an organization towards stakehole and to identify factors influencing plant location materials management, evaluate quality of product concepts of marketing mix and Human Resource d CPM different and to construct network by pro- to accomplish a successful project. Forary management practices and analyze how the s one applicable in modern business and service (B20MB03) Entrepreneurship Development (Open Elective)	L: 3 T: 0 P: 0 C: 3 ement. Iders and build the suitable on and layout decisions. ucts using SQC techniques ce concepts. oper planning organizing an rese contemporary organizations. L: 3 T: 0 P: 0 C: 3		
Course Outcome	Semester VII or VIII Sem Outline the fundamer Define the social Res organization structure Know importance of and Identify the basic Know how PERT and managing the efforts Appraise all contemp management practice Semester VII or VIII Sem Explain characteristic	(B20MB02) Management Science (Open Elective) ntals of management and contributions to manage ponsibilities of an organization towards stakehoo e and to identify factors influencing plant location materials management, evaluate quality of product concepts of marketing mix and Human Resource d CPM different and to construct network by pro- to accomplish a successful project. orary management practices and analyze how the s one applicable in modern business and service (B20MB03) Entrepreneurship Development (Open Elective) cs, Qualities, Skills and Functions of Entrepreneurship	L: 3 T: 0 P: 0 C: 3 ement. Iders and build the suitable on and layout decisions. ucts using SQC techniques ce concepts. oper planning organizing an ese contemporary organizations. L: 3 T: 0 P: 0 C: 3 ur.		
Course Outcome	Semester VII or VIII Sem Outline the fundamer Define the social Res organization structure Know importance of and Identify the basic Know how PERT and managing the efforts Appraise all contemp management practice Semester VII or VIII Sem Explain characteristic Demonstrates Entrept	(B20MB02) Management Science (Open Elective) ntals of management and contributions to manage ponsibilities of an organization towards stakeho e and to identify factors influencing plant location materials management, evaluate quality of produ- concepts of marketing mix and Human Resource d CPM different and to construct network by pro- to accomplish a successful project. Forary management practices and analyze how the s one applicable in modern business and service (B20MB03) Entrepreneurship Development (Open Elective) cs, Qualities, Skills and Functions of Entrepreneur reneur Scenario in India and abroad.	L: 3 T: 0 P: 0 C: 3 ement. Iders and build the suitable on and layout decisions. ucts using SQC techniques ce concepts. oper planning organizing an rese contemporary organizations. L: 3 T: 0 P: 0 C: 3 ur.		
Course Outcome	Semester VII or VIII Sem Outline the fundamer Define the social Ress organization structure Know importance of and Identify the basic Know how PERT and managing the efforts Appraise all contemp management practice Semester VII or VIII Sem Explain characteristic Demonstrates Entrept	(B20MB02) Management Science (Open Elective) ntals of management and contributions to manage ponsibilities of an organization towards stakeho e and to identify factors influencing plant location materials management, evaluate quality of produ- concepts of marketing mix and Human Resource d CPM different and to construct network by pro- to accomplish a successful project. orary management practices and analyze how the s one applicable in modern business and service (B20MB03) Entrepreneurship Development (Open Elective) es, Qualities, Skills and Functions of Entrepreneu- reneur Scenario in India and abroad.	L: 3 T: 0 P: 0 C: 3 ement. Iders and build the suitable on and layout decisions. ucts using SQC techniques ce concepts. oper planning organizing an esse contemporary organizations. L: 3 T: 0 P: 0 C: 3 ur.		
Course Outcome           1           2           3           4           5           Course Outcome           1           2           3           4           5           2           3           4           5           2           3           4           5	Semester VII or VIII Sem Outline the fundamer Define the social Res organization structure Know importance of and Identify the basic Know how PERT and managing the efforts Appraise all contemp management practice Semester VII or VIII Sem Explain characteristic Demonstrates Entrepo Summarizes necessity Interprets about Gove	(B20MB02) Management Science (Open Elective) ntals of management and contributions to manage ponsibilities of an organization towards stakeho e and to identify factors influencing plant location materials management, evaluate quality of produ- concepts of marketing mix and Human Resource d CPM different and to construct network by pro- to accomplish a successful project. orary management practices and analyze how the s one applicable in modern business and service (B20MB03) Entrepreneurship Development (Open Elective) es, Qualities, Skills and Functions of Entrepreneur reneur Scenario in India and abroad. y for business ethics and ethical guidelines in bu ernment Grants and subsides and Entrepreneurship	L: 3 T: 0 P: 0 C: 3 ement. Iders and build the suitable on and layout decisions. ucts using SQC techniques ce concepts. oper planning organizing an uese contemporary organizations. L: 3 T: 0 P: 0 C: 3 ur.		
Course Outcome           1           2           3           4           5           Course Outcome           1           2           3           4           5           2           3           4           5           1           2           3           4           5	Semester VII or VIII Sem Outline the fundamer Define the social Res organization structure Know importance of and Identify the basic Know how PERT and managing the efforts Appraise all contemp management practice Semester VII or VIII Sem Explain characteristic Demonstrates Entrept Summarizes necessity Interprets about Gove	(B20MB02) Management Science (Open Elective) ntals of management and contributions to manage ponsibilities of an organization towards stakeho e and to identify factors influencing plant location materials management, evaluate quality of produ- concepts of marketing mix and Human Resource d CPM different and to construct network by pro- to accomplish a successful project. Forary management practices and analyze how the s one applicable in modern business and service (B20MB03) Entrepreneurship Development (Open Elective) es, Qualities, Skills and Functions of Entrepreneu- reneur Scenario in India and abroad. y for business ethics and ethical guidelines in bu- ernment Grants and subsides and Entrepreneurshis social responsibility and professional ethics by c	L: 3 T: 0 P: 0 C: 3 ement. Iders and build the suitable on and layout decisions. ucts using SQC techniques ce concepts. oper planning organizing an rese contemporary organizations. L: 3 T: 0 P: 0 C: 3 ur.		
Course Outcome	Semester VII or VIII Sem Outline the fundamer Define the social Res organization structure Know importance of and Identify the basic Know how PERT and managing the efforts Appraise all contemp management practice Semester VII or VIII Sem Explain characteristic Demonstrates Entrepp Summarizes necessity Interprets about Gove Prioritizes corporate s Semester VII or VIII Sem	(B20MB02) Management Science (Open Elective) ntals of management and contributions to manage ponsibilities of an organization towards stakehoo e and to identify factors influencing plant location materials management, evaluate quality of produ- concepts of marketing mix and Human Resource d CPM different and to construct network by pro- to accomplish a successful project. orary management practices and analyze how the s one applicable in modern business and service (B20MB03) Entrepreneurship Development (Open Elective) es, Qualities, Skills and Functions of Entrepreneu- reneur Scenario in India and abroad. y for business ethics and ethical guidelines in bu- ernment Grants and subsides and Entrepreneurshis social responsibility and professional ethics by co- (B20MB06) Intellectual Property Rights (Open Elective)	L: 3 T: 0 P: 0 C: 3 ement. Iders and build the suitable on and layout decisions. ucts using SQC techniques ce concepts. oper planning organizing an esse contemporary organizations. L: 3 T: 0 P: 0 C: 3 ur. siness. ompany secretaries. L: 3 T: 0 P: 0 C: 3		



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2	Utilize post registration procedures and trade mark registration process
3	Explain the copyright principles and rights
4	Prioritize the law of patents and patent ownership
5	Develop the trade secret and maintenance



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### DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

### <u>Course Outcomes for M.Tech – Power Electronics (43) for</u> <u>the year 2015-16</u>

Course	Year/Semester	Subject Name (Subject Code)	L: 4 T: 0 P: 0	Credits: 4	
Outcome	I/I Sem	Machine Modelling and	Total: 4		
		Analysis(A943101)			
After the completio	n of this course, the students should be able to				
1	Pocogniza the diff	forant frames for modeling of AC me	abinas		
2	Illustrate the volte	as and torque equations in state spee	cillies.	t machina	
3	Develop the moth	ge and torque equations in state space	e lorin for differen	the transfor	
4	function of the D	rematical models of various DC ma	chines and derive	the transfer	
5	Study vorious tran	- III0101.	inco and avalors	to starting	
5	methods	istormations adopted in 5 phase mach	intes and explore	its starting	
6	Analyze the devel	oped models in various reference fra	mes through simu	lation study	
7	Assess the machin	e dynamics in various operating con	ditions		
8	Perform short circ	uits analysis with d-q model of mach	ines.		
Course	Year / semester	Subject Name (Subject Code)	L: 4 T: 0 P: 0	Credits: 4	
Outcome	I/I Sem	Modern Control Theory (A943102)	Total: 4		
After the completio	n of this course, the student	s should be able to			
1	Learn various ter	ms of basic and modern control syst	tem for the real ti	me analysis	
	and design of con	trol systems.			
2	Learn the basic m	athematical preliminaries for modeli	ng a control system	n	
3	Perform state vari	ables analysis for any real time syste	m		
4	Linearize the non	-linear system model using various te	echniques		
5	Apply the concep	t of optimal control to any system.			
6	Examine a system	n for its stability, controllability and c	bservability.		
7	Implement basic	principles and techniques in designin	g linear control sy	stems.	
8	Formulate and	solve deterministic optimal cont	rol problems in	terms of	
	performance indic	ces.	1		
Course	Year / semester	Subject Name (Subject Code)	L: 4 T: 0 P: 0	Credits: 4	
Outcome	I/I Sem	Circuits (A042102)	Total: 4		
After the completio	n of this course, the student	s should be able to			
1	Understand the ch	aracteristics and principle of operation	on of modern pow	er	
-	electronics device	s.		•••	
2	Compare the feature	res of various power electronic devic	ces		
3	Comprehend the	concepts of different power converte	rs and their applic	ation	
4	Explore various d	river circuits and its heat manageme	ent system		
5	Study the effect of	f source and load inductance on the	controller operatio	n	
6	Analyse and desig	gn the switched mode regulator for v	arious industrial a	pplication	
7	Explore various p	ower factor improvement controllers			
8	Use power electro	nic simulation packages for analysin	g and designing p	ower	
	converters	Pachages for analysin	6	/ ••	
Course	Year / semester	Subject Name (Subject Code)	L: 4 T: 0 P: 0	Credits: 4	



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Outcome	I/I Sem	Special Machines (A943104)	Total: 4			
After the completion of this course, the students should be able to						
1	Learn the constructional features, principle of operation and methods of control of					
-	stepper motor.					
2	Realize the need f	or stepper motors and the various app	lications in indus	tries.		
	Explore various h	ybrid stepping motor				
3	Get a clear picture of the operational characteristics and the applications of Switched					
5	Reluctance Motor.					
4	Know the various	types of PMBLDC motors, rotor pos	ition sensors, me	thods of		
•	control and their a	pplications				
5	Get a clear idea of	the features, control and the application	ions of PMSM			
6	Explore the conce	pt of linear induction motor and devel	lop a double side	d LIM from		
•	rotory induction n	notor				
7	Study the construct	ctional details of permanent magnet as	kial flux machine	s (PMAF)		
8	Explore the applic	ations of various special machines in	day to day applic	cations		
Course	Year / semester	Subject Name (Subject Code)	L: 4 T: 0 P:	Credits: 4		
Outcome	I/I Sem	HVDC Transmission (A943105)	0 Total: 4			
After the completio	n of this course, the student	s should be able to	11			
1	Study the basic po	ower handling capabilities of HVDC	lines			
2	Explore various	configurations and conversion	principles of s	static power		
	converters					
3	Learn the rectifi	er and inverter operations, commu	itation process a	at converter		
	stations.					
4	Apply AC/DC file	ters for harmonic elimination in HVD	C link			
5	Explore various c	ontrols adapted in HVDC converters				
6	Identify various in	nstability problems in HV AC and DC	C system			
7	Study various ove	er voltage problems in multi-terminal	DC system			
8	Comprehend varie	ous converter faults and protection cir	cuits .	1		
Course	Year / semester	Subject Name (Subject Code)	L: 4 T: 0 P:	Credits: 4		
Outcome	I/I Sem	Programmable Logic Controllers	0 Total: 4			
After the completie	n of this course, the student	and their Applications (A943106)				
1	Gain Comprehens	ive knowledge of using advanced con	trollers in measu	rement and		
1	control instrument	ation				
2	Illustrate about da	ata acquisition - process of collecting	information from	field		
_	instruments	and acquisition process of concerning				
3	Analyze Program	mable Logic Controller (PLC). IO Mo	dules and interna	al features		
4	Comprehend Prog	ramming in Ladder Logic addressing	r of I/O	<u></u>		
5	Apply PID and its	Tuning in Lucael Logie, addressing	, 011/01			
6	Develop ladder lo	gic programming for simple process				
7	Execute debug a	ad test programs developed for digital	and analog oper	ations		
8	Reproduce block	liagram representation on industrial a	nulications using	PLC		
Course	Vear / semester	Subject Name (Subject Code)	<b>I</b> • <b>4 T</b> • <b>0 P</b>	Credits A		
Outcome	I/I Sem	Microcontrollers and Applications	0 Total· 4			
Guicome		(A943107)	v 10141. T			
After the completio	n of this course. the student	s should be able to	1	J		



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1	Relate the basic architecture and addressing modes of a microcontroller.			
2	Distinguish types	of computers & microcontrollers and e	explain the princ	iples of top
	down design to mi	crocontroller software development		
3	Demonstrate assembly language programs for the 8-bit, 16-bit and 32-bit			
	Microcontroller, assembly language code for high-level language structures such as			
	IF-THENELSE ar	nd DO-WHILE		
4	Analyze a typical	I/O interface and to discuss timing issued	ues	
5	Develop Real time	e Applications of Microcontrollers & I	Demonstrate RT	OS for
	Microcontrollers.			
6	Translate Hardwar	re applications using Microcontrollers.		
7	Gain working kno	wledge of ports and interrupts		
8	Introduce the need	l and use of interrupt structure, timers	in respective ap	plications
Course	Year / semester	Subject Name (Subject Code)	L: 4 T: 0 P:	Credits: 4
Outcome	I/I Sem	Embedded Systems (A943108)	0 Total: 4	
After the completio	n of this course, the student	s should be able to		
1	Understand the ba	sics of an embedded system		
2	Explore various is	sues in embedded software developme	ent and application	ons
3	Learn the method	of designing an embedded system for	any type of appl	ications
4	Understand the op	erating systems concepts, types and cl	hoosing RTOS	
5	Design, implemen	t and test an embedded system		
6	Understand types	of memory and interacting to external	world	
7	Learn embedded f	ïrmware design approaches		
8	Use ICE and software tools to address the issues in embedded systems			
		die tools to uddress the issues in enios	edded systems	
Course	Year / semester	Subject Name (Subject Code)	L: 4 T: 0 P:	Credits: 4
Course Outcome	Year / semester I/I Sem	Subject Name (Subject Code) Digital Control Systems (A943109)	L: 4 T: 0 P: 0 Total: 4	Credits: 4
Course Outcome After the completio	Year / semester I/I Sem n of this course, the student	Subject Name (Subject Code) Digital Control Systems (A943109) s should be able to	L: 4 T: 0 P: 0 Total: 4	Credits: 4
Course Outcome After the completio	Year / semester I/I Sem n of this course, the student Deduce the contro	Subject Name (Subject Code) Digital Control Systems (A943109) s should be able to l system to block diagram for various	L: 4 T: 0 P: 0 Total: 4 analysis	Credits: 4
Course Outcome After the completio	Year / semester I/I Sem n of this course, the student Deduce the contro Acquire a strong for	Subject Name (Subject Code) Digital Control Systems (A943109) s should be able to I system to block diagram for various oundation in sampling and reconstruct	L: 4 T: 0 P: 0 Total: 4 analysis tion Z-transform	Credits: 4
Course Outcome After the completio 1 2 3	Year / semester I/I Sem n of this course, the student Deduce the contro Acquire a strong for Apply knowledge	Subject Name (Subject Code) Digital Control Systems (A943109) s should be able to l system to block diagram for various oundation in sampling and reconstruct of mathematics, Z-plane analysis to c	L: 4 T: 0 P: 0 Total: 4 analysis tion Z-transform liscrete time con	Credits: 4 s. trol
Course Outcome After the completio 1 2 3	Year / semester I/I Sem n of this course, the student Deduce the contro Acquire a strong for Apply knowledge systems.	Subject Name (Subject Code) Digital Control Systems (A943109) s should be able to l system to block diagram for various oundation in sampling and reconstruct of mathematics, Z-plane analysis to c	L: 4 T: 0 P: 0 Total: 4 analysis tion Z-transform liscrete time con	Credits: 4 s. trol
Course Outcome After the completio 1 2 3 4	Year / semester I/I Sem n of this course, the student Deduce the contro Acquire a strong for Apply knowledge systems. Know sampling an Deaploce the course	Subject Name (Subject Code) Digital Control Systems (A943109) s should be able to l system to block diagram for various oundation in sampling and reconstruct of mathematics, Z-plane analysis to c and reconstruction, Z -transforms.	L: 4 T: 0 P: 0 Total: 4 analysis tion Z-transform liscrete time con	Credits: 4 s. trol
Course Outcome After the completio 1 2 3 4 5 6	Year / semester I/I Sem n of this course, the student Deduce the contro Acquire a strong fr Apply knowledge systems. Know sampling an Replace the conve Evaluate to Apply	Subject Name (Subject Code) Digital Control Systems (A943109) s should be able to I system to block diagram for various oundation in sampling and reconstruct of mathematics, Z-plane analysis to cond reconstruction, Z -transforms. Intional control system with Digital cond Z plane analysis of diagrate time control	L: 4 T: 0 P: 0 Total: 4 analysis tion Z-transform discrete time con	Credits: 4 s. trol
Course Outcome After the completio 1 2 3 4 5 6 7	Year / semester I/I Sem n of this course, the student Deduce the contro Acquire a strong for Apply knowledge systems. Know sampling an Replace the conve Evaluate to Apply	Subject Name (Subject Code) Digital Control Systems (A943109) s should be able to l system to block diagram for various oundation in sampling and reconstruct of mathematics, Z-plane analysis to conditional control system with Digital con Z-plane analysis of discrete time control system with Digital control system system system control system system system control system	L: 4 T: 0 P: 0 Total: 4 analysis tion Z-transform liscrete time con ntrol system. trol systems	Credits: 4 s. trol
Course Outcome After the completio 1 2 3 3 4 5 6 7 9	Year / semester I/I Sem n of this course, the student Deduce the contro Acquire a strong fr Apply knowledge systems. Know sampling an Replace the conve Evaluate to Apply Apply state feedba	Subject Name (Subject Code) Digital Control Systems (A943109) s should be able to l system to block diagram for various oundation in sampling and reconstruct of mathematics, Z-plane analysis to c and reconstruction, Z -transforms. ntional control system with Digital co Z-plane analysis of discrete time cont ack controllers and observers	L: 4 T: 0 P: 0 Total: 4 analysis tion Z-transform liscrete time con ntrol system. trol systems	Credits: 4 s. trol
Course Outcome After the completio 1 2 3 3 4 5 6 7 8 8	Year / semester I/I Sem n of this course, the student Deduce the contro Acquire a strong fr Apply knowledge systems. Know sampling an Replace the conve Evaluate to Apply Apply state feedba Analyse the system	Subject Name (Subject Code) Digital Control Systems (A943109) s should be able to l system to block diagram for various oundation in sampling and reconstruct of mathematics, Z-plane analysis to c and reconstruction, Z -transforms. Intional control system with Digital co Z-plane analysis of discrete time cont ack controllers and observers in stability using root locus, bode and Subject Name (Subject Code)	L: 4 T: 0 P: 0 Total: 4 analysis tion Z-transform liscrete time con ntrol system. trol systems	Credits: 4 s. trol
Course Outcome After the completio 1 2 3 3 4 5 6 7 8 Course Outcome	Year / semester I/I Sem n of this course, the student Deduce the contro Acquire a strong for Apply knowledge systems. Know sampling an Replace the conve Evaluate to Apply Apply state feedba Analyse the system Year / semester	Subject Name (Subject Code) Digital Control Systems (A943109) s should be able to l system to block diagram for various oundation in sampling and reconstruct of mathematics, Z-plane analysis to c nd reconstruction, Z -transforms. ntional control system with Digital co Z-plane analysis of discrete time cont ack controllers and observers n stability using root locus , bode and Subject Name (Subject Code) Optimization Techniques	L: 4 T: 0 P: 0 Total: 4 analysis tion Z-transform liscrete time con ntrol system. trol systems Nyquist plots L: 4 T: 0 P: 0 Total: 4	Credits: 4 s. trol Credits: 4
Course Outcome After the completio 1 2 3 3 4 4 5 6 7 8 Course Outcome	Year / semester I/I Sem n of this course, the student Deduce the contro Acquire a strong fr Apply knowledge systems. Know sampling an Replace the conve Evaluate to Apply Apply state feedba Analyse the system Year / semester I/I Sem	Subject Name (Subject Code) Digital Control Systems (A943109) s should be able to l system to block diagram for various oundation in sampling and reconstruct of mathematics, Z-plane analysis to conditional control system with Digital conditional control system conditional conditional control system conditional control system conditional condition	L: 4 T: 0 P: 0 Total: 4 analysis tion Z-transform liscrete time con ntrol system. rrol systems Nyquist plots L: 4 T: 0 P: 0 Total: 4	Credits: 4 S. trol Credits: 4
Course Outcome After the completio 1 2 3 4 5 6 7 8 Course Outcome After the completio	Year / semester I/I Sem n of this course, the student Deduce the contro Acquire a strong fr Apply knowledge systems. Know sampling ar Replace the conve Evaluate to Apply Apply state feedba Analyse the syster Year / semester I/I Sem n of this course, the student	Subject Name (Subject Code) Digital Control Systems (A943109) s should be able to l system to block diagram for various oundation in sampling and reconstruct e of mathematics, Z-plane analysis to c and reconstruction, Z -transforms. ntional control system with Digital co Z-plane analysis of discrete time cont ack controllers and observers n stability using root locus , bode and Subject Name (Subject Code) Optimization Techniques (A943110) s should be able to	L: 4 T: 0 P: 0 Total: 4 analysis tion Z-transform liscrete time con ntrol system. trol systems Nyquist plots L: 4 T: 0 P: 0 Total: 4	Credits: 4 s. trol Credits: 4
Course Outcome After the completio 1 2 3 3 4 4 5 6 7 8 Course Outcome After the completio 1	Year / semester I/I Sem n of this course, the student Deduce the contro Acquire a strong fr Apply knowledge systems. Know sampling an Replace the conve Evaluate to Apply Apply state feedba Analyse the system Year / semester I/I Sem n of this course, the student Study the need of	Subject Name (Subject Code) Digital Control Systems (A943109) s should be able to l system to block diagram for various oundation in sampling and reconstruct of mathematics, Z-plane analysis to c and reconstruction, Z -transforms. ntional control system with Digital co Z-plane analysis of discrete time cont ack controllers and observers n stability using root locus , bode and Subject Name (Subject Code) Optimization Techniques (A943110) s should be able to optimisation in electrical engineering	L: 4 T: 0 P: 0 Total: 4 analysis tion Z-transform liscrete time con ntrol system. trol systems Nyquist plots L: 4 T: 0 P: 0 Total: 4 problems	Credits: 4 s. trol Credits: 4
Course Outcome After the completio 1 2 3 4 5 6 7 8 Course Outcome After the completio 1 2	Year / semester I/I Sem n of this course, the student Deduce the contro Acquire a strong fr Apply knowledge systems. Know sampling an Replace the conve Evaluate to Apply Apply state feedba Analyse the system Year / semester I/I Sem n of this course, the student Study the need of Learn the convent	Subject Name (Subject Code) Digital Control Systems (A943109) s should be able to l system to block diagram for various oundation in sampling and reconstruct e of mathematics, Z-plane analysis to c and reconstruction, Z -transforms. Intional control system with Digital co Z-plane analysis of discrete time cont ack controllers and observers n stability using root locus , bode and Subject Name (Subject Code) Optimization Techniques (A943110) s should be able to optimisation in electrical engineering ional or classical optimisation technique	L: 4 T: 0 P: 0 Total: 4 analysis tion Z-transform discrete time con ntrol system. trol systems Nyquist plots L: 4 T: 0 P: 0 Total: 4 problems ues	Credits: 4 s. trol Credits: 4
Course Outcome After the completio 1 2 3 4 5 6 7 8 Course Outcome After the completio 1 2 3	Year / semester I/I Sem n of this course, the student Deduce the contro Acquire a strong fo Apply knowledge systems. Know sampling an Replace the conve Evaluate to Apply Apply state feedba Analyse the system Year / semester I/I Sem n of this course, the student Study the need of Learn the convent Learn to formulate	Subject Name (Subject Code) Digital Control Systems (A943109) s should be able to l system to block diagram for various oundation in sampling and reconstruct of mathematics, Z-plane analysis to c nd reconstruction, Z -transforms. ntional control system with Digital co Z-plane analysis of discrete time cont ack controllers and observers n stability using root locus , bode and Subject Name (Subject Code) Optimization Techniques (A943110) s should be able to optimisation in electrical engineering ional or classical optimisation technique e the problem with constrained and un-	L: 4 T: 0 P: 0 Total: 4 analysis tion Z-transform liscrete time con ntrol system. trol systems Nyquist plots L: 4 T: 0 P: 0 Total: 4 problems ues constrained case	Credits: 4 S. trol Credits: 4
Course Outcome After the completio 1 2 3 4 4 5 6 7 8 Course Outcome After the completio 1 2 3 4	Year / semester I/I Sem n of this course, the student Deduce the contro Acquire a strong fr Apply knowledge systems. Know sampling an Replace the conve Evaluate to Apply Apply state feedba Analyse the system Year / semester I/I Sem n of this course, the student Study the need of Learn the convent Learn to formulate Explore various m	Subject Name (Subject Code) Digital Control Systems (A943109) s should be able to l system to block diagram for various oundation in sampling and reconstruct of mathematics, Z-plane analysis to c and reconstruction, Z -transforms. Intional control system with Digital co Z-plane analysis of discrete time cont ack controllers and observers in stability using root locus , bode and Subject Name (Subject Code) Optimization Techniques (A943110) s should be able to optimisation in electrical engineering ional or classical optimisation technique e the problem with constrained and un- odern intelligent optimisation technique	L: 4 T: 0 P: 0 Total: 4 analysis tion Z-transform liscrete time con ntrol system. trol systems Nyquist plots L: 4 T: 0 P: 0 Total: 4 problems ues constrained case ues	Credits: 4 S. Credits: 4 Credits: 4
Course Outcome After the completio 1 2 3 4 5 6 7 8 Course Outcome After the completio 1 2 3 4 5 5	Year / semester I/I Sem n of this course, the student Deduce the contro Acquire a strong fr Apply knowledge systems. Know sampling an Replace the conve Evaluate to Apply Apply state feedba Analyse the system Year / semester I/I Sem n of this course, the student Study the need of Learn the convent Learn to formulate Explore various m Apply these technic	Subject Name (Subject Code) Digital Control Systems (A943109) s should be able to l system to block diagram for various oundation in sampling and reconstruct e of mathematics, Z-plane analysis to c and reconstruction, Z -transforms. Intional control system with Digital co Z-plane analysis of discrete time contrack controllers and observers in stability using root locus , bode and Subject Name (Subject Code) Optimization Techniques (A943110) s should be able to optimisation in electrical engineering ional or classical optimisation technique e the problem with constrained and un- odern intelligent optimisation technique iques to real world problems such as t	L: 4 T: 0 P: 0 Total: 4 analysis tion Z-transform liscrete time con ntrol system. trol systems Nyquist plots L: 4 T: 0 P: 0 Total: 4 problems ues constrained case ues ransportation pro	Credits: 4 S. Credits: 4 Credits: 4 S. Credits: 4
Course OutcomeAfter the completio12345678Course OutcomeAfter the completio12345	Year / semester I/I Sem n of this course, the student Deduce the contro Acquire a strong fo Apply knowledge systems. Know sampling an Replace the conve Evaluate to Apply Apply state feedba Analyse the system Year / semester I/I Sem n of this course, the student Study the need of Learn the convent Learn to formulate Explore various m Apply these technic travelling salesma	Subject Name (Subject Code) Digital Control Systems (A943109) s should be able to l system to block diagram for various oundation in sampling and reconstruct of mathematics, Z-plane analysis to c nd reconstruction, Z -transforms. ntional control system with Digital co Z-plane analysis of discrete time cont ack controllers and observers n stability using root locus , bode and Subject Name (Subject Code) Optimization Techniques (A943110) s should be able to optimisation in electrical engineering ional or classical optimisation technique e the problem with constrained and uncodern intelligent optimisation technique iques to real world problems such as to n problem	L: 4 T: 0 P: 0 Total: 4 analysis tion Z-transform liscrete time con ntrol system. trol systems L: 4 T: 0 P: 0 Total: 4 problems ues constrained case ues ransportation pro	Credits: 4 S. trol Credits: 4 Credits: 4



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7	Apply methods of sensitivity analysis and validate post processing results				
8	Explore various real time optimization problems.				
Course	Year / semester	Subject Name (Subject Code)	L: 4 T: 0 P:	Credits: 4	
Outcome	I/I Sem	Digital control systems (A943111)	0 Total: 4		
After the completio	n of this course, the student	s should be able to		-	
1	Deduce the control	I system to block diagram for various	analysis		
2	Acquire a strong f	oundation in sampling and reconstruc	ction Z-transform	s.	
3	Apply knowledge of mathematics, Z-plane analysis to discrete time control				
	systems.				
4	Know sampling an	nd reconstruction, Z -transforms.			
5	Replace the conve	entional control system with Digital co	ontrol system.		
6	Evaluate to Apply	Z-plane analysis of discrete time con	itrol systems		
7	Apply state feedba	ack controllers and observers			
8	Analyse the system	m stability using root locus, bode and	d Nyquist plots		
Course	Year / semester	Subject Name (Subject Code)	L: 4 T: 0 P:	Credits: 4	
Outcome	I/I Sem	Renewable energy systems	0 Total: 4		
		(A943112)			
After the completio	Explore various re	s should be able to	lectrical energy		
2	Study the character	pristics of PV cell_ photo voltaic mod	ules and its applic	ations	
2	Learn the basies of	f wind operate conversion systems on	d bio mass appre	v gonoration	
3	Explore various W	Vave apergy conversion machines	<u>1 010-111ass ellerg</u>	y generation	
4	conversion schem	ave energy conversion machines - O		ergy	
5	Know the need of	bybrid energy systems such as geoth	armal and fuel ca	110	
5	Study the impact	fuerious reported a percent courses	en anvironment	115	
7	Arrange storage of	norgy and to avoid the anyironmental	nellution		
/	Arrange storage e	nergy and to avoid the environmental	ponution		
<u> </u>	Detect the environ	Subject Name (Subject Code)	I. 4 T. 0 D.	Care dittant 4	
Course	Year / semester	HVDC Transmission (A943113)	L: 4 1: 0 P:	Creans: 4	
After the completion	I/I Sem n of this course the student	s should be able to	0 10tal: 4		
1	Study the basic po	ower handling capabilities of HVDC	lines		
2	Explore various	configurations and conversion	principles of s	static power	
_	converters	comigurations and conversion	principies of s	power	
3	Learn the rectifi	er and inverter operations, comm	itation process	at converter	
C	stations.		Process .		
4	Apply AC/DC filt	ters for harmonic elimination in HVD	C link		
5	Explore various c	ontrols adapted in HVDC converters			
6	Identify various in	nstability problems in HV AC and DC	² system		
7	Study various over	er voltage problems in multi-terminal	DC system		
8	Comprehend vari	ous converter faults and protection cit	rcuits.		
Course	Vear / semester	Subject Name (Subject Code)	L: 4 T: 0 P: 0	Credits: 4	
Outcome	I/I Sem	Analysis of Power Electronic	Total: 4	creation 1	
		Converters (A943114)			
After the completio	n of this course, the student	s should be able to		-	
1	Understand the	characteristics and principle of o	peration of mo	dern power	
	semiconductor de	vices.			



