DEPARTMENT OF COMPUTER APPLICATIONS
Proposed Course Structure (Autonomous) for MTECH.
MTECH I Semester

S.No	Course Code	Course Category	Course Title	Hours per week			Total Contact Hours	Credits
				Lecture	Tutorial	Practical		
1	PG18CS1T01	PCC	Mathematical foundations of Computer Science	3			3	3
2	PG18CS1T02	PCC	Advanced Data Structures	3			3	3
3	PG18CS1T03/ PG18CS1T04/ PG18CS1T05	PEC	Machine Learning/ Wireless Sensor Networks/ Introduction to Intelligent Systems	3			3	3
4	PG18CS1T06/ PG18CS1T07/ PG18CS1T08	PEC	Data Science/ Distributed Systems/ Advanced Wireless and Mobile Networks	3			3	3
5	PG18CS1T09	BSC	Research Methodology and IPR	2			2	2
6	PG18CS1T10	BSC	Audit Course – English for Research Paper Writing	2			2	--
7	PG18CS1L11	PCC	Advanced Data Structures Lab			4	2	2
8	PG18CS1L12	PCC	Machine Learning Lab			4	2	2
								18

MTECH II Semester

S.No	Course Code	Course Category	Course Title	Hours per week			Total Contact Hours	Credits
				Lecture	Tutorial	Practical		
1	PG18CS2T01	PCC	Advanced Algorithms	3			3	3
2	PG18CS2T02	PCC	Soft Computing	3			3	3
3	PG18CS2T03/ PG18CS2T04/ PG18CS2T05	PEC	Data Preparation and Analysis/ Secure Software Design & Enterprise Computing/ Computer Vision	3			3	3
4	PG18CS2T06/ PG18CS2T07/ PG18CS2T08	PEC	Human and Computer Interaction/ GPU Computing/ Digital Forensics	3			3	3
5	PG18CS2T09	BSC	Audit Course: Value Education	2			2	--
6	PG18CS2L10	PCC	Laboratory 3 Advanced Algorithms Lab			4	2	2
7	PG18CS2L11	PCC	Laboratory 4 Data Preparation and Analysis Lab			4	2	2
8	PG18CS2L12	P	Mini Project with Seminar	2			2	2

	18

MTECH III Semester

S.No	Course Code	Course Category	Course Title	Hours per week			Total Contact Hours	Credits
				Lecture	Tutorial	Practical		
1	PG18CS3T01/ PG18CS3T02/ PG18CS3T03	PEC	Mobile Applications and Services/ Compiler for HPC/ Optimization Techniques	3			3	3
2	PG18CS3T04/ PG18CS3T05	OEC	Business Analytics/ Operations Research	3			3	3
3	PG18CS3L06	P	Dissertation – I / Industrial Project			20	10	10
								16

MTECH IV Semester

S.No	Course Code	Course Category	Course Title	Hours per week			Total Contact Hours	Credits
				Lecture	Tutorial	Practical		
1	PG18CS4L01	P	Dissertation - II			32	16	16
								16

Devineni Venkata Ramana & Dr. Hima Sekhar

MIC College of Technology

An Autonomous Institution

(Approved by AICTE & Permanently Affiliated to JNTUK, Kakinada)

Kanchikacherla – 521180, Krishna Dist., AP, India

Department of Electrical & Electronics Engineering

Specialization: Power Electronics & Electrical Drives

Course Structure for M.Tech I Year, Semester – I

S.No	Course Code	Course Category	Course Title	Hours per week			Total Contact Hours	Credits
				Lecture	Tutorial	Practical		
1	PG18EE1T01	PCC	Mathematical Modeling of Machines	3	-	-	3	3
2	PG18EE1T02	PCC	Analysis of power Electronic Converters	3	-	-	3	3
3	PG18EE1T03	PCC	Power Electronic Control of DC Drives	3	-	-	3	3
4	PG18EE1T04	PCC	Digital Signal processing	3	-	-	3	3
5	PG18EE1T05	PCC	HVDC	3	-	-	3	3
6	PG18EE1L06	PCC	Simulation of Electrical Machines and Converters	-	-	6	6	3
							Total number of credits	**18**

Course Structure for M.Tech I Year, Semester – II

S.No	Course Code	Course Category	Course Title	Hours per week			Total Contact Hours	Credits
				Lecture	Tutorial	Practical		
1	PG18EE2T01	PCC	Power Electronic Control of AC Drives	3	-	-	3	3
2	PG18EE2T02	PCC	Advanced Power Electronic Converters	3	-	-	3	3
3	PG18EE2T03	PEC	RES/SEM/DCS	3	-	-	3	3
4	PG18EE2T04	PEC	SG/PQ/Opt Tech	3	-	-	3	3
5	PG18EE2L05	PCC	Electric Drives Lab	-	-	6	6	3
6	PG18EE2P06	PROJ	Mini Project with Seminar	-	-	6	6	3
							Total number of credits	**18**

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Kanchikacherla – 521180, Krishna Dist., AP, India

Department of Electrical & Electronics Engineering

Course Structure for M.Tech II Year, Semester – I

S.No	Course Code	Course Category	Course Title	Hours per week			Total Contact Hours	Credits
				Lecture	Tutorial	Practical		
1	PG18EE3T01	PCC	Digital Control of Drives	3	-	-	3	3
2	PG18EE3V02	PEC	Comprehensive Viva Voce	-	-	6	6	3
3	PG18EE3P03	PROJ	Phase – I Dissertation	-	-	-	20	10
							Total number of credits	**16**

Course Structure for M.Tech II Year, Semester – II

S.No	Course Code	Course Category	Course Title	Hours per week			Total Contact Hours	Credits
				Lecture	Tutorial	Practical		
1	PG18EE2P01	PROJ	Phase – II Dissertation	-	-	-	32	16
							Total number of credits	**16**