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2	Comprehend the concepts of different power converters and their applications				
3	Describe the impo	ortance of AC voltage controllers and	ł cyclo-co	nverters	s for various
	industrial applications				
4	Analyze and design switched mode power electronic converters for various				
	industrial applicat	ions			
5	Analyze pulse wid	th modulated inverters which are use	ed in varial	ble spee	ed drives
6	Choose appropriat	e device for a particular converter to	pology.		
7	Use power electr	conic simulation packages for ana	lyzing and	l desig	ning power
	converters.			U	01
8	Choose appropria	te power converter topologies and	design the	power	stage and
	feedback controlle	ers for various applications	U	1	C
Course	Year / semester	Subject Name (Subject Code)	L: 4 T: 0	<b>P: 0</b>	Credits: 4
Outcome	I/I Sem	Embedded Systems (A943115)	Total: 4		
After the completio	n of this course, the student	s should be able to			
1	Understand the ba	sics of an embedded system			
2	Explore various is	sues in embedded software developn	nent and ap	oplicatio	ons
3	Learn the method	of designing an embedded system for	r any type	of appl	ications
4	Understand the op	erating systems concepts, types and	choosing R	RTOS	
5	Design, implemen	t and test an embedded system			
6	Understand types	of memory and interacting to externa	l world		
7	Learn embedded f	irmware design approaches			
8	Use ICE and softw	vare tools to address the issues in em	bedded sys	stems	
Course	Year / semester	Subject Name (Subject Code)	L: 0 T: 0	P: 4	Credits:4
Outcome	I/I Sem	Power Converters Simulation Lab	Total:4		
		(A943116)			
After the completio	n of this course, the student	s should be able to	a of loadin	~	
1	Able to simulate 1	an converter circuits for various type	dunamia	in state	
2	Acquire programm	ning knowledge to study the systems	aynamics	in state	space
2	Able to access the	frequency response of the system			
3	Able to assess the	n stability and DID controller applies	tion for at	a dru ata	to avatam
4	Analyse the system	in stability and PID controller applica	tion for ste	eady sta	ite system
Course	Vegn / gemester	Subject Name (Subject Code)	Ι.Ο.Τ.Ο	D. 4	Credita.1
Course	I ear / semester	Seminar-I (A943117)	L: U I: U Totol: 4	<b>r: 4</b>	Creans:4
Course	1/1 Selli Voor/Somostor	Subject Name (Subject Code)	10181.4	1.47	
Outcome	I cal/Semester	Power Electronic Converters (A943	201)	L; 4 1	
After the completio	I/II Sem Power Electronic Converters (A945201) 4				
	n of this course the student	s should be able to		•	
1	n of this course, the student	s should be able to	S.	-	
$\frac{1}{2}$	n of this course, the student Understand various Explore various ac	s should be able to a advanced power electronics device dvanced modulation techniques and it	s. ts applicati	ions	
$\frac{1}{2}$	n of this course, the student Understand variou Explore various ac Describe the oper	s should be able to a advanced power electronics device avanced modulation techniques and in cation of multi-level inverters with	s. ts applicati	ions	ies for high
	n of this course, the student Understand variou Explore various ac Describe the oper power application	s should be able to as advanced power electronics device dvanced modulation techniques and i ration of multi-level inverters with	s. ts applicati switching	ions strateg	ies for high
1 2 3 4	n of this course, the student Understand variou Explore various ac Describe the oper power application	s should be able to a advanced power electronics device dvanced modulation techniques and i ration of multi-level inverters with s.	s. ts applicati switching tched mod	ions strateg	ies for high
$ \begin{array}{r} 1\\ 2\\ 3\\ \hline 4\\ \hline 5\\ \hline \end{array} $	n of this course, the student Understand variou Explore various ac Describe the oper power application Comprehend the d	s should be able to s advanced power electronics device dvanced modulation techniques and i ration of multi-level inverters with s. lesign of resonant converters and swi	s. ts applicati switching tched mod	ions strateg e powe	ies for high r supplies.
$ \begin{array}{r} 1\\ 2\\ 3\\ \hline 4\\ \hline 5\\ \hline 6\\ \hline \end{array} $	n of this course, the student Understand variou Explore various ac Describe the oper power application Comprehend the d Gain knowledge o	s should be able to a advanced power electronics device dvanced modulation techniques and i ration of multi-level inverters with s. lesign of resonant converters and swi n various topologies converter circui	s. ts applicati switching tched mod ts	ions strateg e powe	ies for high r supplies.
$     \begin{array}{r}       1 \\       2 \\       3 \\       4 \\       5 \\       6 \\       7 \\       7       \end{array} $	n of this course, the student Understand variou Explore various ac Describe the oper power application Comprehend the d Gain knowledge o Develop and analy	s should be able to s should be able to dvanced modulation techniques and i ration of multi-level inverters with s. lesign of resonant converters and swi n various topologies converter circui vze various converter topologies.	s. ts applicati switching tched mod ts	ions strateg e powe	ies for high r supplies.
$     \begin{array}{r}       1 \\       2 \\       3 \\       4 \\       5 \\       6 \\       7 \\       8 \\       8       \end{array} $	n of this course, the student Understand variou Explore various ac Describe the oper power application Comprehend the d Gain knowledge o Develop and analy Design AC or DC	s should be able to s should be able to lis advanced power electronics device dvanced modulation techniques and i ration of multi-level inverters with s. lesign of resonant converters and swi n various topologies converter circui //ze various converter topologies. switched mode power supplies.	s. ts applicati switching tched mod ts	ions strateg e powe	ies for high r supplies.



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Course	Year / semester	Subject Name (Subject Code)	L: 4 T: 0 P: 0 C:		
Outcome	I/II Sem	Power Electronic Control of DC Drives	4		
		(A943202)			
After the completio	n of this course, the student	s should be able to			
l	Learn basic preliminary requirements for operating DC drives				
2	Explore various re	ectifier fed DC drives			
3	Study the continue	ous and discontinuous modes of operation of s	ingle phase semi		
	and full converter	for DC drives			
4	Study the continue	ous and discontinuous modes of operation of the	nree phase semi and		
	full converter for	DC drives			
5	Perform steady sta	ate analysis of three phase converter controlled	DC motor drive		
6	Explore various cu	urrent and speed controllers			
7	Perform steady sta	ate analysis of chopper controlled DC motor dri	ive		
8	Simulate the dyna	mics of speed controlled DC motor drives			
Course	Year / semester	Subject Name (Subject Code)	L: 4 T: 0 P: 0 C:		
Outcome	I/II Sem	Power Electronic Control of AC Drives	4		
		(A943203)			
After the completio	I earn the speed to	s should be able to	la fraquancy		
1	operation	rque enaracterístics variable voltage and variat	ne nequency		
2	Study the operation	an of induction motor in constant torque and fie	ld weakening		
2	regions	in or induction motor in constant torque and ne	ia weakening		
3	Understand the sta	ator side controls employed for induction drives	0		
	Employ speed and	I flux control in current fed inverter drive	, 		
5	Employ speed and Evaluate the effici	ency of the drive by applying optimization con	otrol		
6	Study the principle	es of vector control methods in rotor of induction	on drives		
7	Implement variou	s speed control schemes in synchronous motor	drives		
8	Study the characte	ristics and control of variable reluctance moto	r drive		
Course	Voor / somostor	Subject Name (Subject Code)			
Outcomo	I cal / semester	Power Quality (A943204)			
After the completio	n of this course. the student	s should be able to	-		
1	Know the differen	t terms and concepts of electric power quality i	in power systems.		
2	Learn about the at	oplications of non-linear load.			
3	Identify and study	the difference between system failures, outage	e and interruptions		
4	Predict various sh	ort and long interruptions			
5	Characterize and	calculate the magnitude the single and three pl	nases Voltage sag in		
	the system		88		
6	Learn how to miti	gate the power quality problems			
7	Learn about the ar	oplication of FACTS device on DG side.			
8	Know the differen	t characteristics of electric power quality in po	wer systems.		
Course	Year / semester	Subject Name (Subject Code)	L: 3 T: 0 P: 0		
Outcome	I/II Sem	Advanced Digital Signal Processing	C:3		
_		(A943205)			
After the completio	n of this course, the student	s should be able to	1 1		
1	Provide fundamen	tal knowledge of analysing and processing of c	ligital systems		
2	Study the relations	ship between continuous time and discrete time	signals and		
	systems				



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3	Study the fundame	entals of time, frequency and Z-Plane analysis	and their
	interrelationships.		
4	Study and design digital filters form analysis to synthesis		
5	Explore few real world signal processing applications		
6	Get acquainted with FFT algorithms, multi-rate signal processing techniques.		
Course	Year / semester Subject Name (Subject Code) L: 3 T: 0 P: 0 C:		
Outcome	I/II Sem	Switched Mode Power Supplies (SMPS)	3
		(A943206)	
After the completio	n of this course, the student	s should be able to	ortora
1	Explore various design considerations		
2	Explore various of	esign considerations.	
3	Explore various co	mont practical airquits for LIDS_SMDS	
4	Understand the of	fact of Electromognetic interference (EMI)	
5	Understand the en	rieus motortion agnetic fan the agruenters	
0	Understand the va	FIGUS PROTECTION ASPECTS FOR THE CONVERTERS.	
Course	Year / semester	Flexible AC Transmission Systems	
Outcome	1/11 Sem	(A943207)	3
After the completio	n of this course, the student	s should be able to	
1	Know the concept	s and types of FACTS controllers	
2	Learn various con	verters employed for FACTS controllers	
3	Study the impact of	of FACTS devices in the power flow in the AC	system
4	Learn various shu	nt compensation using SVC and STATCOM	
5	Learn various seri	es compensators such as TCSC, TSSC	
6	Explore the conce	pt of UPFC and its application.	
Course	Year / semester	Subject Name (Subject Code)	L: 3 T: 0 P: 0 C:
Outcome	I/II Sem	High-Frequency Magnetic Components	3
A fton the community in		(A943208)	
1	Learn the fundame	entals of magnetic devices	
2	Evalore the prope	rties of magnetic core materials	
3	Study the various	effects that exists the round conductor carrying	AC currents
<u> </u>	Evaluate the energy	y stored in coupled inductors of transformers	
5	Design of transfor	mers for fly-back converters in CCM	
6	Design the integra	ted inductors and self capacitance for high freq	uency applications
Course	Vear / semester	Subject Name (Subject Code)	
Outcome	I/II Sem	Dynamics of Electrical Machines (A943209)	3
After the completio	n of this course, the student	s should be able to	•
1	Basics of machine	e theory of all types of machines	
2	Learn generalized	modeling of all electrical machines	
3	Apply of Lagrange	e's equation solution of Electro dynamical equa	tions.
4	Understand the	basic mathematical analysis of electrical	machines and its
	characteristics.		
5	Understand behav	ior of electrical machines under steady state and	d transient state.
6	Understand dynam	nic modeling of electrical machines	
Course	Year / semester	Subject Name (Subject Code)	L: 3 T: 0 P: 0 C:
Outcome	I/II Sem	Instrumentation & Control (A943210)	3



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After the completio	After the completion of this course, the students should be able to			
1	Survey various methods of power generation			
2	Understand the importance of instrumentation in power generation			
3	Explore various measuring and supervising systems involved in thermal power plant			
	processes such as boiler and turbine units			
4	Understand variou	is controls employed in boiler		
5	Explore the tempe	rature and pressure controls in turbine		
6	Study the nuclear	power plant instrumentation		
Course	Year / semester	Subject Name (Subject Code)	L: 3 T: 0 P: 0 C:	
Outcome	I/II Sem	Intelligent Control (A943211)	3	
After the completio	n of this course, the student	s should be able to		
1	Learn the architec	ture of Intelligent control		
2	Learn the basic art	tificial neural network and its mathematical mo	del	
3	Train and test the	neural network with various configurations.		
4	Apply genetic algo	orithm for various optimisation problems		
5	Model and control	l different system with fuzzy logic controller		
6	Explore various po	ower system problem and apply GA, NN and F	uzzy controller	
Course	Year / semester	Subject Name (Subject Code)	L: 3 T: 0 P: 0 C:	
Outcome	I/II Sem	Smart grid technologies (A943212)	3	
After the completio	n of this course, the student	s should be able to		
1	Recite the structur conditions.	re of an electricity market in either regulated or	deregulated market	
2	Understand the a	dvantages of DC distribution and developing	ng technologies in	
	distribution		0 0	
3	Discriminate the	trade-off between economics and reliability o	f an electric power	
	system.			
4	Differentiate varie	ous investment options (e.g. generation capac	tities, transmission,	
	renewable, deman	d-side resources, etc) in electricity markets.		
5	Analyze the devel	opment of smart and intelligent domestic system	ns.	
6	Recite the structur	e of an electricity market in either regulated or	deregulated market	
	conditions.		0	
Course	Year / semester	Subject Name (Subject Code)	L: 3 T: 0 P: 0 C:	
Outcome	I/II Sem	AI Techniques in Electrical Engineering	3	
		(A943213)		
After the completio	n of this course, the student	s should be able to	1 4 1	
1	Gain knowledge o	in soft computing techniques such as artificial n	eural networks,	
	Fuzzy logic and ge	enetic Algorithms.	1 / 1	
2	Learn the concept	s of feed forward neural networks and feedback	neural networks.	
3	Get the concept of	tuzziness involved in various systems and con	prehensive	
-	knowledge of fuzz	y logic control and to design the fuzzy rules		
4	Acquire complete	knowledge on genetic algorithm including thr	ee genetic	
	operators		<b>.</b>	
5	Explore various po	ower system problems which can utilize these A	AI techniques	
6	Assess system stal	bility using AI techniques		
Course	Year / semester	Subject Name (Subject Code) Delightlity Engineering (A042214)	L: 3 T: 0 P: 0 C:	
Outcome	I/II Sem	Kenaulity Engliceting (A945214)	3	
After the completio	n of this course, the student	s should be able to		



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1	To identify the generation system model and recursive relation for capacitive model			
	building			
2	calculate the equivalent transitional rates, cumulative probability and cumulative			
	frequency			
3	Evaluate cumulat	ive probability and cumulative frequency of no	n-identical	
	generating units and merging generation and load			
4	Distinguish variou	is approaches to evaluate operating reserves and	d bulk power	
	generation reserve		-	
5	Analyse the reliab	ility indices on radial and weakly meshed distri	bution networks	
6	Study the effect of	f short circuits in substation and switching station	ons.	
Course	Year / semester	Subject Name (Subject Code)	L: 3 T: 0 P: 0 C:	
Outcome	I/II Sem	Energy Auditing, Conservation &	3	
		Management (A943215)		
After the completio	on of this course, the students should be able to			
1	Know the necessity of conservation of energy			
2	Generalize the me	thods of energy management		
3	Illustrate the factors to increase the efficiency of electrical equipment			
4	Detect the benefits of carrying out energy audits.			
5	Analyze the power factor and to design a good illumination system			
6	Determine pay bac	ck periods for energy saving equipment.	1	
Course	Year / semester	Subject Name (Subject Code)	L: 0 T: 0 P: 4 C:	
Outcome	I/II Sem	Power Converters and Drives Lab	2	
After the completio	n of this source, the student	(A943210)		
1	I earn basic sneed	measurement and implement closed loop contr	rol in PMDC motor	
2	Experience the im	proved control of thyristor drive for PMDC mo	tor over	
2	conventional cont	rol		
3	Learn to generate DWM signals using DSD			
3	Learn to generate r wivi signals using DSP			
4 Course	Voor / comostor	Subject Name (Subject Code)	Ι. Ο.Τ. Ο.Ρ. /	
Outcome	I ear / semester	Seminar-II (A943217)	$\begin{array}{c} \mathbf{L}: \mathbf{U} \mathbf{I}: \mathbf{U} \mathbf{\Gamma}: 4 \\ \mathbf{C} \cdot 2 \end{array}$	
Course	1/11 Selli	Subject Name (Subject Code)		
Course	i ear / semester	Comprehensive Viva-Voce (A943301)		
Outcome	11/1 Sem		U:4	



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### DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

### <u>Course outcomes for M.Tech – Power System Automation and</u> <u>Control (45) for the year 2015-16</u>

Course	i ear/Semester		L: 3 T: 0 P: 0 C:	
Outcome	I/I Sem	Advanced Power System Analysis (A953101)	3	
After the completio	n of this course, the student	s should be able to		
1	Identify the methods and assumptions in modeling of machines.			
2	Recognize the diff	Ferent frames for modeling of AC machines.		
3	Illustrate the volta	ge and torque equations in state space form for d	ifferent machines	
4	Develop the math	nematical models of various machines like, in	duction motor and	
	Synchronous mac	Synchronous machines using modeling equations.		
5	Analyze the devel	oped models in various reference frames		
6	Assess the machin	e dynamics in various operating conditions		
Course	Year / semester	Subject Name (Subject Code)	L: 3 T: 0 P: 0 C:	
Outcome	I/I Sem	Advanced Power System Protection	3	
		(A953102)		
After the completio	I Indepetend the he	s should be able to	vit brookens and	
	rolovo	sic function of a circuit breaker, all kinds of circ	un oreakers and	
2	Differentiate fuse	and circuit breakers under fault condition		
2	Learn construction	and circuit breakers under fault condition	ity of comparators	
5	in them	an details of static relays and importance of duar	ity of comparators	
	Study the operation	n of static relay applied for over aurrent protecti	<b>22</b>	
4	A hla ta annivatati	a relevation for the set of the s		
5	Able to apply stati	c relay for transformer and transmission line pro	Direction	
0	Basic principle of	operation and application of microprocessor bas	ed relaying.	
Course	Year / semester	Modern Control Theory (A953103)	L: 4 T: 0 P: 0 C:	
Outcome	1/1 Sem		4	
After the completio	Various terms of	basic and modern control system for the real	time analysis and	
1	design of control	systems	t this analysis and	
2	To perform state	variables analysis for any real time system		
3	Apply the concern	t of optimal control to any system		
3	Able to examine a	a system for its stability controllability and obser	wahility	
5	Implement basic t	rinciples and techniques in designing linear con	trol systems	
5	Formulate and so	lya deterministic optimal control problems in tea	rms of performance	
0	indices	ive deterministic optimal control problems in ter	this of performance	
Course	Voor / somostor	Subject Name (Subject Code)	I. 4 T. 0 D. 0 C.	
Outcomo	I cal / semester	EHV AC Transmission (A953104)		
After the completion	I/I SCIII	s should be able to	4	
1	Identify the differe	ent aspects of Extra High Voltage A C and D C T	Fransmission	
2	Demonstrate EHV	AC transmission system components, protection	n and insulation	
_	level for over volt	ages	and monution	
3	Estimate the Static	tical procedures for line designs, scientific and e	ngineering	
	Principles in powe	er systems	ing incoming	
4	Power Frequency	Voltage control and over-voltages in FHV lines		
1         2         3         4         5         6         Course Outcome         After the completion         1         2         3         4         5         6         Course Outcome         After the completion         1         2         3         4         3         4	relays Differentiate fuse Learn construction in them. Study the operatio Able to apply stati Basic principle of Year / semester I/I Sem of this course, the student Various terms of design of control To perform state Apply the concep Able to examine a Implement basic p Formulate and so indices. Year / semester I/I Sem of this course, the student Identify the differed Demonstrate EHV level for over volt Estimate the Statis Principles in powe Power Frequency	and circuit breakers under fault condition hal details of static relays and importance of dual n of static relay applied for over current protection c relay for transformer and transmission line pro- operation and application of microprocessor base Subject Name (Subject Code) Modern Control Theory (A953103) s should be able to basic and modern control system for the real systems. variables analysis for any real time system. t of optimal control to any system. a system for its stability, controllability and obser principles and techniques in designing linear con lve deterministic optimal control problems in ter Subject Name (Subject Code) EHV AC Transmission (A953104) s should be able to ent aspects of Extra High Voltage A.C and D.C T AC transmission system components, protection ages stical procedures for line designs, scientific and e er systems. Voltage control and over-voltages in EHV lines	ity of comparator on otection ed relaying. L: 4 T: 0 P: 0 C 4 time analysis at rvability. trol systems. rms of performan L: 4 T: 0 P: 0 C 4 Transmission n and insulation	



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5	Study the concept of Corona in E.H.V. lines and impact of RI in EHV lines			
6	Design the EHV cables and study their charcteristics			
Course	Year / semester	Subject Name (Subject Code)	L: 3 T: 0 P: 0	
Outcome	I/I Sem	High Voltage Engineering (A953105)	C:3	
After the completio	n of this course, the student	s should be able to		
Course	Year / semester	Subject Name (Subject Code)	L: 3 T: 0 P: 0 C:	
Outcome	I/I Sem	Advanced Digital Signal Processing	3	
		(A953106)		
After the completio	n of this course, the students should be able to			
1	Comprehensive understanding of using advanced controllers in measurement and			
	control instrumentation.			
2	Illustrate about da	ata acquisition - process of collecting information	n from field	
	instruments.			
3	Analyze Program	nable Logic Controller (PLC), IO Modules and i	nternal features.	
4	Comprehend Prog	ramming in Ladder Logic, addressing of I/O.		
5	Apply PID and its	s Tuning.		
6	Development of la	adder logic programming for simple process	•	
Course	Year / semester	Subject Name (Subject Code)	L: 4 T: 0 P: 0 C:	
Outcome	I/I Sem	Power Quality (A953107)	4	
After the completio	n of this course, the student	s should be able to	. 11	
<u> </u>	To relate the basic	architecture and addressing modes of a microco	ontroller.	
2	Distinguish types of computers & microcontrollers and explain the principles of top			
	down design to microcontroller software development			
3	demonstrate assembly language programs for the 8-bit, 16-bit and 32-bit			
	Microcontroller, assembly language code for high-level language structures such as			
	IF-THENELSE and DO-WHILE			
4	analyze a typical I/O interface and to discuss timing issues			
5	Develop Real time	e Applications of Microcontrollers & Demonstra	te RTOS for	
	Microcontrollers.			
6	Translate Hardwar	re applications using Microcontrollers.		
Course	Year / semester	Subject Name (Subject Code)	L: 3 T: 0 P: 0 C:	
Outcome	I/I Sem	Microcontrollers and applications (A953108)	3	
After the completio	n of this course, the student	s should be able to		
1	To relate the basic	architecture and addressing modes of a microco	ontroller.	
2	Distinguish types	of computers & microcontrollers and explain the	e principles of top	
	down design to mi	icrocontroller software development		
3	demonstrate assen	nbly language programs for the 8-bit, 16-bit and	32-bit	
	Microcontroller, a	assembly language code for high-level language	structures such as	
	IF-THENELSE ar	nd DO-WHILE		
4	analyze a typical I	/O interface and to discuss timing issues		
5	Develop Real time	e Applications of Microcontrollers & Demonstra	te RTOS for	
	Microcontrollers.			
6	Translate Hardwar	re applications using Microcontrollers.		
Course	Year / semester	Subject Name (Subject Code)	L: 3 T: 0 P: 0 C:	
Outcome	I/I Sem	Distribution Automation (A953109)	3	
After the completio	n of this course, the student	s should be able to		
1	Learn the need of structure of power system automation and its evolution.			



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2	Classify various power system automation schemes			
3	Learn to implement power system automation and protection using SCADA.			
4	Learn the importance of EMS in power system operation.			
5	Learn the architecture of PLC and its application in power system automation			
6	Know the control schemes of distribution automation and substation automation			
Course	Year / semester	Subject Name (Subject Code)	L: 4 T: 0 P: 0 C:	
Outcome	I/I Sem	Optimization Techniques (A953110)	4	
After the completio	n of this course, the student	s should be able to		
1	Study the need of	optimisation in electrical engineering problems		
2	Learn the conventional or classical optimisation techniques			
3	Learn to formulate	e the problem with constrained and unconstrained	1 cases	
4	Explore various m	odern intelligent optimisation techniques		
5	Apply these techn	iques to real world problems such as transportati	on problem,	
	travelling salesma	n problem	1 /	
6	Study various limit	tations in these techniques		
Course	Year / semester	Subject Name (Subject Code)	L: 3 T: 0 P: 0 C:	
Outcome	I/I Sem	Digital control systems (A953111)	3	
After the completio	n of this course, the student	s should be able to	<u> </u>	
1	Deduce the control	l system to block diagram for various analysis		
2	Acquire a strong f	oundation in sampling and reconstruction Z-tran	sforms.	
3	Apply knowledge	of mathematics, Z-plane analysis to discrete tim	e control systems.	
4	Know sampling an	nd reconstruction, Z -transforms.		
5	Replace the conve	ntional control system with Digital control syste	 m.	
6	Evaluate to Apply	Z-plane analysis of discrete time control system	S	
Course	Year / semester	Subject Name (Subject Code)	L: 3 T: 0 P: 0 C:	
Outcome	I/I Sem	Renewable energy systems (A953112)	3	
After the completio	n of this course, the student	s should be able to		
1	Explore various re	enewable energy sources to produce electrical energy	ergy	
2	Study the characte	pristics of PV cell- photo voltaic modules and its	applications	
3	Learn the basics o	f wind energy conversion systems and bio-mass	energy generation	
4	Explore various W	Vave energy conversion machines - Ocean Thern	nal Energy	
	conversion schem	es		
5	Know the need of	hybrid energy systems such as geothermal and f	uel cells	
6	Study the impact of	of various renewable energy sources on environn	nent.	
Course	Year / semester	Subject Name (Subject Code)	L: 3 T: 0 P: 0 C:	
Outcome	I/I Sem	HVDC Transmission (A953113)	3	
After the completio	n of this course, the student	s should be able to		
1	Study the basic po	ower handling capabilities of HVDC lines		
2	Explore various c	onfigurations and conversion principles of stat	ic power converters	
3	Learn the rectifier	and inverter operations, commutation process a	t converter stations.	
4	Apply AC/DC filt	ers for harmonic elimination in HVDC link		
5	Explore various c	ontrols adapted in HVDC converters		
6	Identify various in	nstability problems in HV AC and DC system		
Course	Year / semester	Subject Name (Subject Code)	L: 3 T: 0 P: 0 C:	
Outcome	I/I Sem	Analysis of power Electronic converters (A953114)	3	



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After the completio	n of this course, the student	s should be able to	
1	Understand the	characteristics and principle of operation	of modern power
	semiconductor de	vices.	
2	Comprehend the concepts of different power converters and their applications		
3	Analyze and design switched mode regulators for various industrial applications		
4	Knowledge on var	ious converter topologies	
5	Choose appropriat	e device for a particular converter topology.	
6	Use power electronic simulation packages for analyzing and designing power		
	converters.		
Course	Year / semester	Subject Name (Subject Code)	L: 3 T: 0 P: 0 C:
Outcome	I/I Sem	Embedded Systems (A953115)	3
After the completio	n of this course, the student	s should be able to	
1	Understand the ba	sics of an embedded system	
2	Learn the method	of designing an embedded system for any type o	f applications
3	Understand the op	erating systems concepts, types and choosing RT	TOS
4	Design, implemen	t and test an embedded system	
5	Understand types	of memory and interacting to external world	
6	Learn embedded f	ïrmware design approaches	
Course	Year / semester	Subject Name (Subject Code)	L: 0 T: 0 P: 4 C:
Outcome	I/I Sem	Power Systems Lab-I (A953116)	2
After the completio	n of this course, the student	s should be able to	
1	Able to demonstrate the symmetrical and unsymmetrical fault in the generator.		
2	Realise the Ferranti effect in the transmission line and implement feeder protection		
	under over current operation by constructing the circuits		
3	Study the operation various static relays for over current and over voltage condition		
4	Visualise the diffe	rential protection of transformer for external and	internal faults
Course	Year/Semester	Subject Name (Subject Code)	L: 3 T: 0 P: 0 C:
Outcome	I/II Sem	Power System Dynamics (A955201)	3
After the completio	n of this course, the student	s should be able to	4
1	Learn the basics o	i system dynamics and able to analyse steady sta	te stability and
2	A la la da una a la la servicio de la la servicio de la la da una a la la da una da da	-1	· 1
Δ	Able to model syn	tion	ion analyse its
2	dynamics of opera	uion.	
5	Model the excitati	on system analyse the dynamics of the synchron	ous machine
	Connected to infin	Ite bus. $\mathbf{D} = \mathbf{D} + \mathbf{D} $	
4	Examine the small	I signal stability of the system using Routh's Hur	witz criterion
5	Know the need of	PSS in control signals	• 1 1
6	Dynamic compens	sator analysis of single machine infinite bus syste	em with and
	without PSS.	Cubicat Name (Cubicat Code)	
Course	Year / semester	Flexible AC Transmission Systems (FACTS)	L: 4 T: 0 P: 0 C:
Outcome	1/11 Sem	(A953202)	4
After the completio	n of this course. the student	s should be able to	
1	Know the concept	s and types of FACTS controllers	
2	Learn various con	verters employed for FACTS controllers	
3	Study the impact of	of FACTS devices in the power flow in the AC s	vstem
	study the impact of FACTS devices in the power now in the AC system		



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4	Learn various shu	nt compensation using SVC and STATCOM	
5	Learn various series compensators such as TCSC, TSSC		
6	Explore the concept of UPFC and its application.		
Course	Year / semester	Subject Name (Subject Code)	L: 4 T: 0 P: 0 C:
Outcome	I/II Sem	Power System Operation and Deregulation	4
		(A953203)	
After the completio	n of this course, the student	s should be able to	antrat madala
	Acquire basic knowledge on restructuring of power industry and market models.		
2	Impart knowledge	on fundamental concepts of congestion manager	ment
3	Knowledge on var	ious anciliary service providers	
4	Illustrate various 1	nternational Transmission pricing paradigms	
5	Idea on frameworl	c of Indian power sector and its initiatives	
6	The reforms in Inc	lian power sector	
Course	Year / semester	Gas Insulated Systems(GIS) (A953204)	L: 4 T: 0 P: 0 C:
Outcome	I/II Sem		4
Course	Voar / somostor	Subject Name (Subject Code)	I • 4 T• 0 P• 0
Outcome	I cal / semester	Programmable Logic Controllers and their	$C\cdot 4$
Outcome		Applications (A953205)	0.4
After the completio	n of this course, the student	s should be able to	
1	Gain Comprehens	ive knowledge of using advanced controllers in r	neasurement and
	control instrument	ation.	
2	Illustrate about da	ta acquisition - process of collecting information	n from field
	instruments.		
3	Analyze Programmable Logic Controller (PLC), IO Modules and internal features.		
4	Comprehend Programming in Ladder Logic, addressing of I/O.		
5	Apply PID and its	s Tuning.	
6	Develop ladder log	gic programming for simple process	
Course	Year / semester	Subject Name (Subject Code)	L: 3 T: 0 P: 0 C:
Outcome	I/II Sem	High frequency magnetic components	3
After the completio	n of this course, the student	(A953200)	
1	Learn the fundame	entals of magnetic devices	
2	Explore the proper	rties of magnetic core materials	
3	Study the various	effects that exists the round conductor carrying A	AC currents
4	Evaluate the energy	encers that exists the round conductor carrying r	
5	Design of transfor	mers for fly-back converters in CCM	
6	Design the integra	ted inductors and self canacitance for high freque	ency applications
Course	Vear / semester	Subject Name (Subject Code)	
Outcome	I/II Sem	Reactive Power Compensation and	
Guttome		Management (A953207)	•
After the completio	n of this course, the student	s should be able to	
1	Identify the necess	sity of reactive power compensation	
2	Describe load com	pensation	
3	Select various type	es of reactive power compensation in transmission	on systems
4	Characterize distri	bution side and utility side reactive power.	
5	Understand issues related to power system stability and control.		



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6	Detect reactive power compensation techniques & their practical importance		
Course	Year / semester	Subject Name (Subject Code)	L: 3 T: 0 P: 0 C:
Outcome	I/II Sem	Power System Reliability (A953208)	3
After the completio	n of this course, the student	s should be able to	
1	To identify the get	neration system model and recursive relation for	capacitive model
	building		
2	calculate the equivalent transitional rates, cumulative probability and cumulative		
	frequency		
3	Evaluate cumulat	ive probability and cumulative frequency of non-	-identical
	generating units an	nd merging generation and load	
4	Distinguish variou	is approaches to evaluate operating reserves and	bulk power
	generation reserve		
5	Analyse the reliab	ility indices on radial and weakly meshed distrib	ution networks
6	Study the effect of	f short circuits in substation and switching station	ns.
Course	Year / semester	Subject Name (Subject Code)	L: 3 T: 0 P: 0 C:
Outcome	I/II Sem	Voltage Stability (A953209)	3
After the completio	n of this course, the student	s should be able to	
1	Identify the necess	sity of reactive power compensation	
2	Describe load con	npensation	
3	Select various type	es of reactive power compensation in transmission	on systems
4	Characterize distribution side and utility side reactive power.		
5	Understand issues related to power system stability and control.		
6	Detect reactive power compensation techniques & their practical importance		
	-	1 1 1	L
Course	Year / semester	Subject Name (Subject Code)	L: 4 T: 0 P: 0 C:
Course Outcome	Year / semester I/II Sem	Subject Name (Subject Code) Instrumentation & Control (A953210)	L: 4 T: 0 P: 0 C: 4
Course Outcome After the completio	Year / semester I/II Sem n of this course, the student	Subject Name (Subject Code) Instrumentation & Control (A953210) s should be able to	L: 4 T: 0 P: 0 C: 4
Course Outcome After the completio	Year / semester I/II Sem n of this course, the student Survey various me	Subject Name (Subject Code) Instrumentation & Control (A953210) s should be able to ethods of power generation	L: 4 T: 0 P: 0 C: 4
Course Outcome After the completio	Year / semester I/II Sem n of this course, the student Survey various me Understand the im	Subject Name (Subject Code) Instrumentation & Control (A953210) s should be able to ethods of power generation aportance of instrumentation in power generation	L: 4 T: 0 P: 0 C: 4
Course Outcome After the completio 1 2 3	Year / semester I/II Sem n of this course, the student Survey various me Understand the im Explore various m	Subject Name (Subject Code) Instrumentation & Control (A953210) s should be able to ethods of power generation aportance of instrumentation in power generation heasuring and supervising systems involved in the	L: 4 T: 0 P: 0 C: 4 ermal power plant
Course Outcome After the completio 1 2 3	Year / semester I/II Sem n of this course, the student Survey various me Understand the im Explore various m processes such as	Subject Name (Subject Code) Instrumentation & Control (A953210) s should be able to ethods of power generation portance of instrumentation in power generation heasuring and supervising systems involved in the boiler and turbine units	L: 4 T: 0 P: 0 C: 4 ermal power plant
Course Outcome After the completio 1 2 3 4	Year / semester I/II Sem n of this course, the student Survey various ma Understand the im Explore various m processes such as Understand variou	Subject Name (Subject Code) Instrumentation & Control (A953210) s should be able to ethods of power generation aportance of instrumentation in power generation heasuring and supervising systems involved in the boiler and turbine units as controls employed in boiler	L: 4 T: 0 P: 0 C: 4 ermal power plant
Course Outcome After the completio 1 2 3 4 5	Year / semester I/II Sem n of this course, the student Survey various me Understand the im Explore various m processes such as Understand variou Explore the tempe	Subject Name (Subject Code) Instrumentation & Control (A953210) s should be able to ethods of power generation portance of instrumentation in power generation heasuring and supervising systems involved in the boiler and turbine units is controls employed in boiler erature and pressure controls in turbine	L: 4 T: 0 P: 0 C: 4 ermal power plant
Course Outcome After the completio 1 2 3 4 5 6	Year / semester I/II Sem n of this course, the student Survey various me Understand the im Explore various m processes such as Understand variou Explore the tempe Study the nuclear	Subject Name (Subject Code) Instrumentation & Control (A953210) s should be able to ethods of power generation aportance of instrumentation in power generation beasuring and supervising systems involved in the boiler and turbine units is controls employed in boiler erature and pressure controls in turbine power plant instrumentation	L: 4 T: 0 P: 0 C: 4 ermal power plant
Course Outcome After the completio 1 2 3 4 5 6 Course	Year / semester I/II Sem n of this course, the student Survey various may Understand the im Explore various may processes such as Understand variou Explore the tempe Study the nuclear Year / semester	Subject Name (Subject Code) Instrumentation & Control (A953210) s should be able to ethods of power generation aportance of instrumentation in power generation heasuring and supervising systems involved in the boiler and turbine units is controls employed in boiler brature and pressure controls in turbine power plant instrumentation Subject Name (Subject Code) bratellicent Control (A052211)	L: 4 T: 0 P: 0 C: 4 ermal power plant L: 3 T: 0 P: 0 C:
Course Outcome After the completio 1 2 3 4 5 6 Course Outcome	Year / semester I/II Sem n of this course, the student Survey various me Understand the im Explore various m processes such as Understand variou Explore the tempe Study the nuclear Year / semester I/II Sem	Subject Name (Subject Code) Instrumentation & Control (A953210) s should be able to ethods of power generation portance of instrumentation in power generation leasuring and supervising systems involved in the boiler and turbine units is controls employed in boiler erature and pressure controls in turbine power plant instrumentation Subject Name (Subject Code) Intelligent Control (A953211)	L: 3 T: 0 P: 0 C: 4 L: 3 T: 0 P: 0 C: 3
Course Outcome After the completio 1 2 3 4 5 6 Course Outcome After the completio	Year / semester I/II Sem n of this course, the student Survey various me Understand the im Explore various m processes such as Understand variou Explore the tempe Study the nuclear Year / semester I/II Sem n of this course, the student	Subject Name (Subject Code) Instrumentation & Control (A953210) s should be able to ethods of power generation aportance of instrumentation in power generation beasuring and supervising systems involved in the boiler and turbine units is controls employed in boiler erature and pressure controls in turbine power plant instrumentation Subject Name (Subject Code) Intelligent Control (A953211) s should be able to	L: 3 T: 0 P: 0 C: 4 L: 3 T: 0 P: 0 C: 3
Course Outcome After the completio 1 2 3 3 4 5 6 Course Outcome After the completio 1	Year / semester I/II Sem n of this course, the student Survey various may Understand the im Explore various may processes such as Understand variou Explore the tempe Study the nuclear Year / semester I/II Sem n of this course, the student Learn the architec	Subject Name (Subject Code) Instrumentation & Control (A953210) s should be able to ethods of power generation aportance of instrumentation in power generation beasuring and supervising systems involved in the boiler and turbine units as controls employed in boiler erature and pressure controls in turbine power plant instrumentation Subject Name (Subject Code) Intelligent Control (A953211) s should be able to ture of Intelligent control	L: 3 T: 0 P: 0 C: 4 L: 3 T: 0 P: 0 C: 3
Course Outcome After the completio 1 2 3 4 5 6 Course Outcome After the completio 1 2	Year / semester I/II Sem n of this course, the student Survey various me Understand the im Explore various m processes such as Understand variou Explore the tempe Study the nuclear Year / semester I/II Sem n of this course, the student Learn the architec Learn the basic art	Subject Name (Subject Code) Instrumentation & Control (A953210) s should be able to ethods of power generation aportance of instrumentation in power generation beasuring and supervising systems involved in the boiler and turbine units as controls employed in boiler erature and pressure controls in turbine power plant instrumentation Subject Name (Subject Code) Intelligent Control (A953211) s should be able to ture of Intelligent control tificial neural network and its mathematical mode	L: 3 T: 0 P: 0 C: 4 L: 3 T: 0 P: 0 C: 3
Course OutcomeAfter the completio123456Course OutcomeAfter the completio123	Year / semester I/II Sem n of this course, the student Survey various may Understand the im Explore various m processes such as Understand variou Explore the tempe Study the nuclear Year / semester I/II Sem n of this course, the student Learn the architec Learn the basic art Train and test the	Subject Name (Subject Code) Instrumentation & Control (A953210) s should be able to ethods of power generation aportance of instrumentation in power generation beasuring and supervising systems involved in the boiler and turbine units is controls employed in boiler erature and pressure controls in turbine power plant instrumentation Subject Name (Subject Code) Intelligent Control (A953211) s should be able to ture of Intelligent control tificial neural network and its mathematical mode neural network with various configurations.	L: 3 T: 0 P: 0 C: 4 L: 3 T: 0 P: 0 C: 3
Course Outcome After the completio 1 2 3 4 5 6 Course Outcome After the completio 1 2 3 4	Year / semester I/II Sem n of this course, the student Survey various may Understand the im Explore various may processes such as Understand variou Explore the tempe Study the nuclear Year / semester I/II Sem n of this course, the student Learn the architec Learn the basic art Train and test the Apply genetic algorithms and test the Apply genetic algorithms and test the	Subject Name (Subject Code) Instrumentation & Control (A953210) s should be able to ethods of power generation aportance of instrumentation in power generation heasuring and supervising systems involved in the boiler and turbine units as controls employed in boiler erature and pressure controls in turbine power plant instrumentation Subject Name (Subject Code) Intelligent Control (A953211) s should be able to ture of Intelligent control tificial neural network and its mathematical mode neural network with various configurations. porthm for various optimisation problems	L: 3 T: 0 P: 0 C: 4 L: 3 T: 0 P: 0 C: 3
Course OutcomeAfter the completio123456Course OutcomeAfter the completio12345	Year / semester I/II Sem n of this course, the student Survey various me Understand the im Explore various m processes such as Understand variou Explore the tempe Study the nuclear Year / semester I/II Sem n of this course, the student Learn the architec Learn the basic art Train and test the Apply genetic alge	Subject Name (Subject Code) Instrumentation & Control (A953210) s should be able to ethods of power generation aportance of instrumentation in power generation beasuring and supervising systems involved in the boiler and turbine units as controls employed in boiler erature and pressure controls in turbine power plant instrumentation Subject Name (Subject Code) Intelligent Control (A953211) s should be able to ture of Intelligent control tificial neural network and its mathematical mode neural network with various configurations. Drithm for various optimisation problems I different system with fuzzy logic controller	L: 4 T: 0 P: 0 C: 4 ermal power plant L: 3 T: 0 P: 0 C: 3
Course OutcomeAfter the completio123456Course OutcomeAfter the completio123456	Year / semester I/II Sem n of this course, the student Survey various may Understand the im Explore various may processes such as Understand variou Explore the tempe Study the nuclear Year / semester I/II Sem n of this course, the student Learn the architec Learn the basic art Train and test the Apply genetic algo Model and control	Subject Name (Subject Code) Instrumentation & Control (A953210) s should be able to ethods of power generation aportance of instrumentation in power generation be able to the additional supervising systems involved in the boiler and turbine units is controls employed in boiler rature and pressure controls in turbine power plant instrumentation Subject Name (Subject Code) Intelligent Control (A953211) s should be able to ture of Intelligent control tificial neural network and its mathematical mode neural network with various configurations. pointhm for various optimisation problems I different system with fuzzy logic controller ower system problem and apply GA, NN and Fuz	L: 4 T: 0 P: 0 C: 4 ermal power plant L: 3 T: 0 P: 0 C: 3 el
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Course Outcome After the completio 1 2 3 4 4 5 6 Course Outcome After the completio 1 2 3 4 5 6 Course 0 4 5 6 Course 6 Course 0 4 5 6 After the completio	Year / semester I/II Sem n of this course, the student Survey various may Understand the im Explore various may processes such as Understand variou Explore the tempe Study the nuclear Year / semester I/II Sem n of this course, the student Learn the basic art Train and test the Apply genetic algo Model and control Explore various po Year / semester I/II Sem n of this course, the student	Subject Name (Subject Code) Instrumentation & Control (A953210) s should be able to ethods of power generation aportance of instrumentation in power generation the assuring and supervising systems involved in the boiler and turbine units is controls employed in boiler trature and pressure controls in turbine power plant instrumentation Subject Name (Subject Code) Intelligent Control (A953211) s should be able to ture of Intelligent control tificial neural network and its mathematical mode neural network with various configurations. Drithm for various optimisation problems I different system with fuzzy logic controller Subject Name (Subject Code) Subject Name (Subject Code) Smart grid technologies (A953212) s should be able to	L: 4 T: 0 P: 0 C: 4 ermal power plant L: 3 T: 0 P: 0 C: 3 el zzy controller L: 3 T: 0 P: 0 C: 3



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	conditions.			
2	Understand the a	advantages of DC distribution and developing	ng technologies in	
	distribution		0 0	
3	Discriminate the	trade-off between economics and reliability of	f an electric power	
	system.			
4	Differentiate vari	ous investment options (e.g. generation capacity)	cities transmission	
•	renewable demand-side resources etc) in electricity markets			
5	Analyze the development of smart and intelligent domestic systems			
6	Recite the structure	re of an electricity market in either regulated or	deregulated market	
0	conditions	te of an electricity market in entier regulated of	deregulated market	
Course	Voor / comostor	Subject Name (Subject Code)		
Outcome	I ear / semester	AI Techniques in Electrical Engineering		
Outcome	I/II Sem	(A953213)	3	
After the completio	n of this course, the student	s should be able to		
1	Gain knowledge o	n soft computing techniques such as artificial ne	ural networks,	
1	Fuzzy logic and ge	enetic Algorithms.		
2	Learn the concept	s of feed forward neural networks and feedback	neural networks.	
2	Get the concept of	fuzziness involved in various systems and comp	orehensive	
5	knowledge of fuzz	zy logic control and to design the fuzzy rules		
4	Acquire complete	knowledge on genetic algorithm including thre	e genetic operators	
5	Explore various po	ower system problems which can utilize these Al	I techniques	
6	Assess system stal	bility using AI techniques		
Course	Year / semester	Subject Name (Subject Code)	L: 3 T: 0 P: 0 C:	
Outcome	I/II Sem	Reliability Engineering (A953214)	3	
After the completion of this course, the students should be able to				
1	To identify the generation system model and recursive relation for capacitive model			
	building			
2	calculate the equiv	valent transitional rates, cumulative probability a	nd cumulative	
	frequency			
3	Evaluate cumulat	ive probability and cumulative frequency of non	-identical	
	generating units an	nd merging generation and load		
4	Distinguish variou	s approaches to evaluate operating reserves and	bulk power	
	generation reserve			
5	Analyse the reliab	ility indices on radial and weakly meshed distrib	oution networks	
6	Study the effect of	f short circuits in substation and switching station	ns.	
Course	Year / semester	Subject Name (Subject Code)	L: 3 T: 0 P: 0 C:	
Outcome	I/II Sem	Energy Auditing, Conservation &	3	
		Management (A953215)		
After the completio	Know the necessit	x of conservation of energy		
2	Generalize the ma	thods of energy management		
3	Illustrate the facto	rs to increase the efficiency of electrical equipme	ent	
<u> </u>	Detect the benefit	s of carrying out energy audits		
5	A nalyze the now	r factor and to design a good illumination system	1	
5	Analyze the power factor and to design a good illumination system			
Course	Voor / somester	Subject Name (Subject Code)	I.OT.OD.4C.	
Course	i ear / semester	Power Systems Lab-II (A953216)		



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Outcome	I/II Sem		2		
After the completion	After the completion of this course, the students should be able to				
1	Study the characteristics of microprocessor based relays				
2	Able to protect the feeder from faulty condition using over current relay operation				
3	Study the Characteristics of IDMT Electromagnetic Over Current Relay				
4	Study the phase failure and phase reversal protection with static negative sequence				
4	relay				
Course	Year / semester	Subject Name (Subject Code)	L: 0 T: 0 P: 4		
Outcome	I/II Sem	Seminar-II (A953217)	C:2		



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### <u>Course Outcomes for M.Tech – VLSI SYSTEM DESIGN (R20)</u> <u>for the academic year 2020-2021 onwards</u>

Course	Semester	CMOS Digital Integrated Circuit	L: 3 T: 0 P: 0 C: 3		
Outcome	I Sem	Design (M20VL01)			
After the co	mpletion of this c	ourse, the students should be able to			
1	Define the basic of	Define the basic of CMOS technology.			
2	Relate, compare, in implementation, and	nterpret and make the use of the best CMOS alysis & design of Combinational& Sequential 1	S design techniques for MOS logic circuits.		
3	Know & tell differ memory modules s taking different stru	Know & tell different types of memories and compare performance evaluation of each memory modules so they can be able to think & justify how to improve performance by taking different structures			
4	Define, simplify & circuits.	z justify which dynamic logic circuit can be	used investigate CMOS		
5	Recommend variou constraints requirem	s CMOS techniques and also other device technent.	nologies based on circuit		
Course	Semester	<b>CMOS Analog Integrated Circuit</b>	L: 3 T: 0 P: 0 C: 3		
Outcome	I Sem	Design (M20VL02)			
After the co	mpletion of this c	ourse, the students should be able to			
1	Define the parameters of MOS Devices & can predict the performance or behavior of Analog VLSI circuit.				
2	Analyze & char specifications.	racterize analog devices and systems to	achieve performance		
3	Understand the dif	ferent topologies involved in the CMOS amplif	ier design.		
4	Understand design amplifier design.	issues & measurement techniques related to CM	MOS operational		
5	Design & analyze Specifications.	the comparator for different topologies to achie	ve performance		
Course	Semester	(Program Elective-I) Digital System	L: 3 T: 0 P: 0 C: 3		
Outcome	I Sem	Design using HDL (M20VL03)			
After the co	mpletion of this c	ourse, the students should be able to			
1	Understand the basynthesis and FPG	sic concepts of Verilog HDL, digital system of A implementation issues.	lesign flow, timing, and		
2	Understand the bas	sics of MOS transistors required for MOS based	circuit & layout design.		
3	Know the different select suitable desi	Know the different design technique for CMOS Combinational Circuit Design & able to select suitable design technique for given performance specification.			
4	Get an idea of the to select suitable d	different design technique for CMOS Sequenti esign technique for given performance specifica	al Circuit Design & able		
5	Understand the de VLSI based system	sign flow from simulation to synthesizable / i n design.	mplementation level for		
Course	Semester	(Program Elective-I) VLSI Signal	L: 3 T: 0 P: 0 C: 3		
Outcome	I Sem	Processing (M20VL04)			


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After the co	mpletion of this c	ourse, the students should be able to			
1	Understand the overview of DSP concepts				
2	Apply the concepts of iteration bound, pipelining& parallel processing for FIR filter design				
3	Understand techni structures.	ques of fast convolution & algorithmic strengt	th reduction in the filter		
4	Perform pipelining speed & low powe	g & parallel processing on recursive filter str r.	uctures to achieve high		
5	Use of proper tech	niques for parallel processing design for scaling	and round off noise.		
Course	Semester	(Program Elective-I) VLSI Technology	L: 3 T: 0 P: 0 C: 3		
Outcome	I Sem	(M20VL05)			
After the co	mpletion of this c	ourse, the students should be able to			
1	Understand the dif	ferent MOS technologies.			
2	Appreciate the var	ious techniques involved in the VLSI fabrication	n process.		
3	Analyze the conce design in VLSI.	epts, transistor structures, interconnects & desig	gn rules related to layout		
4	Understand the dif	ferent doping & diffusion mechanism.			
5	Understand the m packaging of VLS	uances of design rules, scaling, transistors, I devices.	resistors, capacitors &		
12	Semester	(Program Elective-II) Algorithms For	L: 3 T: 0 P: 0 C: 3		
	I Sem	VLSI Design Automation (M20VL06)			
After the co	mpletion of this c	ourse, the students should be able to			
1	Understand the pre	eliminaries required for VLSI system design.			
2	Apply the general	purpose methods for combinational optimization	n.		
3	Understand the concept of Layout Compaction, Placement, Floor planning& Routing,				
	modeling & simul	ation involved in VLSI system design.			
4	Analyze the conce	pt related to synthesis & verification in VLSI sy	vstem design.		
5	Analyze the design	n cycle of for FPGA and partitioning-routing con	ncepts related to it.		
6	Explain the algori modules.	thms for partitioning, floor planning, placemer	nt and routing the MCM		
Course	Semester	(Program Elective-II) Embedded	L: 3 T: 0 P: 0 C: 3		
Outcome	I Sem	System Design (M20VL07)			
After the co	mpletion of this c	ourse, the students should be able to			
1	Know the Basic C	oncept of Embedded Systems.			
2	Understand the con	re of typical embedded system.			
3	Know the embedd	ed firmware.			
4	Get introduced to 1	RTOS based Embedded system design & related	l mechanism.		
5	Appreciate the m embedded.	nethods for task communication for the dev	velopment of a typical		
Course	Semester	(Program Elective-II) Device Modeling	L: 3 T: 0 P: 0 C: 3		
Outcome	I Sem	(M20VL08)			
After the co	mpletion of this c	ourse, the students should be able to			



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1	Understand the physics of and design elements of silicon MOSFETs.				
2	Understand & study the physics behind the operation of integrated diodes & integrated				
	bipolar transistor.				
3	Analyze& study the physics behind the operation of integrated diodes & integrated bipolar				
	transistor.	<u> </u>			
4	Understand the VI	SI fabrication techniques.			
5	To design circuits	using Hetero Junction Devices with physical in	sight of their functional.		
Course	Semester	English For Research Paper Writing	L: 2 T: 0 P: 0 C: 0		
Outcome	I Sem	( <b>M20AC01</b> )			
After the co	mpletion of this c	ourse, the students should be able to			
1	Develop the conte	ent, structure and format of writing a research	paper.		
2	Understand the re	search methodology in research paper writing	5.		
3	Analyze and pract	tice writing a Research Paper.			
4	Know how to & v	where to get published the research work.			
Course	Semester	Research Methodology (M20MC01)	L: 2 T: 0 P: 0 C: 2		
	TO				
Outcome	1 Sem				
After the co	mpletion of this c	ourse, the students should be able to			
1	Appreciate the flow	w of research methodologies in the research wo	rk.		
2	Design Important	Concepts Related to Research Design.			
3	Learn better report	writing skills and Patenting.			
4	To write a Researc	h Proposal and Research Report & Research G	rant Proposal.		
5	Understand the im	portance of Intellectual Property.			
Course	Semester	HDL Programming Laboratory	L: 0 T: 0 P: 4 C: 2		
Outcome	I Sem	(M20VL09)			
1	Apply the knowled	lge in Simulation and Synthesis of Digital Circu	uits.		
2	DesignVariousCor	nbinationalandSequentialcircuitsusingVerilogH	DL&HDL.		
3	Explain the System	n Modeling with Tasks and Functions.			
4	Design of digital c	ircuits using FPGA/CPLD boards.			
Course	Semester	Digital IC Design Laboratory	L: 0 T: 0 P: 4 C: 2		
Outcome	I Sem	(M20VL10)			
After the co	mpletion of this c	ourse, the students should be able to			
1	Design CMOS inv	erters, logic circuits and transmission gates to s	pecifications.		
2	Design latches and	l flip-flops as the basic circuit for Random-Acce	ess- Memory (RAM) and		
	Read-Only-Memor	ry (ROM) cells.			
3	Understand the De	sign of Bi-CMOS Inverter, logic circuits.			
4	Design post Layou	t of Different logic circuits.	1		
Course	Semester	CMOS Mixed Signal Circuit Design	L: 3 T: 0 P: 0 C: 3		
Outcome	II Sem	(M20VL11)			
After the co	mpletion of this c	ourse, the students should be able to			
1	Build mixed signal	l circuits like DAC, ADC, PLL etc &Gain know le &To acquire knowledge on design differen	vledge on filter design in tarchitectures in mixed		



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	signal mode.		
2	Analyze digital te	st and linear test engineers to the mixed signa	al world by teaching the
	basics of analog a	and mixed signal test methods. Sampling The	ory, Frequency Domain
	Testing, and Digita	al Signal Processing.	
3	Apply these funda	mental concepts to different test methods and c	lata validation for mixed
	signal parameters	s together with debugging, noise reduction	n and device interface
	techniques.		
4	Deal with the the	eory and design skills of CMOS op-amps, vo	oltage reference circuits,
	switched capacitor	circuits, sample-and-hold circuits, and A/D &	b D/A converters used in
	modern communic	cation systems and consumer electronic products	s.
5	Design of core mi	xed-signal IC blocks: comparators and data co	onverters & System level
	design flow: top-d	own and bottom-up design methodologies.	
Course	Semester	VLSI Design Verification and Testing	L: 3 T: 0 P: 0 C: 3
0	TLC	(M20VL12)	
Outcome	II Sem	()	
After the co	mpletion of this c	ourse, the students should be able to	•
1	Understand the ne	ed for testing in VI SI & different testing issu	165
2	Gain the knowle	adde of testing and verification in VI SL	design process ATPG
2	concepts for com	binational and sequential circuits	uesigni process, Arro
2	Apply knowledge	of tostability massures for tasting of digital s	vatama
3	Apply knowledge	of test nottern concretion & Decign for to	ystellis.
4	Apply knowledge	e of test-pattern generation & Design for te	stability techniques for
<i>Г</i>	testing of digital s		
5	Understanding bo	bundary scan standards & testing techniques to	or CMOS IC s.
Course	Semester	(Program Elective-III) Low Power	L: 3 T: 0 P: 0 C: 3
Outcome	II Sem	VLSI Design (M20VL13)	
Outcome After the co	II Sem mpletion of this c	VLSI Design (M20VL13) ourse, the students should be able to	
Outcome After the con	II Sem mpletion of this c Understand the m	VLSI Design (M20VL13) ourse, the students should be able to eed for low power circuit design & sources	of power dissipation in
Outcome After the con	II Sem mpletion of this c Understand the n VLSI system.	VLSI Design (M20VL13) ourse, the students should be able to eed for low power circuit design & sources	of power dissipation in
Outcome After the con 1	II Sem mpletion of this c Understand the n VLSI system.	VLSI Design (M20VL13) ourse, the students should be able to eed for low power circuit design & sources	of power dissipation in
Outcome After the con 1 2 3	II Sem mpletion of this c Understand the n VLSI system. Appreciate the co	VLSI Design (M20VL13) ourse, the students should be able to eed for low power circuit design & sources ncept of Low-Power Design Approaches in V	of power dissipation in /LSI system design.
Outcome After the con 1 2 3 4	II Sem mpletion of this c Understand the m VLSI system. Appreciate the co Design low voltag	VLSI Design (M20VL13) ourse, the students should be able to eed for low power circuit design & sources ncept of Low-Power Design Approaches in V ge low power adders for given performance sp war of multipliar using different strategies	of power dissipation in /LSI system design. pecification.
Outcome After the con 1 2 3 4	II Sem mpletion of this c Understand the n VLSI system. Appreciate the co Design low voltag Optimize the por	VLSI Design (M20VL13) ourse, the students should be able to eed for low power circuit design & sources ncept of Low-Power Design Approaches in V ge low power adders for given performance sp wer of multiplier using different strategies	of power dissipation in /LSI system design. pecification. at different levels of
Outcome After the con 1 2 3 4	II Sem mpletion of this c Understand the n VLSI system. Appreciate the co Design low voltag Optimize the po design.	VLSI Design (M20VL13) ourse, the students should be able to eed for low power circuit design & sources ncept of Low-Power Design Approaches in V ge low power adders for given performance sp wer of multiplier using different strategies r CMOS memories using various strategies at	of power dissipation in /LSI system design. pecification. at different levels of
Outcome After the con 1 2 3 4 5 Course	II Sem mpletion of this c Understand the m VLSI system. Appreciate the co Design low voltag Optimize the po design. Design low-powe	VLSI Design (M20VL13) ourse, the students should be able to eed for low power circuit design & sources ncept of Low-Power Design Approaches in V ge low power adders for given performance sp wer of multiplier using different strategies r CMOS memories using various strategies at	of power dissipation in <u>'LSI system design.</u> pecification. at different levels of different design level.
Outcome After the condition 1 2 3 4 5 Course	II Sem mpletion of this c Understand the n VLSI system. Appreciate the co Design low voltag Optimize the po design. Design low-powe Semester	VLSI Design (M20VL13) ourse, the students should be able to eed for low power circuit design & sources ncept of Low-Power Design Approaches in V ge low power adders for given performance sp wer of multiplier using different strategies r CMOS memories using various strategies at (Program Elective-III) Optimization	of power dissipation in <u>'LSI system design.</u> pecification. at different levels of different design level. L: 3 T: 0 P: 0 C: 3
Outcome After the con 1 2 3 4 5 Course Outcome	II Sem mpletion of this c Understand the n VLSI system. Appreciate the co Design low voltag Optimize the po design. Design low-powe Semester II Sem	VLSI Design (M20VL13) ourse, the students should be able to eed for low power circuit design & sources ncept of Low-Power Design Approaches in V ge low power adders for given performance sp wer of multiplier using different strategies r CMOS memories using various strategies at (Program Elective-III) Optimization Technique In VLSI Design	of power dissipation in /LSI system design. Decification. at different levels of different design level. L: 3 T: 0 P: 0 C: 3
Outcome After the con 1 2 3 4 5 Course Outcome	II Sem mpletion of this c Understand the never vLSI system. Appreciate the co Design low voltag Optimize the por design. Design low-powe Semester II Sem	VLSI Design (M20VL13) ourse, the students should be able to eed for low power circuit design & sources ncept of Low-Power Design Approaches in V ge low power adders for given performance sp wer of multiplier using different strategies r CMOS memories using various strategies at (Program Elective-III) Optimization Technique In VLSI Design (M20VL14)	of power dissipation in <u>'LSI system design.</u> pecification. at different levels of different design level. L: 3 T: 0 P: 0 C: 3
Outcome After the condition 1 2 3 4 5 Course Outcome After the condition	II Sem mpletion of this c Understand the n VLSI system. Appreciate the co Design low voltag Optimize the po design. Design low-powe Semester II Sem mpletion of this c	VLSI Design (M20VL13) ourse, the students should be able to eed for low power circuit design & sources ncept of Low-Power Design Approaches in V ge low power adders for given performance sp wer of multiplier using different strategies r CMOS memories using various strategies at (Program Elective-III) Optimization Technique In VLSI Design (M20VL14) ourse, the students should be able to	of power dissipation in (LSI system design. Decification. at different levels of different design level. L: 3 T: 0 P: 0 C: 3
Outcome After the con 1 2 3 4 5 Course Outcome After the con	II Sem mpletion of this c Understand the n VLSI system. Appreciate the co Design low voltag Optimize the po design. Design low-powe Semester II Sem mpletion of this c Gain knowledge	VLSI Design (M20VL13) ourse, the students should be able to eed for low power circuit design & sources ncept of Low-Power Design Approaches in V ge low power adders for given performance sp wer of multiplier using different strategies r CMOS memories using various strategies at (Program Elective-III) Optimization Technique In VLSI Design (M20VL14) ourse, the students should be able to on Optimization techniques involved in VL	of power dissipation in (LSI system design. pecification. at different levels of different design level. L: 3 T: 0 P: 0 C: 3 SI circuits.
Outcome After the con 1 2 3 4 5 Course Outcome After the con 1 2	II Sem mpletion of this c Understand the m VLSI system. Appreciate the co Design low voltaş Optimize the po design. Design low-powe Semester II Sem mpletion of this c Gain knowledge	VLSI Design (M20VL13) ourse, the students should be able to eed for low power circuit design & sources ncept of Low-Power Design Approaches in V ge low power adders for given performance sp wer of multiplier using different strategies r CMOS memories using various strategies at (Program Elective-III) Optimization Technique In VLSI Design (M20VL14) ourse, the students should be able to on Optimization to engineering stude	of power dissipation in 'LSI system design. pecification. at different levels of different design level. L: 3 T: 0 P: 0 C: 3 SI circuits. ents_including_linear
Outcome         After the condition         1         2         3         4         5         Course         Outcome         After the condition         1         2	II Sem mpletion of this c Understand the m VLSI system. Appreciate the co Design low voltag Optimize the por design. Design low-powe Semester II Sem mpletion of this c Gain knowledge Analyze method programming no	VLSI Design (M20VL13) ourse, the students should be able to eed for low power circuit design & sources ncept of Low-Power Design Approaches in V ge low power adders for given performance sp wer of multiplier using different strategies r CMOS memories using various strategies at (Program Elective-III) Optimization Technique In VLSI Design (M20VL14) ourse, the students should be able to on Optimization to engineering stude pulinear programming, and heuristic method	of power dissipation in (LSI system design. Decification. at different levels of different design level. L: 3 T: 0 P: 0 C: 3 SI circuits. ents, including linear
Outcome After the con 1 2 3 4 5 Course Outcome After the con 1 2 3	II Sem mpletion of this c Understand the m VLSI system. Appreciate the co Design low voltag Optimize the por design. Design low-powe Semester II Sem mpletion of this c Gain knowledge Analyze method programming, no	VLSI Design (M20VL13) ourse, the students should be able to eed for low power circuit design & sources ncept of Low-Power Design Approaches in V ge low power adders for given performance sp wer of multiplier using different strategies r CMOS memories using various strategies at (Program Elective-III) Optimization Technique In VLSI Design (M20VL14) ourse, the students should be able to on Optimization techniques involved in VL ds of optimization to engineering stude onlinear programming, and heuristic method	of power dissipation in (LSI system design. Decification. at different levels of different design level. L: 3 T: 0 P: 0 C: 3 SI circuits. ents, including linear ls. on problem setup for
Outcome After the condition 1 2 3 4 4 5 Course Outcome After the condition 1 2 3	II Sem mpletion of this c Understand the n VLSI system. Appreciate the co Design low voltag Optimize the po design. Design low-powe Semester II Sem mpletion of this c Gain knowledge Analyze method programming, no	VLSI Design (M20VL13) ourse, the students should be able to eed for low power circuit design & sources ncept of Low-Power Design Approaches in V ge low power adders for given performance sp wer of multiplier using different strategies r CMOS memories using various strategies at (Program Elective-III) Optimization Technique In VLSI Design (M20VL14) ourse, the students should be able to on Optimization techniques involved in VL ds of optimization to engineering stude onlinear programming, and heuristic method nce between theory, numerical computation	of power dissipation in 'LSI system design. pecification. at different levels of different design level. L: 3 T: 0 P: 0 C: 3 SI circuits. ents, including linear ls. on, problem setup for pering systems
Outcome After the con 1 2 3 4 5 Course Outcome After the con 1 2 3 4 4 4 4 5 5 Course Outcome 3 4 4 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	II Sem mpletion of this c Understand the m VLSI system. Appreciate the co Design low voltag Optimize the por design. Design low-powe Semester II Sem mpletion of this c Gain knowledge Analyze method programming, no Understand bala solution by optim	VLSI Design (M20VL13) ourse, the students should be able to eed for low power circuit design & sources ncept of Low-Power Design Approaches in V ge low power adders for given performance sp wer of multiplier using different strategies r CMOS memories using various strategies at (Program Elective-III) Optimization Technique In VLSI Design (M20VL14) ourse, the students should be able to on Optimization to engineering stude onlinear programming, and heuristic method nce between theory, numerical computation ization software, and applications to engine	of power dissipation in 'LSI system design. Decification. at different levels of different design level. L: 3 T: 0 P: 0 C: 3 SI circuits. ents, including linear ls. on, problem setup for cering systems. finitum for
Outcome         After the condition         1         2         3         4         5         Course         Outcome         After the condition         1         2         3         4         5         Course         After the condition         1         2         3         4	II Sem mpletion of this c Understand the n VLSI system. Appreciate the co Design low voltag Optimize the po design. Design low-powe Semester II Sem mpletion of this c Gain knowledge Analyze method programming, no Understand bala solution by optim	VLSI Design (M20VL13) ourse, the students should be able to eed for low power circuit design & sources ncept of Low-Power Design Approaches in V ge low power adders for given performance sp wer of multiplier using different strategies r CMOS memories using various strategies at (Program Elective-III) Optimization Technique In VLSI Design (M20VL14) ourse, the students should be able to on Optimization techniques involved in VL ds of optimization to engineering stude onlinear programming, and heuristic method nce between theory, numerical computation ization software, and applications to engine optimization algorithm; necessary and su	of power dissipation in (LSI system design. Decification. at different levels of different design level. L: 3 T: 0 P: 0 C: 3 SI circuits. ents, including linear ls. on, problem setup for pering systems. fficient conditions for
Outcome         After the condition         1         2         3         4         5         Course         Outcome         1         2         3         4         5         Course         Outcome         1         2         3         4	II Sem mpletion of this c Understand the n VLSI system. Appreciate the co Design low voltag Optimize the por design. Design low-powe Semester II Sem mpletion of this c Gain knowledge Analyze method programming, no Understand bala solution by optim Studies General optimality.	VLSI Design (M20VL13) ourse, the students should be able to eed for low power circuit design & sources ncept of Low-Power Design Approaches in V ge low power adders for given performance sp wer of multiplier using different strategies r CMOS memories using various strategies at (Program Elective-III) Optimization Technique In VLSI Design (M20VL14) ourse, the students should be able to on Optimization techniques involved in VL ds of optimization to engineering stude onlinear programming, and heuristic method nce between theory, numerical computation ization software, and applications to engine optimization algorithm; necessary and su	of power dissipation in LSI system design. Decification. at different levels of different design level. L: 3 T: 0 P: 0 C: 3 SI circuits. ents, including linear ls. on, problem setup for pering systems. fficient conditions for Decification in the system in the system is the system in the system is



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Course	Semester	(Program Elective-III) High Speed	L: 3 T: 0 P: 0 C: 3
Outcome	II Sem	VLSI Design (M20VL15)	
After the co	mpletion of this	course, the students should be able to	
1	Appreciate the specification	different clocking logic styles in VLSI	system design as per
2	Understand circu	it design margining & design variability for V	LSI circuit.
3	Appreciate the c	oncept of latching strategies to optimize the sp	eed of the system.
4	Gainknowledgeo	ninterfacetechniquesinvolvedinhighspeedVLS	Icircuits.
5	Analyze the clo	cking styles in design to optimize the timing	issues to support high
Course	Semester	(Program Elective-IV) ASIC Design	L: 3 T: 0 P: 0 C: 3
Outcome	II Sem	(M20VL16)	
After the co	mpletion of this	course, the students should be able to	
1	To learn the fund	amentals of ASIC and its design methods.	
2	To gain knowled	ge on programmable architectures for ASICs & p	hysical design of ASIC.
3	Understand the particular for design.	rogrammable ASIC Logic Cells & selection of s	uitable ASIC Logic cells
4	Analyze ASIC flo	oor planning, placement and routing in VLSI Des	ign.
5	Appreciate conce	pt of optimization algorithms in the design of an	efficient layout.
Course	Semester	(Program Elective-IV) System On	L: 3 T: 0 P: 0 C: 3
Outcome	II Sem	Chip Architecture (M20VL17)	
After the co	mpletion of this	course, the students should be able to	
1	Apply the knowle	edge of SoC architecture & organization.	
2	Analyze various	processor microarchitecture & design trade-off for	or SoC.
3	Understand the m	emory design for SoC.	
4	Evaluate intercon	nect structure for different topologies.	
	Design Soc based	(Dragram Elective IV) Semiconductor	I. 2 T. 0 D. 0 C. 2
Course	Semester	(Program Elective-TV) Semiconductor	L: 5 1:0 P:0 C: 5
Outcome	II Sem	Memory Design & Testing (M20VL18)	
After the co	mpletion of this	course, the students should be able to	
1	Know the design their design.	of MOS memories and the various precautionar	y methods to be used in
2	Learn overview of analysis and design	f memory chip design, DRAM circuits, voltage gn issues of ultra-low voltage memory circuits.	generators, performance
3	Acquire knowled DRAM Design.	ge about High-Performance Subsystem Memorie	es & Analyze RAM and
4	Demonstrate Ad Technologies & (	vanced Memory Technologies and High-der Gains knowledge on various testing methods of s	nsity Memory Packing emiconductor memories
5	Get an overview	on reliability of semiconductors and their testing	
Course	Semester	Stress Management (M20AC02)	L: 2 T: 0 P: 0 C: 0
Outcome	II Sem		



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After the co	mpletion of this c	course, the students should be able to	
1	Enhance of Physic	al strength and flexibility.	
2	Learn to relax and	focus.	
3	Relieve physical a	nd mental tension.	
4	Improve work per	formance/ efficiency.	
Course	Semester	Analog IC Design Laboratory	L: 0 T: 0 P: 4 C: 2
Outcome	II Sem	(M20VL19)	
After the co	mpletion of this c	course, the students should be able to	
1	Design Various Cl	haracteristics of MOS Logic.	
2	Design Various A	mplifier circuits using CMOS Logic.	
3	Design Various cit	rcuits using Different Logic Styles.	
4	Design Layout of	Different logic circuits.	
Course	Semester	Mixed Signal VLSI Laboratory	L: 0 T: 0 P: 4 C: 2
Outcome	II Sem	(M20VL20)	
After the co	mpletion of this c	course, the students should be able to	I
1	Design Various A	mplifier circuits using CMOS Logic.	
2	Design Various Co	omplex circuits using Different Logic Styles.	
3	Design Layout of	Different logic circuits.	
4	Digital/analog circ	cuits are to be designed and implemented using	CAD tools.
Course	Semester	Mini Project (M20VL21)	L: 0 T: 0 P: 4 C: 2
Outcome	II Sem		
After the cor	npletion of this co	urse, the students should be able to	
1	Use fundamental project.	knowledge and skills in engineering and ap	pply it effectively on a
2	UnderstandthePro	ductDevelopmentProcessincludingbudgetingthro	oughMiniProject.
3	Plan for various ac	ctivities of the Miniproject.	<u> </u>
4	Inculcate electroni	c hardware and software implementation skills.	
5	Manage any dispu	tes and conflicts within and outside individually	<i>.</i>
6	Prepare a technica	l report based on the Miniproject.	
7	Deliver technical s	seminar based on the Mini Project work carried	out.
Course	Semester		L: 3 T: 0 P: 0 C: 3
Outcome	III Sem	(Program Elective-V)	
		High Speed VLSI Architectures for	
		DSP Applications (M20VL22)	
After the cor	npletion of this co	urse, the students should be able to	
1	Apply the concept design.	ot of unfolding for optimization of critical part	ths in the VLSI system
r		analyte strength antimized more for simon an edition	cation in VI SI Design
	Design Multiplier architectures in optimized way for given specification in VLSI Design. Apply the redundant arithmetic for optimization of adder & multiplier block generally		
3	Apply the redund used in digital sign	and an arithmetic for optimization of adder & m and processing application.	ultiplier block generally



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	performance of	High Speed VLSI Design.	
5	Understand the	low power VLSI DSP system.	
Course	Semester	(Program Elective-V)	L: 3 T: 0 P: 0 C: 3
Outcome	III Sem	Nano materials & Nano Technology	
		(M20VL23)	
After the cor	mpletion of this	course, the students should be able to	
1	Understand the	limitations of the MOSFETs & potential of nanoe	lectronics.
2	Show a deeper devices and qua received scaling	understanding of the relation between novel behavior of the matter at the nano scale as wisdom.	navior of nanoelectronics well as the breakdown of
3	Understand stru	ctures of carbon nanotubes & its applications.	
4	Appreciate the ounderstand the p	concept of molecular electronics in nanoscale fabr principle of spintronic.	ication technologies
Course	Semester	(Program Elective-V)	L: 3 T: 0 P: 0 C: 3
Outcome	III Sem	RF Circuit Design (M20VL24)	
After the con	mpletion of this	course, the students should be able to	
1	Understand the	performance parameters / specifications of the RF	Circuits.
2	Design & analy	ze the filter design.	
3	Understand & amplifier design	evaluate the performance of various specifica n, Mixer, Oscillators & Power Amplifiers.	tions of high frequency
4	Understand the parameters of in	source of nonlinearity, noise, process technolo dividual blocks of receiver & on receiver perform	bgy & its impact on the nance.
5	Demonstrate the building blocks.	e tools & techniques to evaluate the performance	specifications of the RF
Course	Semester	(Open Elective) Soft Computing	L: 3 T: 0 P: 0 C: 3
Outcome	III Sem	Techniques (M20CS12)	
After the con	mpletion of this	course, the students should be able to	
1	Understand the	Fundamentals of Neural Networks & Feed Forwa	rd Networks.
2	Design & analy	ze the Associative Memories & ART Neural Netw	vorks.
3	Understand & e	valuate the performance of Fuzzy Logic & System	ns.
4	Understand the	Genetic Algorithms.	
5	Design & analy	ze Hybrid Systems.	
6	Understand Sof	t Computing concepts, technologies, and applicati	ons.
7	application.	e underlying principle of soft computing wit	h its usage in various
Course	Semester	(Open Elective) Graph Theory &	L: 3 T: 0 P: 0 C: 3
Outcome	III Sem	<b>Optimization Techniques (M20MA02)</b>	
1	Understand the	various types of graph Algorithms and graph theo	ry properties.
2	Analyze the NP	– complete problems.	
3	Distinguish the	features of the various tree and matching algorithm	ns.
4	Appreciate the a	applications of digraphs and graph flow.	
5	Understand the	linear programming principles and its conversion.	
6	Design and employ appropriate method for solving computing problems.		



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Course	Semester	(Open Elective) Waste Management	L: 3 T: 0 P: 0 C: 3	
Outcome	III Sem	(M20SE27)		
1	Understand how waste management practices protect environmental health and safety.			
2	Apply physical an	d chemical analysis on municipal solid wastes.		
3	Enhance the route	for solid waste collection and transport system		
4	Develop a method	to use energy from solid wastes.		
5	Explain different r	nethods of disposal of hazardous solid waste.		
Course	Semester	Dissertation Phase-I (M20VL25)	L: 0 T: 0 P: 20 C:10	
Outcome	III Sem			
After the con	npletion of this co	urse, the students should be able to		
1	In Master's Project Phase-I, the students should select a recent topic from a reputed International Journal, preferably IEEE, ACM, Springer in the field that has direct or indirect relation to the area of specialization.			
2	After conducting a detailed literature survey, they should compare and analyze research work done and review recent developments in the area and prepare an initial design of the work to be carried out as Master's Project			
3	It is mandatory that the students should refer National and International Journals and conference proceedings while selecting a topic for their Project.			
4	Emphasis should l proposed work alc	be given for introduction to the topic, literature ng with some preliminary work carried out on	survey, and scope of the the Project topic.	
5	Students should s above and highlight	ubmit a copy of Phase-I Project report covering the features of work to be carried out in P	ng the content discussed hase-II of the Project.	
Course	Semester	Dissertation Phase-II (M20VL26)	L: 0 T: 0 P: 32 C:16	
Outcome	IV Sem			
After the con	npletion of this co	urse, the students should be able to		
1	Use specialized kr	owledge and skills in engineering and apply it	effectively on a project.	
2	Apply knowledge	of the 'real world' situations that a professional	l engineer can encounter.	
3	Apply critical and creative thinking in the design of VLSI System Design projects.			
4	Demonstrate a sou	nd technical knowledge of selected project top	ic.	
5	Demonstrate the sl	kills and attitude of a professional engineer.		
6	Summarize an app to current project.	propriate list of literature review, analyze previ	ous work and relate them	
7	Deliver technical s	eminar based on the Project work carried out.		
8	Publish the condu	cted research work in a National / Internation	al Conference or Journal	
	preterably IEEE, A	ACM, Springer and Scopus indexed/SCI indexe	ed/ESCI.	



Viswambhara Educational Society

# VAAGDEVI COLLEGE OF ENGINEERING

#### **UGC-Autonomous**

**Department of Mechanical Engineering** 

#### COURSE OUTCOMES FOR B.TECH - ME R20 FOR THE YEAR 2020-2021

Course Outcome	Semester I Sem	Subject Name (Subject Code) LINEAR ALGEBRA AND CALCULUS (B20MA01)	No. of Hours L:3 T:1 P:0	Credits: 4	
After the c	ompletion of this c	ourse, the students should be able to			
1	Understand the pre- equations using m	rinciples of matrix to calculate the characterist nultiple methods.	ics of system of li	inearalgebraic	
2	Determine eigen v	values, eigen vectors and orthogonally diagonal	ize symmetric ma	trices.	
3	Analyze the natur	e of sequence and series to identify the converg	ence.		
4	Evaluate limits of integrals using Be	single-variable functions graphically and comp ta and Gamma functions.	outationally. Analy	yzeimproper	
5	Calculate Partial without constrain	derivatives, Jacobian and extrema of functions ts.	s of multiple varia	ables with or	
Course Outcome	Semester I Sem	Subject Name (Subject Code) Engineering Chemistry (B20CH01)	No. of Hours L:3 T:1 P:0	Credits:4	
After the c	ompletion of this c	ourse, the students should be able to			
1	The knowledge of	batteries and corrosion			
2	The knowledge of	water treatment and			
3	The knowledge of	polymers and their us			
4	The required knowledge of principles and concepts of phase rule and surface chemistry				
5	The knowledge of	combustion and fuel	1		
Course	Semester	Subject Name (Subject Code)	No. of Hours		
Outcome	I Sem	ENGINEERING GRAPHICS (B20ME02)	L:1 T:0 P:4	Credits: 3	
After the c	ompletion of this c	ourse, the students should be able to			
1	Analyze the Proje	ctions of points.			
2	Understand the Pr	ojections of solids.			
3	Estimate the use of Drawings, dimensioning, scales and conic sections.				
4	Modify the Applications of this knowledge in Computer Graphics.				
5	Compare the conversion of isometric views to Orthographic views.				
Course	Semester	Subject Name (Subject Code)	No. of Hours	Credits: 4	
Outcome	I Sem	PROGRAMMING FOR PROBLEM SOLVING(B20CS01)	L:4 T:0 P:0		
After the c	ompletion of this c	course, the students should be able to			
1	Understanding h solution.	now problems are posed and how they ca	in be analyzed f	for obtaining	
2	Understanding th	ne fundamentals of C programming.			

3	Learning of sequencing, branching, looping and decision making statements to solve				
4	Implementing different operations on arrays and creating and using of functions to				
	solve problems				
5	Ability to design Methodology	and implement different types of file struc	tures using stand	ard	
Course	Semester	Subject Name (Subject Code)	No. of Hours	Credits: 1.5	
Outcome	I Sem	ENGLISH LANGUAGE AND	L:0 T:0 P:3		
		INTERACTIVE			
		COMMUNICATION SKILLS			
After the c	omplotion of this a	LAB (B20EN02)			
After the C	Linderstand their	strongths and weaknesses in English usage i	in formal and inf	ormal	
1	contexts.	strengths and weaknesses in English usage		ormai	
2	Use English comf	Fortably in their individualized contexts			
3	Use IT skills and	research skills in English speaking and writ	ing		
4	Improve their voc	abulary, pronunciation, receptive and expre	essive skills in Er	nglish	
Course	Semester	Subject Name (Subject Code)	No. of Hours	Credits:1.	
Outcome	I Sem	PROGRAMMING FOR PROBLEM	I .0 T.0 P.3	5	
Outcome		SOLVING LAB (B20CS02)	L.0 1.01.5		
After the o	completion of this c	course, the students should be able to			
1	To provide the nece	essary knowledge on general engineering proble	em solving		
	methodologies.				
2	To provide necessa the basic concepts i	ry foundations for step by step computer progra n C programming language.	m development ar	nd to present	
3	To prepare the stud	ents to write modular and readable C Programs			
4	The Course introdu	ces the essential concepts like abstract data type	es, user defined da	ta types.	
5	To analyze the perf with the help of file	ormance of algorithms and how to use such knows.	owledge for later p	rocessing	
6	Aims to train the st	udents to write working programs to solve prob	lems		
Course	Semester	Subject Name (Subject Code)	No. of Hours	Credits: 1	
Outcome	I Sem	ENGINEERING WORKSHOP	L:0 T:0 P:2		
		(B20ME04)			
After the o	completion of this c	course, the students should be able to			
1	Know the fundame	ntal knowledge of various trades and their usag	e in real time Appl	ications	
2	Compare Foundry,	Welding, Black smithy, Fitting, Machine shop	and house wiring	1	
3	Understand the bas	is for analyzing power tools in construction and	wood working, el	ectrical	
4	Apply basic concer	ots of computer hardware for assembly and disast	ssembly		
Course	Semester	Subject Name (Subject Code)	No of Hours	Credits: 4	
Outcome	Semester	DIFFERENTIAL EQUATIONS AND	L .2 T.1 D.0		
Outcome	II Sem	VECTOR CALCULUS (B20MA02)	L:3 1:1 P:0		
After the o	completion of this c	course, the students should be able to			
1	Apply the fundame	ntal concepts of ordinary differential equations	to real time proble	ms.	
2	Find the complete s	solution of a non homogeneous differential equ	ations and applyi	ng itsconcepts	
	in solving physical problems of Engineering.				

3	Evaluate the multiple integrals in various coordinate systems.			
4	Apply the concepts of gradient, divergence and curl to formulate Engineering problems.			
5	Analyze line, surface	ce and volume integrals using fundamental theo	rems.	
Course	Semester	Subject Name (Subject Code)	No. of Hours	Credits:4
Outcome	II Sem	ENGINEERING PHYSICS (B20PH03)	L:3 1:1 P:0	
After com	pletion of this cou	rse, the student shall be/shall		
1	Learns about transf	ormation concepts in Mechancis		
2	Gains knowledge of improvements	on basics of rigid body dynamics and lasers whi	ch leads to new in	novations and
3	The knowledge of p	physics relevant to engineering is critical for con	nverting ideas into	technology
4	An understanding existing devices and	of Physics also helps engineers understand the v d techniques, which eventually leads to newinne	working and limita ovations and impre	ations of ovements
Course	Semester	Subject Name (Subject Code)	No. of Hours	Credits:4
Outcome	II Sem	ENGINEERING MECHANICS (B20CE01)	L:3 T:1 P:0	
After com	pletion of this cou	rse, the student shall be/shall		
1	Understand the bas	ic concepts of engineering mechanics and force	Systems	
2	Calculate the fricti	on developed in motion of bodies	-	
3	Calculate centroid a	and moment of inertia for simple and composite	bodies	
4	Apply the concepts	s of mechanics for solving problems of particles	and rigid body m	otion
5	Understand the Wo	rk Energy method for plane motion		
Course	Semester	Subject Name (Subject Code)	No. of Hours	Credits:2
Outcome	II Sem	INTRODUCTION TO PYTHON	L.I I.UI.2	
A ft an a a m	lation of this cour	PROGRAMMING (B20C300)		
Alter com	Defining the fourte	rse, the student shall be/shall		
2	Defining the fundal	Dethan coninting elements such as variables of		tu a 1 atura ataana a
3	Expressing the Cor	e Python scripting leements such as variables an	id conditional con	troi structures
	Apply Dython function	tions to facilitate and rouge		
5	Apply Python funct	tions to facilitate code feuse		
5	Extending now to v	Solution and packages	No of Hours	Credits:3
Course	Semester	Subject Name (Subject Code)	L:3 T:0 P:0	Cicuits.5
Outcome	II Sem	BASIC ELECTRICAL AND		
		(B20FF01)		
After com	nlation of this cour	rse, the student shall be/shall		
After com	A nalyza sinovit the	rse, the student shan be/shan	llal naturaliza Ela	atmiaal marrian
2	Gain knowledge on	orenis, mesh and nodal analysis, series and para	and Admittance	and Dower
2	Factor	AC circuits, reactance, impedance, susceptance		
3	Learn the working	principle of DC motors, Transformers		
4	Study the character	istics of PN Junction diode and zener diode		
5	Learn the basic of A	Amplifiers and Rectifiers		
Course	Semester	Subject Name (Subject Code)	No. of Hours	Credits:1.5
Outcome	II Sem	BASIC ELECTRICAL AND	L:0 1:0 F:3	

		ELECTRONICS ENGINEERING LAB			
		(B20EE02)			
After com	pletion of this cou	rse, the student shall be/shall			
1	Learn to simplify c	omplex electric and electronic circuits by apply	ing the KVL and I	KCL laws	
2	Identify the optimal	l loading onmachines			
3	Analyze the perform	nance of DC machines			
4	Identify and analyz	e the performance and operation of semi conduc	cting devices		
Course	Semester	Subject Name (Subject Code)	No. of Hours	Credits:1.5	
Outcome	II Sem	PHYSICS LAB (B20PH05)	L:0 T:0 P:3		
After com	pletion of this cou	rse. the student shall be/shall			
1	The laboratory cou	rse helps the student how to operate different eq	uipments related t	o engineering.	
-	It also allows the st	udent to develop experimental skills to design n	iew experiments in	n engineering	
2	The course enlighte	ens the student about modern equipment like So	lar cell, Optical fil	bres etc	
3	With the exposure t	to these experiments, the student can compare the	he theory and corr	elate with	
	experiment		-		
Course	Semester	Subject Name (Subject Code)	No. of Hours	Credits:3	
Outcome		METALLURGY AND MATERIAL	L:3 T:0 P:0		
Outcome	III Sem	SCIENCE (B20ME07)			
After com	pletion of this cou	rse, the student shall be/shall			
1	Understand the bon	d formation, grains and grain boundaries in cry	stalline metals		
2	Apply lever rule in calculating the liquid and solid percentage				
3	Apply heat treatment processes to different materials to get required properties				
4	Gain knowledge about advanced materials like composites & ceramics.				
5	Analyze the application	tions and the properties of cast irons and steels			
Course	Semester	Subject Name (Subject Code)	No. of Hours	Credits:3	
Outcome		MECHANICS OF SOLIDS (B20ME08)	L:3 T:0 P:0		
	III Sem				
After com	pletion of this cou	rse, the student shall be/shall			
1	Understand the con	cepts of stress and strain in mechanics of solids	and material prop	erties.	
2	Apply the fundame	ntal concepts of shear force & bending moment	for Cantilever bea	am, simply	
	supported beam &	overnanging beam with point loads, UDL, grad	ually varying load	s & their	
3	Apply the fundame	ntal concepts of Bending stresses & shear stress	ses for different B	ame	
4	Apply the different	methods to determine the deflection & slope of	different beams li	ike double	
	integration method.	Area moment method & Macaulay's method	different beams in		
5	Apply the Lame's e	equation to determine stresses in Thick cylinder	s and to understan	d the concept	
	of torsion and its ap	plication to circular shafts.			
Course	Semester	Subject Name (Subject Code)	No. of Hours	Credits:3	
Outcome	0	THERMODYNAMICS (B20ME09)	L:3 T:0 P:0		
outcome	III Sem				
After com	pletion of this cou	rse, the student shall be/shall			
1	Understand the bas	ic thermodynamic principles and their application	ons		
2	Apply the laws of t	hermodynamics for different thermal systems.			
3	Use mollier diagrar	n and steam tables to find the properties of pure	substances		
4	Calculate different	properties of perfect gases, real gases and mixtu	ires of perfect		

5	Analyse different power cycles				
Course	Semester	Subject Name (Subject Code)	No. of Hours	Credits:3	
Outcome	III Sem	MACHINE DRAWING (B20ME10)	L:2 T:0 P:2		
After com	pletion of this cou	rse, the student shall be/shall			
1	Understand various	s conventions used in machine drawing			
2	Identify the design	and use of various machine components			
3	Interpret and make	conclusions about a given drawing			
4	Prepare the assemb	ly and part drawings for various machine comp	onents		
5	Apply the First ang	le projection to machine parts			
Course	Semester	Subject Name (Subject Code)	No. of Hours L:2 T:0 P:0	Credits:2	
Outcome	III Sem	INTELLIGENCE (B20CS26)			
After com	pletion of this cou	rse, the student shall be/shall			
1	Possess the ability	to formulate an efficient problem space for a pro-	oblem expressed in	n English	
2	Possess the ability	to select a search algorithm for a problem			
3	Possess the charact	erization time and space complexities			
4	Possess the skill for	r representing knowledge using the appropriate	technique		
5	Possess the ability	to apply AI techniques to solve problems of Gan	me Playing		
6	Possess the Expert	Systems, Machine Learning and Natural Langu	age Processing		
Course	Semester	Subject Name (Subject Code)	No. of Hours	Credits:2	
Outcome	III Sem	ENGLISH FOR EFFECTIVE COMMUNICATION (B20EN01)	L:2 1:0 P:0		
After com	nletion of this cou	rse_the student shall he/shall	•		
1	Skim and scan the	digital text to summarize it for future reference			
2	Read the text tomal	ke notes according to their n			
3	Use English langua	by the effectively in spoken and written forms			
4	Communicate conf	idently in various contexts and different culture	s		
.5	Acquire basic profi	ciency in English including reading and listenin	g comprehension	writing and	
	speaking skills		lg comprenention,	witting and	
Course	Semester	Subject Name (Subject Code)	No. of Hours	Credits:0	
Outcome	III Com	HUMAN VALUES & PROFESSIONAL	L:2 T:0 P:0		
	III Sem	ETHICS (B20MC04)			
After com	pletion of this cou	rse, the student shall be/shall			
1	It ensures students	sustained happiness through identifying the esse	entials of human v	alues and	
2	It facilitates a corre	ct understanding between profession and happing	ness		
3	It helps students up	derstand practically the importance of trust mu	itually satisfying h	uman	
5	behavior and enrich	ning interaction with nature	ituany satisfying n	umun	
4	Ability to develop	appropriate technologies and management patte	rns to create harm	ony in	
	professional and pe	ersonal life		-	
Course	Semester	Subject Name (Subject Code)	No. of Hours	Credits:1.5	
Outcome	III Sem	MECHANICS OF SOLIDS LAB	L:0 T:0 P:3		
		(B20ME12)			
After com	pletion of this cou	rse, the student shall be/shall			
1	Perform material te	esting and analyze various material properties			
2	Understand the Imp	pact load effect on various Beams			

3	Perform Hardness t	est to find hardness of components		
4	Find the stiffness of	f springs with all parameters		
5	Perform Deflection	test on Beams and can analyze the Beams		
Course	Semester	Subject Name (Subject Code)	No. of Hours	Credits:1.5
Outcome	III Sem	METALLURGY LAB (B20ME13)	L:0 T:0 P:3	
After com	pletion of this cou	rse, the student shall be/shall		
1	Understand the Bas	ic Crystal structures of various materials		
2	Identify Grain and	grain boundary, crystal structure of different ma	terials	
3	Study the microstru	icture of various materials		
4	Analyze Metallurgi	cal properties of various Metals and Non-Metal	S	
5	Analyze Metallurgi	cal properties of ferrous and Nonferrous alloys		
Course	Semester	Subject Name (Subject Code)	No. of Hours	Credits:4
Orterse		PROBABILITY AND STATISTICS	L:3 T:1 P:0	
Outcome	IV Sem	(B20MA07)		
After com	pletion of this cou	rse, the student shall be/shall		
1	Use probability the	ory and deals with modelling uncertainty in ord	er to evaluate the	probability of
	real world events		,	
2	Develop discrete pr	obability distributions and its applications, and	use these techniqu	ies to generate
	data from Binomial	and Poisson Distributions	-	-
3	Use the techniques	of continuous probability distributions to generate	ate data from Nor	mal
	Distributions			
4	Perform correlation	and regression analysis, in order to estimate the	e nature and the st	rength of the
	linear relationship b	between two variables		
5	Construct confidence	ce interval to estimates population parameters to	o test the hypothes	is
Course	Semester	Subject Name (Subject Code)	No. of Hours	Credits:3
Outcome	IV Sem	FLUID MECHANICS AND HYDRAULIC	L:3 T:0 P:0	
Outcome	IV bein	MACHINERY (B20ME14)		
After com	pletion of this cou	rse, the student shall be/shall		
1	Apply mathematics	and basic sciences and translates this knowledge	ge to understand fl	uid flow
	principles and their	applications		
2	Understand fundam	ental knowledge of the mechanics of fluid at re	st and in motion	
3	Observe fluid phen	omena by developing and using the principles, l	aws	
4	Analyze fluid intera	actions with natural and constructed systems		
5	Associate fundament	ntal knowledge & performance of different turb	ines & pumps	
Course	Semester	Subject Name (Subject Code)	No. of Hours	Credits:3
Outcome	IV Sem	THERMAL ENGINEERING-I (B20ME15)	L:3 1:0 P:0	
After com	pletion of this cou	rse, the student shall be/shall		
1	Understand the con	cept and working of two and four strokes I.C. e	ngines	
2	Analyse the normal	and abnormal condition for the combustion of	SI and CI engines	also the
	parameters which e	ffect the combustion characteristics	C C	
3	Able to calculate th	e performance of the engine with different para	meters	
4	Get knowledge abo	ut compressors and their classifications		
5	Differentiate variou	s compressor on the basis of their working and	requirement and c	can use
	suitable one.			

Course	Semester	Subject Name (Subject Code)	No. of Hours	Credits:3
Outcome	IV Sem	KINEMATICS OF MACHINES	L:3 T:0 P:0	
		(B20ME16)		
After com	pletion of this cou	rse, the student shall be/shall		
1	Identify the basic n	hechanisms involved in machines		
2	Develop familiarity	with application of kinematics theories to real-	world machines	
3	Identify the basic re	elations between distance, time, velocity and acc	celeration	
4	Understand analytic	cal linkage analysis, determine cam profiles		
3	Analyze gear trains	and gear profiles, speed regulation methods	No of House	Creaditar 2
Course	Semester	Subject Name (Subject Code)	No. 01 Hours	Creatts:3
Outcome	IV Sem	PRODUCTION TECHNOLOGY (B20ME17)	L.3 1.01.0	
After com	nletion of this cour	rse, the student shall be/shall		
1	Apply the knowled	ge of casting welding joints and forces and now	ver requirements i	n metal
1	forming processes	ge of easting, wereing joints and forces and pow	ver requirements in	i metai
2	Relate the melting.	solidification, pattern allowances, gating and ris	ser design of mold	cavity.
	aspects of casting.		U	<b>,</b>
3	Understand basic c	alculations of forces and power requirements in	the metal forming	operations
4	Differentiate the ap	plication of welding using the arc welding, gas	welding, resistanc	e welding,
	soldering and brazi	ng.		
5	Survey the defects	occurring in forging operation		
Course	Semester	Subject Name (Subject Code)	No. of Hours	Credits:1.5
Outcome	IV Sem	FLUID MECHANICS AND HYDRAULIC	L:0 T:0 P:3	
		MACHINERY LAB (B20ME19)		
After com	pletion of this cou	rse, the student shall be/shall		
1	Apply knowledge o	of fluid mechanics and hydraulic machines and t	ranslates this know	wledge for
	understanding fluid	flow principles and their application to experin	nents.	
2	Practical exposure	by using components vacuum gauge, pressure g	auge, manometers	, pipes,
2	motors, pumps & ti	arbines.		
3	Use comparison of	theoretical values with the real parameters	ma with parameter	ma ayah aa
4	discharge, head of	water, speed of brake drum.	mps with paramete	ers such as
Course	Semester	Subject Name (Subject Code)	No. of Hours	Credits:1.5
Outcome	IV Sem	PRODUCTION TECHNOLOGY LAB (B20ME20)	L:0 T:0 P:3	
After com	pletion of this cou	rse, the student shall be/shall		
1	Understand basic k	nowledge and concepts of various experiments		
2	Perform joining of	materials (similar/dissimilar) using welding		
3	Analyze the concep	ots of extrusion and design of die		
4	Operate injection m	olding and blow molding machines		
Course	Semester	Subject Name (Subject Code)	No. of Hours	Credits:1
Outcome	IV Sem	FUELS & LUBRICANTS LAB (B20ME21)	L:0 1:0 P:2	
After com	pletion of this cou	rse, the student shall be/shall		
1	Analyze the flash p	oint & fire point of liquid fuels		
2	Observe the carbon	percentage for liquid fuels		
3	Illustrate the viscos	ity of Liquid lubricants		

4	Apply different methods to determine the calorific value of fuels
5	Compare the depth of penetration for different lubricants



Viswambhara Educational Society

VAAGDEVI COLLEGE OF ENGINEERING

**UGC-Autonomous** 

**Department of Mechanical Engineering** 

# COURSE OUTCOMES FOR M.TECH – THERMAL ENGINEERING R20 FOR THE YEAR 2020-2021

Course Outcome	Semester I Sem	Subject Name (Subject Code) ADVANCED THERMODYNAMICS (M20TE01)	No. of Hours L:3 T:0 P:0	Credits: 3
After the c	completion of this c	ourse, the students should be able to		
1	Emphasize the re	levance of Evaluation of thermodynamic pro	perties of workin	g substance
2	Know the applica	ations of Energy properties of real gases, Var	our pressure, Cla	usius
3	Apply Psychometr cooling towers	ic mixture properties and psychometric chart	t, Air conditioning	g processes,
4	Analyse Combusti levels of tables. Er	on Reactions, Enthalpy of formation. Entrop nergy of formation, Heat reaction	y of formation, R	eference
5	Select a problem in law analysts of cyc	n Review binary vapour cycle, co generation cles and Refrigeration cycles	and combined cy	cles, Second
Course Outcome	Semester I Sem	Subject Name (Subject Code) ADVANCED FLUID MECHANICS (M20TE02)	No. of Hours L:3 T:0 P:0	Credits: 3
After the c	completion of this c	ourse, the students should be able to		
1	Relate Application	ons Of In Viscid Flow Of Incompressible Flu	ids	
2	Apply Basic Law	rs Of Fluid Flow		
3	Understanding T	he Viscous Flow		
4	Contrast Boundar	ry Layer Concepts		
5	Tabulate Fundam	ental Concept Of Turbulence	1	
Course Outcome	Semester I Sem	Subject Name (Subject Code) ADVANCED REFRIGERATION AND AIR CONDITIONING (M20TE03)	No. of Hours L:3 T:0 P:0	Credits: 3
After the c	completion of this c	ourse, the students should be able to		
1	Deal with Compo	onents of Vapor Compression System		
2	Develop the stud	y skills on Production of Low Temperature.		
3	Develop the stud diagrams – limita	y skills on Steam Jet refrigeration system, Re- tions and applications.	presentation on T	-s and h-s
4	Enable students of conditioning ,The	on Construction of Psychometric chart, Requirer ermodynamics of human body	irements of Comf	fort Air –
5	Equip students w year round air – co	ith Parameters influencing the Effective Tem anditioning systems	perature. Summe	er, winter and
Course Outcome	Semester I Sem	Subject Name (Subject Code) TURBO MACHINES (M20TE04)	No. of Hours L:3 T:0 P:0	Credits: 3
After the c	completion of this c	ourse, the students should be able to		

1	Understand the F	undamentals of turbo machines and their app	olications	
2	Applicability of s	team nozzle and steam turbine in power plar	nt and the relation	of their flow
	on performance of	of plant.		
3	To equip students	s with the fundamental of thermodynamics co	oncepts for gas dy	namics.
4	Get Knowledge a	bout type and working principle of centrifug	al compressors.	
5	Deal with Fundar	nental concept of Axial flow compressors an	d different type o	of cascade
5	systems			
G	a i	Subject Name (Subject Code)		
Course	Semester	ENERGY MANAGEMENT	No. of Hours	Credits: 3
Outcome	I Sem	(M20TE05)	L:3 T:0 P:0	
After the c	ompletion of this c	ourse, the students should be able to		
1	Understand The I	Need Of Energy Management And Its Princip	ples.	
2	Analyze The Rec	uirement Of Energy Audit And Its Concepts		
3	Applythe Concer	ts Of Economic Analysis And Its Scope.	-	
4	Select Methods (	of Evaluation Of Projects		
5	Survey Fundame	ntal Concept Energy Audit		
	Survey I undame	intal Concept Energy Rudit		
Course	Semester	Subject Name (Subject Code)	No. of Hours	Creditar 2
Outcome	I Sem	GAS TURBINES (M20TE06)	L:3 T:0 P:0	Creuits: 5
After the c	ompletion of this c	ourse, the students should be able to		
1	Explain the Appl	ications and classifications of gas turbines		
2	Applicability of c	lifferent processes for improving the perform	nance of the plant	
3	Analysis of Ideal	and Real cycle gas turbines and concept of i	mproving the effi	ciency.
4	Get Knowledge a	bout fundamental equations and laws of rota	ting machines	
5	Learn the basic a	nd advanced concepts and working principle	s of different type	e of
5	compressors			
C	<b>G</b> (	Subject Name (Subject Code)	NT CIT	
Course	Semester	NON CONVENTIONAL ENERGY	No. of Hours	Credits: 3
Outcome	I Sem	SOURCES (M20TE07)	L:3 1:0 P:0	
After the c	ompletion of this c	ourse, the students should be able to		
	Know About Sol	ar Energy Applications: Solar Water Heating	Space Heating	Active And
1	Passive Heating I	Energy	,. ~pare meaning,	
2	Group Structure	Of Earth, Geothermal Regions, Hot Springs.	Hot Rocks	
3	Illustrate A Probl	em In Thermionic & Thermoelectric Genera	tion, MHD Gener	ator.
	Compare Fusion.	Fusion Reaction, P-P Cycle, Carbon Cycle,	Deuterium Cvcle	. Condition
4	For Controlled F	ision. Fuel Cells And Photovoltaic.		,
	Relate Energy So	urces, Plant Productivity, Biomass Wastes, A	Aerobic And Ana	erobic
5	Bioconversion Pr	ocessed		
		Subject Name (Subject Code)		
Course	Semester	FOLIPMENT DESIGN FOR	No. of Hours	Credits: 3
Outcome	I Sem	THERMAL SYSTEMS (M20TE08)	L:3 T:0 P:0	Creation J
A 64 are 41- 1		armon the students should be able to		
Alter the c	ompletion of this c	ourse, the students should be able to		
1	Get details about	heat exchanger and its classifications.		
2	Determine the eff	tect of increasing pipes in performance of he	at exchanger and	get idea
	about double pipe	e heat exchanger.		

3	Understand the w	vorking principle of steam condenser and exp	lore the condensa	tion of
	Get Knowledge a	bout processes like vaporization, evaporation	n and reboiling ar	nd study
4	about the equipm	ients used for these processes	8	j
5	To understand th	e working principle of cooling tower		
C	<b>G</b> (	Subject Name (Subject Code)	NI CIT	
Course	Semester	ADVANCED THERMAL	No. of Hours	Credits: 2
Outcome	1 Sem	ENGINEERING LAB (M20TE09)	L.0 1.01.4	
After the c	ompletion of this c	course, the students should be able to		
1	Understand the A	analysis of air conditioning unit.		
2	Understand the A	analysis of heat pipe.		
3	Know about Perf	ormance analysis of flat plate collector.		
4	Know about Perf	ormance analysis of evacuative tube concent	rator	
Course	Semester	Subject Name (Subject Code)	No. of Hours	
Outcome	I Sem	MODELING AND ANALYSIS LAB-I	L.0 T.0 P.4	Credits: 2
outcome	I Dem	(M20TE10)		
After the c	ompletion of this c	course, the students should be able to		
1	Understand the A	analysis of flow profile on the designed nozz	le.	
2	Understand the D	Designing the diffuser and Analysis of flow particular test of the second	rofile on the desig	gned diffuser.
3	Understand the A	analysis of fluid flow on over curved surface.		
4	Understand the A	analysis of force exerted by the fluid jet on fit	xed flat plate	
Course	Semester	Subject Name (Subject Code)	No. of Hours	
Outcome	I Sem	RESEARCH METHODOLOGY	L:2 T:0 P:0	Credits: 2
outcome		(M20MC01)		
After the c	ompletion of this c	ourse, the students should be able to		
1	Understand abou	t Intellectual Property Right		
2	Compose and wr	ite quality research reports and attain familia	rity with intellect	ual property
Z	rights.			
3	Estimate research	n problem formulation.		
4	Analyze research	related information.		
5	Discuss new and	better products for economic growth and soc	ial benefits.	
Course	Semester	Subject Name (Subject Code)	No. of Hours	
Outcome	I Sem	STRESS MANAGEMENT (M20AC02)	L:2 T:0 P:0	Credits: 0
A fton the e	amm lation of this	arman the students should be able to		
Alter the c	ompletion of this c	Sourse, the students should be able to	.1	
1	Understand The I	Need Of Energy Management And Its Princip	ples.	
2	Analyze The Red	ultement Of Energy Audit And Its Concepts	•	
3	Apply The Collect	bods Of Evoluation Of Projects		
4 5	Compare The En	hous Of Evaluation Of Flojects.	aram Lika Voca	
5	Compare The En	nancing creativity by Sen Development Flo	graffi Like Toga.	
Course	Semester	SUBJECT NAME (Subject Code)	No. of Hours	Curditar 2
Outcome	II Sem	ADVANCED REAT TRAINSPER $(M20TF11)$	L:3 T:0 P:0	Creatts: 3
After the	amplation of this -	anno the students should be able to		
Alter the C		tourse, the students should be able to		
1	Emphasize the G	eneral heat Conduction equation.		

2	Know the Lumpe	ed system analysis		
3	Know about Equ	ations of fluid flow		
4	To understand th	e concept of free convection, boiling and con	densation	
5	Get the knowledg	ge about transfer of heat in the space and at h	igher temperat	
Course Outcome	Semester II Sem	Subject Name (Subject Code) ADVANCED I.C. ENGINES (M20TE12)	No. of Hours L:3 T:0 P:0	Credits: 3
After the c	ompletion of this c	ourse, the students should be able to		
1	Know about Des	ign and operating Parameters		
2	Applicability of	Thermo-chemistry of Fuel-Air mixtures.		
3	Understanding th	e effect of Volumetric Efficiency on the perf	formance of the e	ngines.
4	Get Knowledge of	on Mean velocity and turbulent characteristic	s.	
5	Deal with Abnor	mal combustion Fuel factors, MPFI		
Course Outcome	Semester II Sem	Subject Name (Subject Code) CRYOGENIC ENGINEERING (M20TE13)	No. of Hours L:3 T:0 P:0	Credits: 3
After the c	ompletion of this c	ourse, the students should be able to		
1	To understand th	e main concept of cryogenic systems.		
2	To know the imp	ortance and applications of gas liquefaction		
3	Understand the w	orking of liquefaction systems for various ty	pes of gases	
4	Equip students w	ith the knowledge of gas separation systems	and purification s	systems.
5	To impart knowle	edge on cryogenic refrigeration systems	*	•
Course Outcome	Semester II Sem	Subject Name (Subject Code) JET PROPULSION AND ROCKET ENGINEERING (M20TE14)	No. of Hours L:3 T:0 P:0	Credits: 3
After the c	ompletion of this c	ourse, the students should be able to		
1	To understand th	e concept of turbo jet propulsion system and	performance of f	light.
2	Enable students t	o learn the concept of rocketry and its fundar	nentals.	
3	To impart knowle	edge on the effect of nozzle design on the per	rformance of jet r	propulsion.
4	Get idea about th	e combustion chemistry of fuels used in rock	etry.	1
5	Equip students w	ith the knowledge of advanced rocket engine	28.	
Course Outcome	Semester II Sem	Subject Name (Subject Code) ALTERNATE FUELS (M20TE15)	No. of Hours L:3 T:0 P:0	Credits: 3
After the c	ompletion of this c	ourse, the students should be able to		
1	Know about Ava hydrogen, and an	ilability and properties of alternate fuels, gen nmonia.	eral use of Alcoh	ols, LPG,
2	Deal with Proper	ties as engine fuel, alcohols and gasoline ble	nds.	
3	Deal with to solv	e a problem in performance in SI & CI Engi	nes.	
4	Deal with perform	nance and emission characteristics, bio diese	and its characte	ristics
5	To enable studen specifications, sy	ts on Layout of an electric vehicle, advantage stem components.	e and Limitations	,
Course Outcome	Semester II Sem	<b>Subject Name (Subject Code)</b> ADVANCED COMPUTATIONAL FLUID DYNAMICS (M20TE16)	No. of Hours L:3 T:0 P:0	Credits: 3

After the c	ompletion of this c	ourse, the students should be able to		
1	Understand Finite	e Difference Method, Finite Volume Method	, Finite Element l	Method
2	Consider Solution	n Methods Of Elliptical Equations		
3	Understand Bour	dary Layer Equations For Laminar, Turbuler	nt Flow	
4	Solve Numerical Method.	On Burgers Equations: Explicit And Implici	t Schemes, Runge	e- Kutta
5	Apply Knowledg Methods.	e On Formulations Of Incompressible Visco	us Flows By Fini	te Difference
Course Outcome	Semester II Sem	Subject Name (Subject Code) THERMAL AND NUCLEAR POWER PLANTS (M20TE17)	No. of Hours L:3 T:0 P:0	Credits: 3
After the c	ompletion of this c	course, the students should be able to		
1	Understand the T	ype of Power plants, Direct energy conversion	on system.	
2	Analysis and Unc	lerstand Recent developments in power gene	ration.	
3	Know about Feed	l water heaters.		
4	To impart knowle	edge on Combined cycle power plant and its	importance.	
5	To understand the	e concepts of Nuclear Reactor and its Classif	ication	
Course Outcome	Semester II Sem	Subject Name (Subject Code) THERMAL MEASUREMENTS & PROCESS CONTROLS (M20TE18)	No. of Hours L:3 T:0 P:0	Credits: 3
After the c	ompletion of this c	ourse, the students should be able to		
1	Understand the fi	indamental principles of measuring instrume	nts.	
2	Identify the work	ing principle of all the instruments used to de	etermine the flow	
3	Develop the adva	inced thermometers for different type of oper	ations.	
4	Measure the leve	by direct or indirect methods.		
5	Impart knowledg	e on principles used for process control		
Course Outcome	Semester II Sem	Subject Name (Subject Code) ADVANCED INTERNAL COMBUSTION ENGINES LAB (M20TE19)	No. of Hours L:0 T:0 P:4	Credits: 2
After the c	ompletion of this c	ourse, the students should be able to		
1	Understand the engine.	ffect of change in compression ratio on the po	erformance of die	esel& petrol
2	Analyze the effect	t of change in fuel injection timing on the pe	erformance of dies	sel engine.
3	Understand and a	nalysis Flame propagation analysis of gaseou	us fuels.	
4	Use different type	e of fuels and analyze its effect on the perform	mance of diesel a	nd petrol
Course Outcome	Semester II Sem	Subject Name (Subject Code) MODELING AND ANALYSIS LAB-II (M20TE20)	No. of Hours L:0 T:0 P:4	Credits: 2
After the c	ompletion of this c	ourse, the students should be able to		
1	Aware of Therma	al stress analysis of piston head of diesel engi	ine for real condit	tion.
2	Design of intake	and exhaust valve for diesel engine.		
3	Analyze the therr	nal stress of crank rod of diesel engine for re	al operating cond	itions.
4	Understand effec	t of thermal stress on the intake and outlet va	lve of IC engines	

Course Outcome	Semester II Sem	Subject Name (Subject Code) ENGLISH FOR RESEARCH PAPER WRITING (M20AC01)	No. of Hours L:0 T:0 P:4	Credits: 2
After the c	ompletion of this c	ourse, the students should be able to		
1	To understand the	e nuances of language and vocabulary in write	ting a Research P	aper.
2	To develop the co	ontent, structure and format of writing a research	arch paper.	*
3	To give the pract	ice of writinga Research Paper.		
4	To enable the stu	dents to evolve original research papers with	out subjected to p	olagiarism
Course Outcome	Semester III Sem	Subject Name (Subject Code) ADVANCED MATERIALS FOR THERMAL SYSTEMS (M20TE22)	No. of Hours L:3 T:0 P:0	Credits: 3
After the c	ompletion of this c	ourse, the students should be able to		
1	Understand the fu	indamentals of different type of testing meth	ods.	
2	Analyse Impact I	Behavior Heat Treatment of Steels and Cast I	rons.	
3	Impart knowledg	e on fundamentals of Nuclear Power Plant a	nd Their Material	s
4	survey about mat	erials in Fuel cells and Solar Cells Electro ca	ıtalyst.	
5	Compare the Mat	terials in Thermal Power Generation.	-	
Course Outcome	Semester III Sem	Subject Name (Subject Code) COMPUTER SIMULATION OF SI & CI ENGINES (M20TE23)	No. of Hours L:3 T:0 P:0	Credits: 3
After the c	ompletion of this c	ourse, the students should be able to	•	
1	Impart knowledg	e on importance of computer simulation of I	C engines.	
2	To understand the	e concept of Wiebe's function in SI engine m	nodeling.	
3	Determine the im	portance of Watsons and White house and W	Vav models in CI	engines.
4	Understand the b	asics of gas exchange processes.	2	0
5	Equip students w	ith knowledge of heat transfer to the surroun	ding from the IC	engines
Course Outcome	Semester III Sem	Subject Name (Subject Code) ADVANCED FINITE ELEMENT ANALYSIS (M20TE24)	No. of Hours L:3 T:0 P:0	Credits: 3
After the c	ompletion of this c	ourse, the students should be able to		
1	Understand The I	Basic Concepts, Historical Back Ground, Ap	plications Of FEN	И.
2	Analysis And Un	derstand Virtual Energy Principle	<b>L</b>	
3	Observe 1-D Stru	ictural Problems.		
4	Impart Knowledg	ge On Hermite Shape Functions, Stiffness Ma	atrix, And Load V	vector.
5	Apply Finite eler	nent modeling of Axi-symmetric solids		
Course Outcome	Semester III Sem	Subject Name (Subject Code) ADVANCED OPTIMIZATION TECHNIQUES & APPLICATIONS (M20MA01)	No. of Hours L:3 T:0 P:0	Credits: 3
After the c	ompletion of this c	ourse, the students should be able to		
1	Know about the b	basics of one dimensional Optimization meth	ods.	
2	Choose the ways	to use Direct search method		
3	Calculate dynami	ic programming.		
4	Construct linear	programming		
5	Analyze integer p	programming		

Course Outcome	Semester III Sem	Subject Name (Subject Code) BUSINESS LAW AND ETHICS (M20MB23)	No. of Hours L:3 T:0 P:0	Credits: 3
After the c	ompletion of this c	ourse, the students should be able to		
1	Know the Busine	ss Laws related to incorporating a company		
2	Identify the Impo	rtance of Ethics in Business		
3	Categorize Cyber	Crime and Legal Aspects.		
4	Analyze Busines	s Ethics.		
5	Understand Nego	tiable Instruments Act – 1881		
Course Outcome	Semester III Sem	Subject Name (Subject Code) PROJECT MANAGEMENT (M20MB30)	No. of Hours L:3 T:0 P:0	Credits: 3
After the c	ompletion of this c	ourse, the students should be able to		
1	Importance of Press	oject Management.		
2	Project Planning.	Execution and implementation.		
3	Significance of te	eams in projects.		
4	Project evaluate t	echniques.		
5	Role of Schedulin	ng and Network Analysis in Project Planning		

#### COURSE OUTCOMES FOR B.TECH-CSE R20 FOR THE YEAR 2020-2021

				Cuadita 1
Course	Year/Semester	Subject Name (Subject Code)	No. of Hours	Creans: 4
Outcome	I Sem	LINEAR ALGEBRA AND CALCULUS	L:3 T:1 P:0	
		(B20MA01)		
On successf	ul completion of th	is course, students will be able to:		
1	Understand the prin using multiple met	nciples of matrix to calculate the characteristics hods.	s of system of linea	ar equations
2	Determine Eigen va	alues, Eigenvectors of matrices.		
3	Analyse the nature	of sequence and series to identify the converge	ence.	
4	Evaluate limits of s integrals using Beta	ingle-variable functions graphically and compute and Gamma functions.	utationally. Analys	se improper
5	Calculate Partial de	rivatives, extreme of functions of multiple vari	iables.	
Course	Year /Semester	Subject Name (Subject Code)	No. of Hours L:3 T:0 P:0	Credits:3
Outcome	I Sem	MODERN PHYSICS (B20PH01)		
On success	sful completion of	f this course, students are able to:		
1	Understands the ba	sic concepts and hypothesis of quantum mecha	nics	
2	Describes the chara	cteristics and working of lasers and their use in	various fields.	
3	Analyze and apply	the concepts of wave optics for accurate determined	nination of theinte	erference in
	thin films, Newton	's rings and the diffraction in single slit etc.		
4	Classify the materi	als on the basis of energy band gap, and evaluate	uates the carrierco	oncentration of
	given semiconduct	ors for device applications		
5	Apply the concepts	of the light propagation in optical fibres in opt	icalcommunicatio	n systems
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:3
Outcome	I Som	BASIC ELECTRICAL AND ELECTRONICS	I.3 T.0 P.0	Creation
Outcome	1 Sem	ENGINEERING(B20EE01)	L.5 1.01.0	
After the o	completion of this o	course, the students should be able to		
1	Analyze circuit the	orems, mesh and nodal analysis, series and par	allel networks, Ele	ectricalpower.
2	Gain knowledge on Factor	AC circuits, reactance, Impedance, Susceptance	ce and Admittance	andPower
3	Learn the working	principle of DC motors. Transformers		
4	Study the character	istics of PN Junction diode and zener diode		
5	Learn the basic of A	Amplifiers and Rectifiers.		
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits: 4
Outcome	I Sem	PROGRAMMING FOR PROBLEM	L:4 T:0 P:0	
After the c	completion of this a	course, the students should be able to		
1	Understanding how	y problems are posed and how they can be analy	zed for obtaining	solutions.
2	Learning of sequen	cing, branching, looping and decision making	statements tosolve	scientific and
-	engineering proble	ms.		
3	Implementing diffe	rent operations on arrays and creating and usin	g of functionsto so	olve problems
4	Understanding and	exploring the various methods of memory allo	cations.	
5	Ability to design and implement different types of file structures using standard methodology.			

Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits: 2
Outcome	I Sem	ENGINEERING DRAWING (B20ME01)	L:0 T:0 P:4	
After the o	completion of this c	ourse, the students should be able to		
1	Understand various	commands, modify the applications and object	properties in AU	TOCAD
2	Analyse the Project	ions of Points and solids		
3	Estimate the use of	drawings, dimensioning, scales and conic secti	ons	
4	Compare the Conve	ersion of Isometric views to Orthographic view		
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:
Outcome	I Sem	PHYSICS LAB (B20PH05)	L:0 T:0 P:3	1.5
After the c	completion of this c	ourse, the students should be able to		
1	Estimate the freque	ncy of tuning for and AC supply with the help	of stretched string	s
2	Analyze as well a	s compare the intensity distribution of interfe	erence and diffra	ction patterns
3	Draw the character parameter	istics of electrical and electronic circuits and e	valuate the depen	dent
4	Explore and unders	tand the applications of semiconducting device	s	
5	Evaluates the wave	elength and radius of curvature of Plano con-	vex lens by Newt	ton's rings
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:1.5
Outcome	I Sem	PROGRAMMING FOR PROBLEM	L:0 T:0 P:3	
		SOLVING LAB(B20CS02)		
After the c	completion of this c	ourse, the students should be able to		
1	Understand basic st	ructure of the C Programming, data types, decl	laration and usage	of variables,
	control structures a	nd all related concepts.		
2	Ability to understar	nd any algorithm and Write the C programming	code in executab	le form
3	Implement Progran	is using functions, pointers and arrays, and use	the pre-processors	s to solvereal
1	time problems	matures and implement and shows on files		
4	Adding to use the s	fuctures and implement programs on mes.		
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits: 4
		U V U /		
Outcome	II Sem	DIFFERENTIAL EQUATIONS AND VECTOR CALCULUS(B20MA02)	L:3 T:1 P:0	
Outcome After the c	II Sem	DIFFERENTIAL EQUATIONS AND VECTOR CALCULUS(B20MA02) ourse, the students should be able to	L:3 T:1 P:0	
Outcome After the o	II Sem completion of this of Apply the fundame	DIFFERENTIAL EQUATIONS AND VECTOR CALCULUS(B20MA02) ourse, the students should be able to ntal concepts of ordinary differential equations :	L:3 T:1 P:0	ems
Outcome After the o 1 2	<b>II Sem</b> completion of this of Apply the fundame Find the complete s	DIFFERENTIAL EQUATIONS AND VECTOR CALCULUS(B20MA02) ourse, the students should be able to ntal concepts of ordinary differential equations solution of a non homogeneous differential equ	L:3 T:1 P:0 to real time proble ations and applyir	ems ng its concepts
Outcome After the o 1 2	<b>II Sem</b> completion of this of Apply the fundame Find the complete s inEngineering prob	DIFFERENTIAL EQUATIONS AND VECTOR CALCULUS(B20MA02) ourse, the students should be able to ntal concepts of ordinary differential equations solution of a non homogeneous differential equalems	L:3 T:1 P:0 to real time proble ations and applyir	ems ng its concepts
Outcome After the c 1 2 3	II Sem completion of this of Apply the fundame Find the complete s inEngineering prob Evaluate the multip	DIFFERENTIAL EQUATIONS AND VECTOR CALCULUS(B20MA02) ourse, the students should be able to ntal concepts of ordinary differential equations solution of a non homogeneous differential equ lems le integrals in various coordinate systems.	L:3 T:1 P:0 to real time proble ations and applyin	ems ng its concepts
Outcome After the c 1 2 3 4	II Sem completion of this of Apply the fundame Find the complete s inEngineering prob Evaluate the multip Apply the concepts	DIFFERENTIAL EQUATIONS AND VECTOR CALCULUS(B20MA02) ourse, the students should be able to ntal concepts of ordinary differential equations solution of a non homogeneous differential equ lems le integrals in various coordinate systems. of gradient, divergence and curl to formulate E	L:3 T:1 P:0 to real time proble ations and applyin	ems ng its concepts em
Outcome After the c 1 2 3 4 5	II Sem completion of this of Apply the fundame Find the complete s inEngineering prob Evaluate the multip Apply the concepts Analyse line, surfac	DIFFERENTIAL EQUATIONS AND VECTOR CALCULUS(B20MA02) ourse, the students should be able to ntal concepts of ordinary differential equations solution of a non homogeneous differential equ lems le integrals in various coordinate systems. of gradient, divergence and curl to formulate E ce and volume integrals using fundamental theo	L:3 T:1 P:0 to real time proble ations and applyin Engineering proble rems.	ems ng its concepts em
Outcome After the c 1 2 3 4 5 Course	II Sem completion of this of Apply the fundame Find the complete s inEngineering prob Evaluate the multip Apply the concepts Analyse line, surface Year / semester	DIFFERENTIAL EQUATIONS AND VECTOR CALCULUS(B20MA02) ourse, the students should be able to ntal concepts of ordinary differential equations solution of a non homogeneous differential equ lems le integrals in various coordinate systems. of gradient, divergence and curl to formulate E ce and volume integrals using fundamental theo Subject Name (Subject Code)	L:3 T:1 P:0 to real time proble ations and applyin Engineering proble rems.	ems ng its concepts em <b>Credits: 3</b>
Outcome After the o 1 2 3 4 5 Course Outcome	II Sem completion of this of Apply the fundame Find the complete s inEngineering prob Evaluate the multip Apply the concepts Analyse line, surfac Year / semester II Sem	DIFFERENTIAL EQUATIONS AND VECTOR CALCULUS (B20MA02) ourse, the students should be able to ntal concepts of ordinary differential equations solution of a non homogeneous differential equalems le integrals in various coordinate systems. of gradient, divergence and curl to formulate E ee and volume integrals using fundamental theo Subject Name (Subject Code) MODERN CHEMISTRY	L:3 T:1 P:0 to real time proble ations and applyin Engineering proble rems. No. of Hours L:3 T:0 P:0	ems ng its concepts em Credits: 3
Outcome After the o 1 2 3 4 5 Course Outcome	II Sem completion of this of Apply the fundame Find the complete s inEngineering prob Evaluate the multip Apply the concepts Analyse line, surface Year / semester II Sem	DIFFERENTIAL EQUATIONS AND VECTOR CALCULUS(B20MA02) ourse, the students should be able to ntal concepts of ordinary differential equations solution of a non homogeneous differential equ lems le integrals in various coordinate systems. of gradient, divergence and curl to formulate E ee and volume integrals using fundamental theo Subject Name (Subject Code) MODERN CHEMISTRY (B20CH04)	L:3 T:1 P:0 to real time proble ations and applyin Engineering proble rems. No. of Hours L:3 T:0 P:0	ems ng its concepts em <b>Credits: 3</b>
Outcome After the o  3 4 5 Course Outcome After the o	II Sem completion of this of Apply the fundame Find the complete s inEngineering prob Evaluate the multip Apply the concepts Analyse line, surfac Year / semester II Sem	DIFFERENTIAL EQUATIONS AND VECTOR CALCULUS (B20MA02) ourse, the students should be able to ntal concepts of ordinary differential equations solution of a non homogeneous differential equalems le integrals in various coordinate systems. of gradient, divergence and curl to formulate E ce and volume integrals using fundamental theo Subject Name (Subject Code) MODERN CHEMISTRY (B20CH04) ourse, the students should be able to	L:3 T:1 P:0 to real time proble ations and applyin Engineering proble rems. No. of Hours L:3 T:0 P:0	ems ng its concepts em Credits: 3
Outcome     After the o     1     2     3     4     5     Course     Outcome     After the o     1	II Sem completion of this of Apply the fundame Find the complete s inEngineering prob Evaluate the multip Apply the concepts Analyse line, surface Year / semester II Sem completion of this of The knowledge of e	DIFFERENTIAL EQUATIONS AND VECTOR CALCULUS(B20MA02) ourse, the students should be able to ntal concepts of ordinary differential equations solution of a non homogeneous differential equ lems le integrals in various coordinate systems. of gradient, divergence and curl to formulate E ee and volume integrals using fundamental theo Subject Name (Subject Code) MODERN CHEMISTRY (B20CH04) ourse, the students should be able to electro chemical cells, different batteries	L:3 T:1 P:0 to real time proble ations and applyin Engineering proble rems. No. of Hours L:3 T:0 P:0	ems ng its concepts em Credits: 3
Outcome After the o 1 2 3 4 5 Course Outcome After the o 1 2	II Sem completion of this of Apply the fundame Find the complete s inEngineering prob Evaluate the multip Apply the concepts Analyse line, surface Year / semester II Sem completion of this of The knowledge of p	DIFFERENTIAL EQUATIONS AND VECTOR CALCULUS(B20MA02) ourse, the students should be able to ntal concepts of ordinary differential equations solution of a non homogeneous differential equ lems le integrals in various coordinate systems. of gradient, divergence and curl to formulate E ee and volume integrals using fundamental theo Subject Name (Subject Code) MODERN CHEMISTRY (B20CH04) ourse, the students should be able to electro chemical cells, different batteries principles and concepts in corrosion & it's cont	L:3 T:1 P:0 to real time proble ations and applyin Engineering proble rems. No. of Hours L:3 T:0 P:0	ems ng its concepts em Credits: 3
OutcomeAfter the o12345CourseOutcomeAfter the o123	II Sem completion of this of Apply the fundame Find the complete s inEngineering prob Evaluate the multip Apply the concepts Analyse line, surface Year / semester II Sem completion of this of The knowledge of p The knowledge of p	DIFFERENTIAL EQUATIONS AND VECTOR CALCULUS (B20MA02) ourse, the students should be able to ntal concepts of ordinary differential equations solution of a non homogeneous differential equalems le integrals in various coordinate systems. of gradient, divergence and curl to formulate E ce and volume integrals using fundamental theo Subject Name (Subject Code) MODERN CHEMISTRY (B20CH04) ourse, the students should be able to electro chemical cells, different batteries principles and concepts in corrosion & it's cont Water treatment.	L:3 T:1 P:0 to real time proble ations and applyin Engineering proble rems. No. of Hours L:3 T:0 P:0	ems ng its concepts em Credits: 3
Outcome         After the o         1         2         3         4         5         Course         Outcome         After the o         1         2         3         4         5         Course         Outcome         3         4         3         4         3         4	II Sem completion of this of Apply the fundame Find the complete sinEngineering prob Evaluate the multip Apply the concepts Analyse line, surfact Year / semester II Sem completion of this of The knowledge of p The knowledge of p	DIFFERENTIAL EQUATIONS AND VECTOR CALCULUS(B20MA02) ourse, the students should be able to ntal concepts of ordinary differential equations solution of a non homogeneous differential equ lems le integrals in various coordinate systems. of gradient, divergence and curl to formulate E ee and volume integrals using fundamental theo Subject Name (Subject Code) MODERN CHEMISTRY (B20CH04) ourse, the students should be able to electro chemical cells, different batteries orinciples and concepts in corrosion & it's cont Water treatment. Amino acids, Proteins and Nucleic acids	L:3 T:1 P:0 to real time proble ations and applyin Engineering proble rems. No. of Hours L:3 T:0 P:0	ems ng its concepts em Credits: 3

Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits: 4
Outcome	II Sem	DATA STRUCTURES AND ALGORITHMS(B20CS04)	L:4 T:0 P:0	
After the o	completion of this c	course, the students should be able to		
1	Define the basic tec	chniques of algorithm analysis		
2	Examine the linear	and non linear data structures.		
3	Develop Priority Q	ueues and Balanced Trees		
4	Understand Hashing Techniques and Graph applications			
5	Apply suitable algo	rithms for sorting Technique		
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:4
Outcome	II Sem	PYTHON PROGRAMMING(B20CS03)	L:4 T:0 P:0	
After the c	completion of this c	course, the students should be able to		1
1	Defining the funda	mentals of writing Python scripts.		
2	Europeanin a tha Car	- Dethon conjusting a lamonta angle ag upricklag	nd flore control at	
Z	Expressing the Cor	e Python scripting elements such as variables a	nd flow control st	ructures.
3	Apply Python funct	ions to facilitate code reuse.		
4	Extending how to v	vork with lists and sequence data.		
5	Implement file oper	ations such as read and write and Adapting the	code robust byha	ndling errors
	and exceptions prop	perly.		
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:1.5
Outcome	II Sem	DATA STRUCTURES AND ALGORITHMS LAB(B20CS08)	L:0 T:0 P:3	
After the o	completion of this c	course, the students should be able to		<u> </u>
1	Explaining the line	ar data structures such as List, Stack, Queue and	d its applications	
2	Implement non-line	ear data structure such as Trees, Graphs and its	applications	
3	Apply suitable algo	rithms for sorting Techniques		
	Choose appropriate algorithm for Searching and Hashing			
4	Choose appropriate	algorithm for Searching and Hashing		
4 Course	Choose appropriate Year / semester	algorithm for Searching and Hashing Subject Name (Subject Code)	No. of Hours	Credits:1.5
4 Course Outcome	Choose appropriate Year / semester II Sem	algorithm for Searching and Hashing Subject Name (Subject Code) PYTHON PROGRAMMING	No. of Hours L:0 T:0 P:3	Credits:1.5
4 Course Outcome	Choose appropriate Year / semester II Sem	algorithm for Searching and Hashing         Subject Name (Subject Code)         PYTHON PROGRAMMING         LAB(B20CS07)	No. of Hours L:0 T:0 P:3	Credits:1.5
4 Course Outcome After the c	Choose appropriate Year / semester II Sem	algorithm for Searching and Hashing Subject Name (Subject Code) PYTHON PROGRAMMING LAB(B20CS07) course, the students should be able to Prtham conjusting algorithm and the students and the students are stables as the stables as the students are stables as	No. of Hours L:0 T:0 P:3	Credits:1.5
4 Course Outcome After the c 1	Choose appropriate Year / semester II Sem completion of this of Expressing the Cor	algorithm for Searching and Hashing Subject Name (Subject Code) PYTHON PROGRAMMING LAB(B20CS07) course, the students should be able to e Python scripting elements such as variables a ions to facilitate and a range	No. of Hours L:0 T:0 P:3 nd flow control st	Credits:1.5
4 Course Outcome After the c 1 2 3	Choose appropriate Year / semester II Sem completion of this of Expressing the Cor Apply Python funct	algorithm for Searching and Hashing         Subject Name (Subject Code)         PYTHON PROGRAMMING         LAB(B20CS07)         course, the students should be able to         e Python scripting elements such as variables a         ions to facilitate code reuse         work with lists and sequence data	No. of Hours L:0 T:0 P:3 nd flow control st	Credits:1.5
4 Course Outcome After the c 1 2 3 4	Choose appropriate Year / semester II Sem completion of this of Expressing the Cor Apply Python funct Extending how to v Implement file one	algorithm for Searching and Hashing Subject Name (Subject Code) PYTHON PROGRAMMING LAB(B20CS07) Course, the students should be able to e Python scripting elements such as variables a cions to facilitate code reuse work with lists and sequence data. rations such as read and write and Adapting the	No. of Hours L:0 T:0 P:3 nd flow control st	Credits:1.5
4 Course Outcome After the c 1 2 3 4	Choose appropriate Year / semester II Sem completion of this of Expressing the Cor Apply Python funct Extending how to Implement file ope and exceptions pro-	algorithm for Searching and Hashing         Subject Name (Subject Code)         PYTHON PROGRAMMING         LAB(B20CS07)         course, the students should be able to         e Python scripting elements such as variables a         tions to facilitate code reuse         work with lists and sequence data.         rations such as read and write and Adapting the perly	No. of Hours L:0 T:0 P:3 nd flow control st e code robust byha	Credits:1.5
4 Course Outcome After the c 1 2 3 4	Choose appropriate Year / semester II Sem completion of this of Expressing the Cor Apply Python funct Extending how to Implement file ope and exceptions prop	algorithm for Searching and Hashing         Subject Name (Subject Code)         PYTHON PROGRAMMING         LAB(B20CS07)         course, the students should be able to         e Python scripting elements such as variables a         ions to facilitate code reuse         work with lists and sequence data.         rrations such as read and write and Adapting the perly.         Schiptet Nerro (Schipter Code)	No. of Hours L:0 T:0 P:3 nd flow control st e code robust byha	Credits:1.5
4 Course Outcome After the c 1 2 3 4 Course	Choose appropriate Year / semester II Sem completion of this of Expressing the Cor Apply Python funct Extending how to Implement file ope and exceptions prop Year / semester	algorithm for Searching and Hashing         Subject Name (Subject Code)         PYTHON PROGRAMMING         LAB(B20CS07)         course, the students should be able to         e Python scripting elements such as variables a         ions to facilitate code reuse         work with lists and sequence data.         rations such as read and write and Adapting the         perly.         Subject Name (Subject Code)         ENGLISH LANGUAGE AND	No. of Hours L:0 T:0 P:3 Ind flow control st e code robust byha	Credits:1.5 ructures. andling errors Credits: 1.5
4 Course Outcome After the c 1 2 3 4 4 Course Outcome	Choose appropriate Year / semester II Sem completion of this of Expressing the Cor Apply Python funct Extending how to Implement file ope and exceptions prop Year / semester II Sem	algorithm for Searching and Hashing         Subject Name (Subject Code)         PYTHON PROGRAMMING         LAB(B20CS07)         course, the students should be able to         e Python scripting elements such as variables a         ions to facilitate code reuse         work with lists and sequence data.         rrations such as read and write and Adapting the         perly.         Subject Name (Subject Code)         ENGLISH LANGUAGE AND         INTERACTIVE COMMUNICATION         SKILLS LAB(B20EN02)	No. of Hours L:0 T:0 P:3 nd flow control st e code robust byha No. of Hours L:0 T:0 P:3	Credits:1.5 ructures. andling errors Credits: 1.5
4 Course Outcome After the c 1 2 3 4 Course Outcome After the c	Choose appropriate Year / semester II Sem completion of this of Expressing the Cor Apply Python funct Extending how to Implement file ope and exceptions prop Year / semester II Sem completion of this of	algorithm for Searching and Hashing         Subject Name (Subject Code)         PYTHON PROGRAMMING         LAB(B20CS07)         course, the students should be able to         e Python scripting elements such as variables a         cions to facilitate code reuse         work with lists and sequence data.         rations such as read and write and Adapting the         perly.         Subject Name (Subject Code)         ENGLISH LANGUAGE AND         INTERACTIVE COMMUNICATION         SKILLS LAB(B20EN02)         course, the students should be able to	No. of Hours L:0 T:0 P:3 and flow control st e code robust byha No. of Hours L:0 T:0 P:3	Credits:1.5 ructures. andling errors Credits: 1.5
4 Course Outcome After the c 1 2 3 4 Course Outcome After the c 1	Choose appropriate Year / semester II Sem completion of this of Expressing the Cor Apply Python funct Extending how to Implement file ope and exceptions prop Year / semester II Sem completion of this of Understand the nua	algorithm for Searching and Hashing Subject Name (Subject Code) PYTHON PROGRAMMING LAB(B20CS07) course, the students should be able to e Python scripting elements such as variables a ions to facilitate code reuse work with lists and sequence data. rrations such as read and write and Adapting the perly. Subject Name (Subject Code) ENGLISH LANGUAGE AND INTERACTIVE COMMUNICATION SKILLS LAB(B20EN02) course, the students should be able to nces of English language through audio-visual	No. of Hours L:0 T:0 P:3 nd flow control st e code robust byha No. of Hours L:0 T:0 P:3	Credits:1.5 ructures. andling errors Credits: 1.5
4CourseOutcomeAfter the c1234CourseOutcomeAfter the c12	Choose appropriate Year / semester II Sem completion of this of Expressing the Cor Apply Python funct Extending how to Implement file ope and exceptions prop Year / semester II Sem completion of this of Understand the nual Speak with clarity a	Subject Name (Subject Code)         PYTHON PROGRAMMING         LAB(B20CS07)         course, the students should be able to         e Python scripting elements such as variables a         cions to facilitate code reuse         work with lists and sequence data.         rations such as read and write and Adapting the         perly.         Subject Name (Subject Code)         ENGLISH LANGUAGE AND         INTERACTIVE COMMUNICATION         SKILLS LAB(B20EN02)         course, the students should be able to         ncces of English language through audio-visual         and confidence which in turn enhances their employed and set of the students in turn enhances their employed and set of the students in turn enhances their employed and confidence which in turn enhances their	No. of Hours L:0 T:0 P:3 and flow control st e code robust byha No. of Hours L:0 T:0 P:3 experience and gr poloyability skills.	Credits:1.5 ructures. andling errors Credits: 1.5 roupactivities.
4CourseOutcomeAfter the c1234CourseOutcomeAfter the c123	Choose appropriate Year / semester II Sem completion of this of Expressing the Cor Apply Python funct Extending how to Implement file ope and exceptions prop Year / semester II Sem completion of this of Understand the nual Speak with clarity a Develop their lister	algorithm for Searching and Hashing         Subject Name (Subject Code)         PYTHON PROGRAMMING         LAB(B20CS07)         course, the students should be able to         e Python scripting elements such as variables a         ions to facilitate code reuse         work with lists and sequence data.         rrations such as read and write and Adapting the         perly.         Subject Name (Subject Code)         ENGLISH LANGUAGE AND         INTERACTIVE COMMUNICATION         SKILLS LAB(B20EN02)         course, the students should be able to         Inces of English language through audio-visual         and confidence which in turn enhances their emaining skills so that they may appreciate its role in	No. of Hours L:0 T:0 P:3 nd flow control st e code robust byha No. of Hours L:0 T:0 P:3 experience and gr sployability skills. n developing LSR	Credits:1.5 ructures. andling errors Credits: 1.5 coupactivities. W skills
4CourseOutcomeAfter the c1234CourseOutcomeAfter the c123	Choose appropriate Year / semester II Sem completion of this of Expressing the Cor Apply Python funct Extending how to Implement file ope and exceptions prop Year / semester II Sem completion of this of Understand the nua Speak with clarity a Develop their lister language and impro-	Subject Name (Subject Code)         PYTHON PROGRAMMING         LAB(B20CS07)         course, the students should be able to         e Python scripting elements such as variables a         cions to facilitate code reuse         work with lists and sequence data.         rations such as read and write and Adapting the         perly.         Subject Name (Subject Code)         ENGLISH LANGUAGE AND         INTERACTIVE COMMUNICATION         SKILLS LAB(B20EN02)         course, the students should be able to         ncces of English language through audio-visual         and confidence which in turn enhances their em         and so that they may appreciate its role in         pove their pronunciation.	No. of Hours L:0 T:0 P:3 and flow control st e code robust byha No. of Hours L:0 T:0 P:3 experience and gr aployability skills. n developing LSR	Credits:1.5 ructures. andling errors Credits: 1.5 roupactivities. W skills

Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits: 1.5	
Outcome	II Sem	WORKSHOP LAB(B20ME03)	L:0 T:0 P:3		
After the o	completion of this o	course, the students should be able to			
1	Know the fundame	ntal knowledge of House wiring and soldering	and their usage in	real time	
	Applications.				
2	Gain knowledge on electronic components and measuring instruments.				
3	Use basic concepts of computer hardware for assembly and disassembly.				
4	Use Microsoft tool	s for exercise.			
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits: 3	
Outcome	III Sem	DESIGN AND ANALYSIS OF ALGORITHMS(B20CS10)	L:3 T:0 P:0		
After the o	completion of this o	course, the students should be able to			
1	Expose student's to	o few known methods of solution processes, bu	ild new solution a	lgorithms,	
	analyze the asympt	otic performance of algorithms and to write rig	orous correctness	proofs for	
	algorithms.				
2	Identify appropriate	e data structures and algorithm design methods	for specified class	ses of	
3	Applications,	boice of data structures and algorithm design m	othods would im	act the	
5	performance of pro	grams and how to compare them	ietilous would imp		
4	Design methods su	ch as the greedy method, divide and conquer, dy	vnamic programm	inα	
-	bestgn methods such as the greedy method, drvide and conquer, dynamic programming,				
5	Perceive methods t	o deal with logarithmic type, polynomial type	and non-polynomi	al type of	
5	classes of problems	and Synthesis of efficient algorithms in comm	on engineering de	sign situations	
	would bediscussed		on engineering de	sign situations	
Course	Voor / comostor	Subject Name (Subject Code)	No of Hours	Credits: 3	
Outcome	III Sem	DIGITAL LOGIC DESIGN & MICRO	L:3 T:0 P:0	Creans. 5	
		FROCESSORS(B20EC09)		<u> </u>	
After the o	Completion of this (	course, the students should be able to	acia thaonama usir	a in Dooloon	
1	algebra.	ic concepts of afferent Number systems and ba	asic theorems usir	ig in Boolean	
2	Design the logic cir	cuits using basic logic gates by reducing the Bo	oolean expression	s with thehelp	
	of Karnaugh Map.				
3	Analyze various ty	pes of combinational and sequential circuits.			
4	Analyze various ty	pes of sequential circuits.			
5	Understand the inte	ernal organization of popular8086 microprocess	sors		
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits: 3	
Outcome	III Sem	MATHEMATICAL FOUNDATIONS OF	L:3 T:0 P:0		
		COMPUTER SCIENCE(B20CS11)			
After the c	completion of this o	course, the students should be able to			
1	Evaluate the notion	s of propositions, predicate formulae, Rules of	inference.		
2	Illustrate and descr	ibe various types of Relations and Functions.			
3	Apply knowledge of	of Mathematics, Combinations & Permutations	, Binomial Multin	omial	
	theorems, Pigeon h	ole principles			
4	Develop to solve th	ne recurrence relations by using various method	S		
5	Perceive the basic concepts of graph theory and apply for real time examples.				

Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits: 3	
Outcome	III Sem	JAVA PROGRAMMING (B20CS12)	L:3 T:0 P:0		
After the o	completion of this o	course, the students should be able to			
1	1 Understand the use of OOP concepts and solve real world problems using OOP techniques.				
2	Solve the inter-disciplinary applications using the concept of inheritance.				
3	Develop robust and	l faster applications by applying different excep	tion handling me	chanisms.	
4	Understand the mu	ltithreading concepts and develop efficient appl	ications.		
5	Design GUI based	applications and develops applets for web appli	cations.		
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits: 2	
Outcome	III Sem	ENGLISH FOR EFFECTIVE	L:2 T:0 P:0		
		COMMUNICATIONS(B20EN01)			
After the o	completion of this of	course, the students should be able to			
	Skim and scan the o	digital text to summarize it for future reference.			
2	Read the text to ma	ke notes according to their needs.			
5		ige effectively in spoken and written forms.			
4	Communicate conf	idently in various contexts and different culture	s		
5	Acquire basic profi	ciency in English including reading and listenii	ng comprehension	, writing and	
Course	Year/semester	Subject Name (Subject Code)	No. of Hours	Credits:1.5	
Outcome	III Sem	DIGITAL LOGIC DESIGN & MICRO	L:0 T:0 P:3		
	in bein	PROCESSORS LAB(B20EC10)			
After the o	completion of this o	course, the students should be able to	NOD YOD YA		
I	Demonstrate variou flops.	us types of logic gates (AND, OR, NOT, NANI	D, NOR, XOR,XN	(OR) and flip	
2	Analyze and design	a various types of combinational and sequential	circuits.		
3	Develop microproc	essor based programs for Arithmetic and Logic	al Operations		
4	Develop microproc	essor based programs for various problems.			
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits: 1.5	
Outcome	III Sem	DESIGN AND ANALYSIS OF	L:0 T:0 P:3		
		ALGORITHMS LAB(B20CS13)			
After the o	completion of this o	course, the students should be able to			
1	Ability to choose a	ppropriate algorithm design techniques for solv	ing problems.		
2	Design an algorithr	n in an effective manner			
3	Design and apply it	erative and recursive algorithms			
4	Ability to analyze t	he performance of algorithms.	ſ		
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:1.5	
Outcome	III Sem	JAVA PROGRAMMING LAB(B20CS14)	L:0 T:0 P:3		
After the o	completion of this o	course, the students should be able to			
1	Use the Java SDK o	environment to create, debug and run simple Ja	va programs.		
2	Write Java program	ns to implement error handling techniques using	g exception handl	ng	
3	Develop multithre	aded applications with synchronization.			
4	Design simple Graphical User Interface applications and event driven programming.				

Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:3	
Outcome	IV Sem	OPERATING SYSTEMS (B20CS16)	L:3 T:0 P:0		
After the c	completion of this o	course, the students should be able to			
1	Compare various C	Derating Systems architectures, IO structures, N	Network Structure		
2	Analyze the virtual	memory, paging and memory allocation techni	ques for variousa	pplications	
3	Apply Deadlock prevention and Deadlock Detection algorithms and perceive the working of an				
	operating system as a File manager, I/O manager, Process manager.				
4	Understand the ove	erview of Disk Storage Structure.			
5	Analyze assess acc	ess controls to protect files.	Γ		
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits: 3	
Outcome	IV Sem	FORMAL LANGUAGES AND AUTOMATA THEORY(B20CS17)	L:3 T:0 P:0		
After the c	completion of this o	course, the students should be able to			
1	Explain basic conc	epts in formal language theory, grammars, auto	mata theory(DFA	&NFA),	
	computability theor	ry, and complexity theory.			
2	Know the production	on rules of regular expressions and grammars, i	ncluding context:	free and	
	context: sensitive g	grammar			
3	Construct a pushdo	wn automata and context free, regular, normal	form grammars to	odesign	
4	computer language	S			
4	Evaluate solution f	or various problems using a theoretical comput	er (Turing machir	ie)for a	
5	computer language	abie among language alagaas and geometry wi	th the help of		
5	Explain the relation	ising among language classes and grammars wi	lecidability		
C			N CII	<b>C 1</b> ¹ <b>1 2</b>	
Course	Year / semester	Subject Name (Subject Code) COMPLITER ORGANIZATION &	No. of Hours	Credits:3	
Outcome	IV Sem	ARCHITECTURE(B20CS18)	L:3 T:0 P:0		
After the c	completion of this o	course, the students should be able to			
1	Understand the stru	icture, function of various functional units of co	omputer.		
2	Understand the bas	ic design of Computer, and its organization			
3	Perceive control un	it operations and Micro Program example.			
4	Understand differe	ent computer arithmetic algorithms for various a	rithmetic operatio	n	
5	Identity and compa	re different methods of input-output.			
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:3	
Outcome	IV Sem	DATABASE MANAGEMENT	L:3 T:0 P:0		
After the c	ompletion of this a	provide the students should be able to			
1	Perceive the fundation	mental concepts of database management.			
2	Analyze database n	nodels & Entity Relationship models and to dra	w the E-R diagram	n forthe given	
	case study.				
3	Apply relational Da	atabase Theory, and be able to write relational a	algebra expressior	s forqueries	
4	Apply Normalizati	on Process to construct the database and explain	n Basic Issues of T	ransaction	
	processing				
5	Compare the basic	Database storage structures and access techniqu	ies: File		
	Organizationindexi	ng methods including B- Tree and Hashing			

Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:3	
Outcome	IV Sem	PROBABILITY AND	L:3 T:0 P:3		
	-,	STATISTICS(B20MA07)			
After the c	completion of this of	course, the students should be able to			
1	1 Use probability theory and deals with modeling uncertainty in order to evaluateThe probability of real world events.				
2	Develop discrete pr data from Binomia	obability distributions and its applications, and land Poisson Distributions.	use the technique	s togenerate	
3	Use the techniques	of continuous probability distributions to generative	ate data from Nor	mal	
	Distributions.				
4	Perform correlatior	and regression analysis, in order to estimate the between two variables.	ne nature and these	trength of the	
5	Construct confiden	ce interval to estimates population parameters t	o test the hypothes	sis.	
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:1.5	
Outcome	IV Sem	OPERATING SYSTEMS LAB(B20CS20)	L:0 T:0 P:3		
After the c	completion of this o	course, the students should be able to			
1	Apply CPU schedu	ling algorithms, Page replacement algorithms.			
2	Explain Bankers A	lgorithm for Dead Lock Avoidance & Dead Lo	ck Prevention		
3	Describe the conce	pts of paging and segmentation.			
4	Make use of Linux	commands			
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits: 1.5	
Outcome	IV Sem	DATABASE MANAGEMENT SYSTEMS LAB(B20CS21)	L:0 T:0 P:3		
After the c	completion of this o	course, the students should be able to			
1	Design database sci	hema for given Application.			
2	Transform ER Mod	lel to Relational Model.			
3	Apply the normaliz	ation techniques for development of applicatio	n software to real	isticproblems.	
4	Construct SQL que	ries to retrieve information from database		-	
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:1.5	
Outcome	IV Sem	WEB TECHNOLOGIES LAB(B20CS22)	L:0 T:0 P:3		
After the co	mpletion of this co	ourse, the students should be able to			
1	Design and implem	ent dynamic websites with good aesthetic sens	e of designing and	1 latest	
	technical know-how	v's			
2	Understand, analyz	e and apply the role of languages like HTML, G	CSS, XML, JavaS	cript, PHPand	
	protocols in the wo	rkings of the web and web applications			
3	Create dynamic we	b pages using JavaScript			
4	Build web applicati	ons using PHP			
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:3	
Outcome	V Sem	SOFTWARE ENGINEERING(B20CS29)	L:3 T:0 P:0		
After the co	mpletion of this co	ourse, the students should be able to		I	
1	- Define Software Er	ngineering and list core principles of software en	ngineering and un	derstand	
-	various process mo	odels			
2	Develop an underst	anding of software requirements and be able to	prepare SRS docu	iment.	
3	Understand softwar	re design engineering process using structural a	nd object oriented	approaches	
1	and be able to mod	el	coord of cofference	davalanment	
4	Apply the testing of	trategies on different level of implementation ()	init integration	)	
5	Understand and ab	le to compute quality measures and develop a s	oftware quality as	surance plan	
	for a software development.				

Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:3	
Outcomo	V Som	DATA COMMUNICATIONS AND	I.3 T.0 D.0		
Outcome	v Sem	COMPUTER NETWORKS(B20CS30)	L.3 1.01.0		
After the co	ompletion of this co	ourse, the students should be able to			
1	Illustrate basic cor	nputer network technology, functions of each	layer in the OSI	and TCP/IP	
	reference model.		-		
2	Gain the knowledg	e on error control and flow control mechanisms			
3	Obtain the skills of subnetting and routing mechanisms.				
4	Analyze the features and Operations of TCP/UDP, congestion control and QoS Techniques.				
5	Familiarity with t	he essential protocols of application layer, and	nd how they can	be used in	
	network design and	1 implementation.	[		
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:3	
Outcome	V Sem	DATA WAREHOUSING AND DATA MINING(B20CS24)	L:3 T:0 P:0		
After the c	completion of this (	course, the students should be able to	L		
1	Develop an unders	tanding of data warehouse, designing and using	data in data ware	house using	
	various operations.	· · · · · · · · · · · · · · · · · · ·		_	
2	Introduce data mini	ing concepts and develops understanding of data	a mining applicati	on.	
3	Develop an outlool	k of Association rule mining, association rule m	ining methods and	l their	
4	application on som	e sample data sets, evaluate these methods base	ed on need.	1.1.	
4	Develop an under	standing of classification and prediction, clas	sification method	s and their	
5	Develop conceptus	al understanding of clustering various clustering	a methods and th	eirapplication	
5	on some sample da	the understanding of clustering, various clustering the sets, evaluate these methods based on need.	ig methods and th	ien application	
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:3	
Outcome	VSom	ARTIFICIAL INTELLIGENCE	I •3 T•0 P•0		
Outcome	Viseni	(B20AI03)	1.5 1.01.0		
After the co	mpletion of this co	ourse, the students should be able to			
1	Possess the ability	to formulate an efficient problem space for a pr	oblem expressed i	n English.	
2	Possess the ability	to select a search algorithm for a problem.	*	-	
3	Possess the skill for	r representing knowledge using the appropriate	technique		
4	Possess the ability	to apply AI techniques to solve problems of Ga	me Playing.		
5	Possess the Expert	Systems, Machine Learning and Natural Langua	age Processing		
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:3	
Outcome	VSem	COMPILER DESIGN(B20CS31)	L:3 T:0 P:0		
After the co		(PROFESSIONAL ELECTIVE-I)			
After the completion of this course, the students should be able to					
1	ompletion of this co	ourse, the students should be able to			
1	Apply the knowled	ge of modern phases of compiler and its feature	es.		
1 2	Apply the knowled Identify the similar	ge of modern phases of compiler and its feature ities and differences among varies parsing techn	es. niques.		
1 2 3	Apply the knowled Identify the similar Explain semantic a	ge of modern phases of compiler and its feature ities and differences among varies parsing techn nalysis in the context of the compilation proces	es. niques. s.		
1 2 3 4	Apply the knowled Identify the similar Explain semantic a Design a symbol ta	ge of modern phases of compiler and its feature ities and differences among varies parsing techn nalysis in the context of the compilation proces ble format for the language defined by a gramm	es. niques. s. nar		
1 2 3 4 5	Apply the knowled Identify the similar Explain semantic a Design a symbol ta Analyze the code g	ge of modern phases of compiler and its feature rities and differences among varies parsing tech nalysis in the context of the compilation proces ble format for the language defined by a gramm generation algorithm	es. niques. s. ar		
1 2 3 4 5 <b>Course</b>	Apply the knowled Identify the similar Explain semantic a Design a symbol ta Analyze the code g Year / semester	burse, the students should be able to ge of modern phases of compiler and its feature rities and differences among varies parsing tech inalysis in the context of the compilation proces ble format for the language defined by a gramm generation algorithm Subject Name (Subject Code)	es. niques. s. har <b>No. of Hours</b>	Credits:3	
1 2 3 4 5 Course Outcome	Apply the knowled Identify the similar Explain semantic a Design a symbol ta Analyze the code g Year / semester V Sem	burse, the students should be able to ge of modern phases of compiler and its feature ities and differences among varies parsing tech inalysis in the context of the compilation proces ble format for the language defined by a gramm generation algorithm Subject Name (Subject Code) PRINCIPLES OF PROGRAMMING LANGUACEDE (PROGRAMMING LANGUACEDE (PROGRAMMING	es. niques. s. nar No. of Hours L:3 T:0 P:0	Credits:3	
1 2 3 4 5 <b>Course</b> <b>Outcome</b>	Apply the knowled Identify the similar Explain semantic a Design a symbol ta Analyze the code g Year / semester V Sem	burse, the students should be able to lige of modern phases of compiler and its feature ities and differences among varies parsing tech inalysis in the context of the compilation proces ble format for the language defined by a gramm generation algorithm Subject Name (Subject Code) PRINCIPLES OF PROGRAMMING LANGUAGES (B20CS32) (PROFESSIONAL ELECTIVE-I)	es. niques. s. har No. of Hours L:3 T:0 P:0	Credits:3	
1       2       3       4       5       Course       Outcome	Apply the knowled Identify the similar Explain semantic a Design a symbol ta Analyze the code g Year / semester V Sem	burse, the students should be able to lge of modern phases of compiler and its feature ities and differences among varies parsing tech inalysis in the context of the compilation proces ble format for the language defined by a gramm generation algorithm Subject Name (Subject Code) PRINCIPLES OF PROGRAMMING LANGUAGES (B20CS32) (PROFESSIONAL ELECTIVE-I) purse, the students should be able to	es. niques. s. nar No. of Hours L:3 T:0 P:0	Credits:3	
1 2 3 4 5 <b>Course</b> <b>Outcome</b> <b>After the co</b> 1	Apply the knowled Identify the similar Explain semantic a Design a symbol ta Analyze the code g Year / semester V Sem Ompletion of this con Able to analyze symbol	burse, the students should be able to lge of modern phases of compiler and its feature ities and differences among varies parsing tech inalysis in the context of the compilation proces ble format for the language defined by a gramm generation algorithm Subject Name (Subject Code) PRINCIPLES OF PROGRAMMING LANGUAGES (B20CS32) (PROFESSIONAL ELECTIVE-I) Durse, the students should be able to ntax-related concepts including context-free gra	es. niques. s. har No. of Hours L:3 T:0 P:0 ummars, parse tree	Credits:3	
1           2           3           4           5           Course           Outcome           After the co           1	Apply the knowled Identify the similar Explain semantic a Design a symbol ta Analyze the code g Year / semester V Sem Ompletion of this co Able to analyze syn issues associated w	ities and differences among varies parsing tech inalysis in the context of the compilation proces ble format for the language defined by a gramm generation algorithm Subject Name (Subject Code) PRINCIPLES OF PROGRAMMING LANGUAGES (B20CS32) (PROFESSIONAL ELECTIVE-I) Durse, the students should be able to ntax-related concepts including context-free gra vith function implementations.	es. niques. s. har No. of Hours L:3 T:0 P:0 mmars, parse tree	Credits:3	
1           2           3           4           5           Course           Outcome           After the co           1           2	Apply the knowled Identify the similar Explain semantic a Design a symbol ta Analyze the code g Year / semester V Sem Moletion of this co Able to analyze syn issues associated w Summarize the des	ities and differences among varies parsing tech- inalysis in the context of the compilation proces ble format for the language defined by a gramm generation algorithm Subject Name (Subject Code) PRINCIPLES OF PROGRAMMING LANGUAGES (B20CS32) (PROFESSIONAL ELECTIVE-I) Durse, the students should be able to ntax-related concepts including context-free gra vith function implementations. ign issues of various reference types and its imp	es. niques. s. har No. of Hours L:3 T:0 P:0 mmars, parse tree plementation relat	Credits:3 s, semantic ed to these	
12345CourseOutcomeAfter the co12	Apply the knowled Identify the similar Explain semantic a Design a symbol ta Analyze the code g Year / semester V Sem mpletion of this co Able to analyze syn issues associated w Summarize the des types.	burse, the students should be able to lge of modern phases of compiler and its feature ities and differences among varies parsing tech inalysis in the context of the compilation proces ble format for the language defined by a gramm generation algorithm Subject Name (Subject Code) PRINCIPLES OF PROGRAMMING LANGUAGES (B20CS32) (PROFESSIONAL ELECTIVE-I) purse, the students should be able to ntax-related concepts including context-free gra /ith function implementations. ign issues of various reference types and its imp	es. niques. s. har No. of Hours L:3 T:0 P:0 mmars, parse tree plementation relat	Credits:3 s, semantic ed to these	
1           2           3           4           5           Course           Outcome           After the conne           1           2           3	Apply the knowled Identify the similar Explain semantic a Design a symbol ta Analyze the code g Year / semester V Sem Mole to analyze syn issues associated w Summarize the des types. Able to understand	<b>burse, the students should be able to</b> Ige of modern phases of compiler and its feature         ities and differences among varies parsing tech         inalysis in the context of the compilation proces         ble format for the language defined by a gramm         generation algorithm         Subject Name (Subject Code)         PRINCIPLES OF PROGRAMMING         LANGUAGES (B20CS32)         (PROFESSIONAL ELECTIVE-I)         Durse, the students should be able to         ntax-related concepts including context-free gra <i>i</i> th function implementations.         ign issues of various reference types and its implementations         the concepts of Abstraction and Encapsulation	es. niques. s. ar No. of Hours L:3 T:0 P:0 Immars, parse tree plementation relat constructs of clas	Credits:3 s, semantic ed to these ses, interfaces,	
1           2           3           4           5           Course           Outcome           After the co           1           2           3	Apply the knowled Identify the similar Explain semantic a Design a symbol ta Analyze the code g Year / semester V Sem Ompletion of this co Able to analyze syn issues associated w Summarize the des types. Able to understand packages of variou	<b>burse, the students should be able to</b> Ige of modern phases of compiler and its feature         ities and differences among varies parsing tech         inalysis in the context of the compilation proces         ible format for the language defined by a gramm         generation algorithm         Subject Name (Subject Code)         PRINCIPLES OF PROGRAMMING         LANGUAGES (B20CS32)         (PROFESSIONAL ELECTIVE-I)         Durse, the students should be able to         ntax-related concepts including context-free gra         with function implementations.         ign issues of various reference types and its implementations         the concepts of Abstraction and Encapsulation         s Language Examples.         nd the nature and implementation of chiest with	es. niques. s. har No. of Hours L:3 T:0 P:0 mmars, parse tree plementation relat constructs of clas	Credits:3 s, semantic ed to these ses, interfaces,	

Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:3	
Outcome	V Sem	NETWORK PROGRAMMING (B20CS33) (PROFESSIONAL ELECTIVE-I)	L:3 T:0 P:0		
After the co	mpletion of this co	ourse, the students should be able to			
1	 Demonstrate advan	ced knowledge of OSI layers, TCP & UDP con	icepts		
2	Networking. Sumn	narize the TCP socket functions and Byte Order	ring.		
3	Make use of TCP client server applications and analyze I/O Multiplexing and socket options.				
4	Define about the E	lementary UDP sockets and Address conversio	ns.	-	
5	Explain DNS, othe	r networking information, Pseudo -Terminals.	, Terminal modes	s, Control	
	Terminals.			-	
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:1.5	
Outcome	V Sem	DATA COMMUNICATIONS AND	L:0 T:0 P:3		
		COMPUTER NETWORKS LAB(B20CS34)			
After the co	mpletion of this co	ourse, the students should be able to			
1	Implement data lin	k layer farming methods.			
2	Analyze error detec	ction and error correction codes.			
3	Implement and ana	lyze routing and congestion issues in network of	design.		
4	Implement Encodir	g and Decoding techniques used in presentation	n layer.		
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:1.5	
Outcome	V Sem	ARTIFICIAL INTELLIGENCE LAB (B20AI04)	L:0 T:0 P:3		
After the co	mpletion of this co	ourse, the students should be able to			
1	Demonstrate Know	ledge of the building blocks of AI as presented	in terms of intelli	gent agents.	
2	Analyze and forma	lize the problem as a state space, graph and desi	gn heuristics	<u> </u>	
3	Jevelop intelligent	algorithms for constraint satisfaction problems	and also design in	telligent	
	systemsfor game pl	aying.	C	C	
4	Attain the capability	y to represent various real life problem domains	using logicbased	techniques	
	anduse this to perfo	orm inference or planning.		-	
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:0	
Outcome	V Sem	INDIAN CONSTITUTION(B20MC03)	L.2 T.0 P.0		
oucome					
After the co	mpletion of this co	ourse, the students should be able to			
1	Demonstrate the fur	ndamental rights and duties of a citizen			
2	Classify the admini	strative structure of the Indian union			
3	Identify the power of	of state government and make use of positions			
4	Categorize the varie	ous department and local administrations respo	nsibilities		
5	Functions of electio	n commission and its roles			
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:3	
Outcome	WSem	MACHINE LEARNING (B20AI06)	L:3 T:0 P:0		
After the co	mpletion of this co	ourse the students should be able to :			
1	Explain the theory u	underlying machine learning			
2	Learn beyond binar	y classification.			
3	Recognize and imp	lement various genetic algorithms.			
4	Construct algorithn	ns to learn tree, to learn linear, non-linear model	s and Probabilistic	c models.	
5	Able to analyze the	data using R Programming			

Course Outcome	Year / semester VI Sem	Subject Name (Subject Code) CLOUD COMPUTING (B20CS36)	No. of Hours L:3 T:0 P:0	Credits:3
After the co	mpletion of this co	ourse, the students should be able to		
1	Ability to understa	nd various service delivery models of a cloud co	mouting architect	ure
2	Ability to understand the ways in which the cloud can be programmed and deployed			
3	Understanding Cloud Computing Architecture and Management			
4	Understanding cloud service Models			
5	Understanding cloud service providers.			
		1	1	
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:3
Outcome	VI Sem	INTERNET OF THINGS(B20CS37)	L:3 T:0 P:0	
After the co	mpletion of this co	Durse, the students should be able to		
1	Interpret the visior	n of IoT from global context.		
2	Perceive building b	blocks of Internet of Things and its characteristi	cs.	
3	Learn the basic con	cepts of Python. Implement the python program	nming using Rasp	berry.
4	Perceive the applic	cation areas of IoT. Realize the revolution of In	ternet in Mobile	Devices,
	Cloud &Sensor Ne	etworks		
5	Determine the Mar for IoT.	rket perspective of IoT. Develop Python web a	oplications and clo	oud servers
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:3
Outcome	VI Sem	SOFTWARE PROJECT MANAGEMENT (PROFESSIONAL ELECTIVE-II)	L:3 T:0 P:0	
		(B20CS38)		
After the co	ompletion of this co	ourse, the students should be able to		
1	Gain knowledge of	software economics, phases in the life cycle of	f software develop	oment, project
	organization, and p	project control and process instrumentation.		
2	Summarize softwar workflows, checkp	re economics, software development life cycle, oints, project organization and responsibilities,	artifacts of the pr project control an	ocess, id process
3	Choose the right so	oftware development approach. Compare variou	is project organiza	ations and
C	responsibilities.		is project organize	uions und
4	Analyze the major	and minor milestones, artifacts and metrics for	management and	technical
	perspective.			
5	Design software	product using conventional and modern p	principles of sof	tware project
C	management.		NI CII	<b>C</b> 14 2
Course	Year / semester	Subject Name (Subject Code) NETWORK SECURITY AND	No. of Hours	Credits:3
Outcome	VI Sem	CRYPTOGRAPHY (B20CS39)	L:3 T:0 P:0	
		(PROFESSIONAL ELECTIVE-II)		
After the c	completion of this o	course, the students should be able to		
1	Identifies various t	ypes of vulnerabilities, attacks, mechanisms and	l security services	
2	Compare and contr	ast symmetric and asymmetric encryption algo	rithms.	
3	Implementation of	message authentication, hashing algorithms and	able to understan	nd kerberos.
4	Explore the attacks	and controls associated with IP, transport level	, web and E-mail	security.
5	Develop intrusion of	detection system, solutions for wireless network	s and designing of	of varioustypes
	of firewalls.			

Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:3		
Outcome	VI Sem	WEB SERVICES (B20CS40)	L:3 T:0 P:0			
		(PROFESSIONAL ELECTIVE-II)				
After the o	completion of this of	course, the students should be able to				
1	Implement Web se computing,J2EE, S	ervice client and server with interoperable syste SOA, WSDL, UDDI and EBXML	ms like core distri	buted		
2	Perceive and analy	ze the principles of SOAP.				
3	Perceive the imple	Perceive the implement Web Services life cycle, Anatomy of WSDL definition document.				
4	How to utilize the semantics of web services. Working with UDDI, programming with UDDI,					
	UDDIdata structur	es				
5	Explore interopera webservices	bility between different frameworks. Design we	b based applicatio	ons that use		
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:1.5		
Outcome	VI Sem	MACHINE LEARNING LAB (B20AI08)	L:0 T:0 P:3			
After the o	completion of this	course, the students should be able to				
1	Discuss different a	pplication on Machine Learning problems.				
2	Describe various al	Igorithms on Machine Learning mentioning its	strengths andweal	knesses.		
3	Improve the perfor	mance of Machine Learning algorithms with dif	fferent parameters			
4	Understand the late	est issues raised by current researchers.				
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:1.5		
Outcome	VI Sem	CLOUD COMPUTING LAB(B20CS41)	L:0 T:0 P:3			
After the co	ompletion of this co	ourse, the students should be able to				
1	Analyze Cloud Cor	mputing fundamentals, technologies, applicatio	ns and implement	ation of		
	virtualization with	Oracle VM Virtual box.	0 111 0			
2	Development know and Networking.	viedge of cloud computing using Amazon web	Services like Cor	npute, Storage		
3	Providing Security	to the Cloud System using Identity Access Ma	anagement(IAM).			
4	Attain the Capabili Web Services.	ty of design, development of agile and highly a	vailable systems ı	ısingAmazon		
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:1.5		
Outcome	VI Sem	INTERNET OF THINGS LAB(B20CS42)	L:0 T:0 P:3			
After the ec	mulation of this a	avera the students should be able to				
After the cu	Improve the quality	y of life of humans through IoT technology for t	hat student closer	interaction		
1	between the experi	ment and the society	hat student closer	Interaction		
2	Identify the Compo	ponents that forms part of IoT specific Application	on.			
3	Determine the mos	t appropriate IoT Devices and Sensors based on	IoT application.			
4	Improve the Python	n programming skills for writing IoT Application	on			
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:0		
Outcome	VI Sem	LOGICAL REASONING AND	L:2 T:0 P:0			
		QUANTITATIVE APTITUDE(B20MC05)				
After the o	completion of this of	course, the students should be able to				
1	Apply quantitative problems.	reasoning and mathematical analysis methodol	ogies to understar	id and solve		
2	Apply quantitative	e correctly arrive at meaningful conclusions	regarding their a	nswers and		
	manipulate equation	ons and formulas in order to solve for the desire	d variable			
3	Interpret given inf	ormation correctly, determine which mathemat	tical model best d	escribes the		
	data, and apply the	model correctly.				
4	Correctly apply ma	thematical language and notation to explain the solving problems using mathematical or statistic	e reasoning under	lying their		
5	Improve their math	pematical skills in various general aspects to solu	ve real time proble	ms		
5	Improve their mathematical skills in various general aspects to solve real time problems.					

Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:3
Outcome	VII Sem	DEEP LEARNING(B20AI10)	L.3 T.0 P.0	
Outcome			1.5 1.01.0	
After the c	completion of this c	course, the students should be able to		
1	Understand the bas	ics of Artificial Neural Networks.		
2	Understand the Dec	is Learning Networks and Special Networks.		
5				
4	Develop different p	barameters for Regularization for Deep Learning	g.	
5	Design Optimized			
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:3
Outcome	VII Sem	MANAGERIAL ECONOMICS AND FINANCIAL ANALYSIS(B20MB01)	L:3 T:0 P:0	
After the c	ompletion of this c	course the students should be able to		
Arter the t	Understand the net	ure score and importance of Managerial Econo	mias	
2	Know what deman	d is analyze demand and how elasticity of dema	nd is used for pri	cingdecisions
2	and to evaluate me	thods for forecasting demand.	ind is used for pri-	enigueersions
3	Know how product	ion function is carried out to achieve least cost	combination of	
	Inputsand how to a	nalyze cost.		
4	Understand the cha	racteristics of different kinds of markets and ou	tline different for	m
	ofbusiness organiza	ation and analyze how capital budgeting technic	ques are used for	
5	Know how to prepa	lls.	lyze and interpre	tfinancial
5	statements using ra	tio analysis.	aryze and interpre	umanetar
Course	Vear / semester	Subject Name (Subject Code)	No. of Hours	Credits:3
Outcome	VII Com	SOFTWARE TESTING(B20CS44)	I.2 T.0 D.0	Ci cuits.s
Outcome	vii Sem	(PROFESSIONAL ELECTIVE – III)	L:5 1:0 P:0	
After the c	completion of this c	course, the students should be able to		
1	Design test cases su	uitable for a software development for different	domains.	
2	Prepare test planning	ng based on the document.		
3	Identify suitable tes	sts to be carried out.		
4	Validate test plan a	nd test cases designed		
5	Use of automatic te	esting tools		
Course	Veen / semester	Subject Name (Subject Code)	No. of House	Creediter 2
Course	Year / semester	SUBJECT NAME (SUBJECT CODE)	No. of Hours	Creans:5
Outcome	VII Sem	(PROFESSIONAL ELECTIVE – III)	L:3 T:0 P:0	
		(B20CS45)		
After the c	completion of this c	course, the students should be able to		
1	Design various ser	vice layers		
2	Model service cand	lidate derived from existing business documenta	ation.	
3	Design the compos	ition of SOA.		
4	Design application	services for technology abstraction.		
5	Principles of Servic	e-Orientation.		
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:3
Outcome	VII Sem	SCRIPTING LANGUAGES (B20CS46)	L:3 T:0 P:0	
		(PROFESSIONAL ELECTIVE – III)		
After the c	completion of this c	course, the students should be able to		
1	Perceive of scriptin	ig and the contributions of scripting languages.		
2	Develop simple s	cripts to automate system administration.	-1	
3	Gain knowledge of	the strengths and weakness of Perl, TCL and R	uby; and select a	n
4	Acquire programm	ing skills in scripting language		
5	Develop simple a	pplications by various tools and expose to c	create advanced	applications
				11

Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:3	
Outcome	VII Sem	BUSINESS INTELLIGENCE & BIG DATA	L:3 T:0 P:0		
		(PROFESSIONAL ELECTIVE – IV) (B20CS47)			
After the c	ompletion of this c	course the students should be able to			
1	Explain the foundation	tions, definitions and capabilities of Bigdata.			
2	List the definitions.	, concepts, architectures and challenges in Big of	data environment.	Outline the	
	definitions, concept	ts, and enabling technologies of big data analyt	ics.		
3	3 Understand concepts on Handoop Ecosystem in Big data.				
4	Analyze the Map re	educe programming in Big data Analytics.			
5	Apply Security big	data technologies in business intelligence using	g geospatialλ data	, location-	
	based analytics, soo	cial networking, Web 2.0, reality mining, and c	loud computing.		
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:3	
Outcome	VII Sem	REINFORCEMENT LEARNING (B20AI15) (PROFESSIONAL ELECTIVE – IV)	L:3 T:0 P:0		
After the c	completion of this c	course, the students should be able to			
1	Understand the key	features of Reinforcement Learning.			
2	Apply the different	algorithms and define the policy.			
3	Analyze multiple c metrics.	riteria for analyzing RL algorithms and evaluat	e algorithms on th	lese	
4	Evaluate the eligibi	lity traces, Eligibility traces used for sampling.			
5	Create Function Ap	pproximation Methods.			
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:3	
Outcome	VII Sem	CYBER SECURITY & ETHICAL	L:3 T:0 P:0		
		HACKING (B20CS48)			
		(PROFESSIONAL ELECTIVE – IV)			
After the c	completion of this o	course, the students should be able to			
1	Outline key terms	and concepts in cyber law, intellectual pro	perty and		
	cybercrimes.		1 2		
2	cybercrimes. Explore the vulne	rabilities, threats and cybercrimes posed by	criminals.		
23	cybercrimes. Explore the vulne Identify various sec	rabilities, threats and cybercrimes posed by curity challenges phased by mobile devices.	criminals.		
2 3 4	cybercrimes. Explore the vulne Identify various sec	rabilities, threats and cybercrimes posed by curity challenges phased by mobile devices.	v criminals.	counter	
2 3 4	cybercrimes. Explore the vulne Identify various sec Identify various typ methods to maintai	prabilities, threats and cybercrimes posed by curity challenges phased by mobile devices. bes of tools and methods used in cybercrime, de n security protection	v criminals.	counter	
2 3 4 5	cybercrimes. Explore the vulne Identify various sec Identify various typ methods to maintai Analyze the cyber	rabilities, threats and cybercrimes posed by curity challenges phased by mobile devices. bes of tools and methods used in cybercrime, de n security protection r security risk management policies in order	v criminals. evelops the secure	counter rotect an	
2 3 4 5	cybercrimes. Explore the vulne Identify various sec Identify various typ methods to maintai Analyze the cyber organization's crit	prabilities, threats and cybercrimes posed by curity challenges phased by mobile devices. bes of tools and methods used in cybercrime, de n security protection r security risk management policies in order cical information and assets.	v criminals. evelops the secure r to adequately p	counter rotect an	
2 3 4 5 <b>Course</b>	cybercrimes. Explore the vulne Identify various sec Identify various typ methods to maintai Analyze the cyber organization's crit <b>Year / semester</b>	rabilities, threats and cybercrimes posed by curity challenges phased by mobile devices. bes of tools and methods used in cybercrime, de n security protection r security risk management policies in order cical information and assets.	v criminals. evelops the secure r to adequately p	counter rotect an Credits:2	
2 3 4 5 Course Outcome	cybercrimes. Explore the vulne Identify various sec Identify various typ methods to maintai Analyze the cyber organization's crit Year / semester VII Sem	rabilities, threats and cybercrimes posed by curity challenges phased by mobile devices. bes of tools and methods used in cybercrime, de n security protection r security risk management policies in order cical information and assets. Subject Name (Subject Code) MINI PROJECT & INTERNSHIP	v criminals. evelops the secure r to adequately p <b>No. of Hours</b> L:0 T:0 P:0	counter rotect an Credits:2	
2 3 4 5 Course Outcome	cybercrimes. Explore the vulne Identify various sec Identify various typ methods to maintai Analyze the cyber organization's crit Year / semester VII Sem	rabilities, threats and cybercrimes posed by curity challenges phased by mobile devices. bes of tools and methods used in cybercrime, de n security protection r security risk management policies in order cical information and assets. Subject Name (Subject Code) MINI PROJECT & INTERNSHIP (B20CS49)	v criminals. evelops the secure t to adequately p <b>No. of Hours</b> L:0 T:0 P:0	counter rotect an Credits:2	
2 3 4 5 Course Outcome	cybercrimes. Explore the vulne Identify various sec Identify various typ methods to maintai Analyze the cyber organization's crit Year / semester VII Sem Enhance students	rabilities, threats and cybercrimes posed by curity challenges phased by mobile devices. bes of tools and methods used in cybercrime, de n security protection r security risk management policies in order cical information and assets. Subject Name (Subject Code) MINI PROJECT & INTERNSHIP (B20CS49) ' knowledge in current technology	v criminals. evelops the secure r to adequately p No. of Hours L:0 T:0 P:0	counter rotect an Credits:2	
2 3 4 5 Course Outcome	cybercrimes. Explore the vulne Identify various sec Identify various typ methods to maintai Analyze the cyber organization's crit Year / semester VII Sem Enhance students Develop leadersh	rabilities, threats and cybercrimes posed by curity challenges phased by mobile devices. bes of tools and methods used in cybercrime, de n security protection r security risk management policies in order cical information and assets. Subject Name (Subject Code) MINI PROJECT & INTERNSHIP (B20CS49) ' knowledge in current technology in ability and responsibility to execute the s	v criminals. evelops the secure r to adequately p No. of Hours L:0 T:0 P:0	counter rotect an Credits:2	
2 3 4 5 Course Outcome	cybercrimes. Explore the vulne Identify various sec Identify various typ methods to maintai Analyze the cyber organization's crit Year / semester VII Sem Enhance students Develop leadersh Enhance their em	rabilities, threats and cybercrimes posed by curity challenges phased by mobile devices. bes of tools and methods used in cybercrime, de n security protection r security risk management policies in order cical information and assets. Subject Name (Subject Code) MINI PROJECT & INTERNSHIP (B20CS49) ' knowledge in current technology ip ability and responsibility to execute the g ployability skills along with real corporate	v criminals. evelops the secure t to adequately p No. of Hours L:0 T:0 P:0 given task exposure	counter rotect an Credits:2	
2 3 4 5 Course Outcome	cybercrimes. Explore the vulne Identify various sec Identify various typ methods to maintai Analyze the cyber organization's crit Year / semester VII Sem Enhance students Develop leadersh Enhance their em Elaborate the con	rabilities, threats and cybercrimes posed by curity challenges phased by mobile devices. bes of tools and methods used in cybercrime, de n security protection r security risk management policies in order cical information and assets. Subject Name (Subject Code) MINI PROJECT & INTERNSHIP (B20CS49) ' knowledge in current technology ip ability and responsibility to execute the g ployability skills along with real corporate pleted task and compile the report.	v criminals. evelops the secure r to adequately p No. of Hours L:0 T:0 P:0	counter rotect an Credits:2	
2 3 4 5 Course Outcome	cybercrimes. Explore the vulne Identify various sec Identify various typ methods to maintai Analyze the cyber organization's crit Year / semester VII Sem Enhance students Develop leadersh Enhance their em Elaborate the con	rabilities, threats and cybercrimes posed by curity challenges phased by mobile devices. bes of tools and methods used in cybercrime, de n security protection r security risk management policies in order cical information and assets. Subject Name (Subject Code) MINI PROJECT & INTERNSHIP (B20CS49) ' knowledge in current technology ip ability and responsibility to execute the g ployability skills along with real corporate pleted task and compile the report. Subject Name (Subject Code)	v criminals. evelops the secure r to adequately p No. of Hours L:0 T:0 P:0 given task exposure	counter rotect an Credits:2	
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2 3 4 5 Course Outcome 1 2 3 4 Course Outcome After the c	cybercrimes. Explore the vulne Identify various sec Identify various typ methods to maintai Analyze the cyber organization's crit Year / semester VII Sem Enhance students Develop leadersh Enhance their em Elaborate the con Year / semester VII Sem	rabilities, threats and cybercrimes posed by curity challenges phased by mobile devices. bes of tools and methods used in cybercrime, de n security protection r security risk management policies in order cical information and assets. <b>Subject Name (Subject Code)</b> MINI PROJECT & INTERNSHIP (B20CS49) ' knowledge in current technology ip ability and responsibility to execute the g ployability skills along with real corporate pleted task and compile the report. <b>Subject Name (Subject Code)</b> DEEP LEARNING LAB (B20AI13)	v criminals. v criminals. evelops the secure r to adequately p No. of Hours L:0 T:0 P:0 given task exposure No. of Hours L:0 T:0 P:3	counter rotect an Credits:2 Credits:1.5	
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2 3 4 5 Course Outcome 1 2 3 4 Course Outcome After the c 1 2	cybercrimes. Explore the vulne Identify various sec Identify various sec Identify various typ methods to maintai Analyze the cyber organization's crit Year / semester VII Sem Enhance students Develop leadersh Enhance their em Elaborate the con Year / semester VII Sem completion of this of Understand the bas Describe the variou	rabilities, threats and cybercrimes posed by curity challenges phased by mobile devices. bes of tools and methods used in cybercrime, den security protection r security risk management policies in order cical information and assets. <b>Subject Name (Subject Code)</b> MINI PROJECT & INTERNSHIP (B20CS49) ' knowledge in current technology ip ability and responsibility to execute the <u>g</u> ployability skills along with real corporate upleted task and compile the report. <b>Subject Name (Subject Code)</b> DEEP LEARNING LAB (B20AI13) <b>course, the students should be able to</b> ics of Artificial Neural Networks. Ins Learning Networks and Special Networks	v criminals. evelops the secure r to adequately p No. of Hours L:0 T:0 P:0 given task exposure No. of Hours L:0 T:0 P:3	counter rotect an Credits:2 Credits:1.5	
2 3 4 5 Course Outcome 1 2 3 4 Course Outcome After the c 1 2 3 3	cybercrimes. Explore the vulne Identify various sec Identify various sec Identify various typ methods to maintai Analyze the cyber organization's crit Year / semester VII Sem Enhance students Develop leadersh Enhance their em Elaborate the con Year / semester VII Sem completion of this of Understand the bas Describe the variou Understand the Description	rabilities, threats and cybercrimes posed by curity challenges phased by mobile devices. Des of tools and methods used in cybercrime, de n security protection r security risk management policies in order cical information and assets. Subject Name (Subject Code) MINI PROJECT & INTERNSHIP (B20CS49) r knowledge in current technology ip ability and responsibility to execute the g ployability skills along with real corporate rapleted task and compile the report. Subject Name (Subject Code) DEEP LEARNING LAB (B20AI13) course, the students should be able to ics of Artificial Neural Networks. Is Learning Networks and Special Networks ep Neural Network.	v criminals. v criminals. evelops the secure r to adequately p No. of Hours L:0 T:0 P:0 given task exposure No. of Hours L:0 T:0 P:3	counter rotect an Credits:2 Credits:1.5	

Course Outcome	Year / semester VII Sem	Subject Name (Subject Code) MAJOR PROJECT PHASE-I	No. of Hours L:0 T:0 P:8	Credits:4	
1		(B20CS50)			
1	Identify the probl	Identify the problem by applying acquired knowledge.			
2	Analyze and categorize executable project modules.				
3	Choose efficient tools for designing project modules.				
4	Combine all the modules through effective team work after efficient testing				
5	Elaborate the con	npleted task and compile the project report.			
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:0	
Outcome	VII Sem	HUMAN VALUES AND PROFESSIONAL ETHICS(B20MC05)	L:2 T:0 P:0		
After the o	completion of this c	course, the students should be able to			
1	Perceive the impor	tance of ethics and values in life and society.			
2	Develop moral resp	oonsibility and mould them as best professionals	i.		
3	Create ethical visio	n and achieve harmony in life.			
4	Provide a critical pe	erspective on the socialization of men and wom	en		
5	Perceive the impor	tant issues related to gender in contemporary In	dia		
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:3	
Outcome	VIII Sem	DESIGN PATTERNS (B20CS51)	L:3 T:0 P:0		
	,	(PROFESSIONAL ELECTIVE – V)			
After the o	completion of this c	course, the students should be able to			
1	Identify the approp	riate design patterns to solve object oriented de	sign problems.		
2	Identify and impler	nent appropriate solutions to recurring program	iming problems b	y consulting	
	technical document	tation and specifications, including design patte	rn catalogs and ex	tisting	
3	Understand basic of	lamonte of structural patterns and their implane	ntation		
	Understand basic e	lements of creational patterns and their implements	entations		
5	Understand basic e	lements of behavioral patterns and their implem	entation along w	ith growth in	
5	the field of using d	esign natterns	citation along w	itil growth ill	
Course	Voor / comostor	Subject Name (Subject Code)	No of Hours	Credite:3	
Course	I cal / semester	BLOCK CHAIN TECHNOLOGIES		Cieuns.5	
Outcome	VIII Sem	(B20CS52)	L:3 1:0 P:0		
		(PROFESSIONAL ELECTIVE – V)			
After the c	completion of this c	course, the students should be able to			
1	Introduce the funda	amentals of blockchain, history, technology and	decentralization.		
2	Revise cryptograph	hic concepts and its use in blockchain.			
3	Define bitcoin and	understand structure of blockchain, alternatives	s to proof of work		
4	Introduce smart co	ntracts, solidity and Web3 to implement blockc	hain		
5	Understand applica	tions of blockchain and its challenges			
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:3	
Outcome	VIII Sem	PRINCIPLES OF ROBOTICS(B20AI24) (PROFESSIONAL ELECTIVE – V)	L:3 T:0 P:0		
After the c	completion of this c	course, the students should be able to			
1	Understand Roboti	c Process Automation & Bot Creation.			
2	Apply methods for	Bots Upload and Credentials.			
3	Analyze devices to	Develop and Runtime Clients and Device Pool	s.		
4	Develop Bot creato	or using XML commands.			
5	Create work flow d	lesigner			
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:3	
---------------------------------------------------------------------	------------------------------------------------------------------------------------------------	---------------------------------------	--------------	------------	
Outcome	VIII Sem	COMPUTER VISION (B20AI26)	L:3 T:0 P:0		
oucome		(PROFESSIONAL ELECTIVE – VI)			
After the completion of this course, the students should be able to					
1	Elaborate development of algorithms and techniques.				
2	Analyze and interpret the visible world around us with real time problems.				
3	Apply the fundamental concepts on multi-dimensional signal processing, feature extraction,				
4	pattern analysis visual geometric modeling, stochastic optimization etc.				
4	Take part to makeup and contribute in research developments in the field of computer vision.				
5	Explain different applications ranging from Biometrics, Medical diagnosis, document				
a	Very Compared to Subject News (Cabiert Cab)				
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:3	
Outcome	VIII Sem	(PROFESSIONAL FLECTIVE - VI)	L:3 T:0 P:0		
After the c	ompletion of this (	course the students should be able to			
1 Understands various types of Substitution cinhers					
2	Explore various techniques to break the ciphers and understands transposition				
_	techniques.				
3	Compare and contrast block cipher and stream cipher algorithms				
4	Implementation of asymmetric key cryptographic algorithms and understand key management in				
	public key cryptography.				
5	Explore different types of steganography techniques to hide the data in text and				
	images.				
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:3	
Outcome	VIII Sem	NATURAL LANGUAGE PROCESSING	L:3 T:0 P:0		
		(PROFESSIONAL ELECTIVE - VI)			
After the completion of this course, the students should be able to					
1	oranmars				
2	Understand and carry out proper experimental methodology for training and evaluating empirical				
	NLP systems				
3	Able to manipulate probabilities, construct statistical models over strings and trees, and				
	estimate parameters using supervised and unsupervised training methods.				
4	Able to design, implement, and analyze NLP algorithms				
5	Able to design different language modelling Techniques.				
Course	Year / semester	Subject Name (Subject Code)	No. of Hours	Credits:1	
Outcome	VIII Sem	TECHNICAL SEMINAR(B20CS53)	L:0 T:0 P:2		
After the c	er the completion of this course, the students should be able to				
1 Identify recent technical tonics from interested domains					
2	Analyze the applicability of modern tools and technology				
3	Discuss and justify the technical aspects of the chosen topic in a systematic approach				
4	Develop Presentation and Communication skills.				
Course	Voor / comostor	Subject Neme (Subject Code)	No of Hours	Creditor	
Course	VIII Sem	MAIOR PROJECT PHASE-II(R20CS54)	NU. OI HOURS	CI CUILS:0	
Outcome			L:0 T:0P:16		
After the completion of this course, the students should be able to					
1 Identify the problem by applying acquired knowledge.					
2	Analyze and categorize executable project modules.				
3	Choose efficient tools for designing project modules.				
4	Combine all the modules through effective team work after efficient testing				
5					
1	Enaborate the completed task and complet the project report.				