DEPARTMENT OF MECHANICAL ENGINEERING

PROPOSED COURSE STRUCTURE (Autonomous) for M. Tech (Machine Design)

I Year I Semester

S.No	Course Code	Course Title	Hours Per Week			Total Contact Hours	Credits
			L	T	P		
1	18311T01	Advanced Stress Analysis	3	---	---	3	3
2	18311T02	Advanced Vibrations and Acoustics	3	---	---	3	3
3	18311T03	1.Advanced Machine Design	3	---	---	3	3
	18311T04	2.Design for Manufacturing and Assembly					
	18311T05	3.Mathematical Methods in Engineering					
4	18311T06	1.Advanced Engineering Materials	3	---	---	3	3
	18311T07	2.Mechanics of Composite Materials					
	18311T08	3.Analysis and Synthesis of Mechanisms					
5	18311L11	Machine dynamics lab	---	---	4	4	2
6	18311L12	Numerical Simulation lab	---	---	4	4	2
7	18311T09	Research Methodology and IPR	2	---	---	2	2
8	18311T10	Audit Course – 1	2	---	---	2	0
		TOTAL	16	---	8	24	18

I Year II Semester

S.No	Course Code	Course Title	Hours Per Week			Total Contact Hours	Credits
			L	T	P		
1	18312T01	Finite Element Method	3	---	---	3	3
2	18312T02	Computer Aided Design	3	---	---	3	3
3	18312T03	1. Tribology in Design	3	---	---	3	3
	18312T04	2. Robotics					
	18312T05	3. Fracture Mechanics					
4	18312T06	1. Multi-body Dynamics	3	---	---	3	3
	18312T07	2. Condition Based Monitoring					
	18312T08	3. Optimization Techniques in Design					
5	18312L11	Computer Aided Design lab	---	---	4	4	2
6	18312L12	Simulation lab	---	---	4	4	2
7	18312T09	Audit Course-2	2	---	---	2	0
8	18312P10	Mini-Project with Seminar	---	---	4	4	2
		TOTAL	14	---	12	26	18

V. S. SAI (DR V. S. SAI)

(K. SRINIVAS)

(DR. G. RAJESH)

R. Kesiraju

(P. Bhagat Singh)

II Year III Semester

S.No	Course Code	Course Title	Hours Per Week			Total Contact Hours	Credits
			L	T	P		
1	18313T01	1. Advanced Finite Element Method	3	---	---	3	3
	18313T02	2. Advanced Metallurgy					
2	18313T03	1. Business Analytics	3	---	---	3	3
	18313T04	2. Industrial Safety					
	18313T05	3. Operations Research					
	18313T06	4. Cost Management of Engineering Projects					
	18313T07	5. Composite Materials					
	18313T08	6. Waste to Energy					
3	18313P08	Dissertation Phase – I	---	---	20	20	10
		TOTAL	6	---	20	26	16

II Year IV Semester

S. No	Course Code	Course Title	Hours Per Week			Total Contact Hours	Credits
			L	T	P		
1	18314P01	Dissertation Phase – II	---	---	32	32	32
		TOTAL	---	---	32	32	16

Audit course 1 & 2

1. English for Research Paper Writing
2. Disaster Management
3. Sanskrit for Technical Knowledge
4. Value Education
5. Constitution of India
6. Pedagogy Studies
7. Stress Management by Yoga
8. Personality Development through Life Enlightenment Skills.

(Dr V.S.SAI) (CK.SRINIVAS) (Dr G RAJESH) (P Bhagat Singh)

DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING
PROPOSED COURSE STRUCTURE (Autonomous)
for M.Tech (VLSI and Embedded Systems)
I Year I Semester

Sr. No.	Course Code	Course Title	L	T	P	Contact Hrs./ Wk.	Credits
1	18411T01	Digital System Design	3	0	0	3	3
2	18411T02	Embedded Real Time Operating Systems	3	0	0	3	3
3	18411T03 18411T04 18411T05	**Programme Elective I** 1. VLSI Technology and Design 2.CMOS Digital IC Design 3. System on Chip Design	3	0	0	3	3
4	18411T06 18411T07 18411T08	**Programme Elective II** 1. Advanced Operating Systems 2. Soft Computing Techniques 3. Network Security and Cryptography	3	0	0	3	3
5	18411L09	VLSI System design Lab-I	0	0	4	2	2
6	18411L10	Digital System Design using Verilog and VHDL	0	0	4	2	2
7	18411T11	Research Methodology	2	0	0	2	2
						Total Credits	**18**

I Year II Semester

Sr. No.	Course Code	Course Title	L	T	P	Contact Hrs./ Wk.	Credits
1	18412T01	Embedded system Design	3	0	0	3	3
2	18412T02	Low Power VLSI Design	3	0	0	3	3
3	18412T03 18412T04 18412T05	**Programme Elective III** 1. VLSI Signal Processing 2. CMOS Mixed Signal Circuit Design 3. CPLD & FPGA Architectures and Applications.	3	0	0	3	3
4	18412T06 18412T07 18412T08	**Programme Elective IV** 1.Micro Electro Mechanical Systems (MEMS) Design 2. DSP Processors & Architectures 3. Semiconductor Memory Design and Testing.	3	0	0	3	3
5	18412L09	Embedded System Design lab	0	0	4	4	2
6	18412L10	VLSI System design Lab-II	0	0	4	4	2
7	18412T11	Intellectual Property Rights And Patents	2	0	0	2	2
						Total Credits	**18**

II Year III Semester

Sr. No.	Course Code	Course Title	L	T	P	Contact Hrs./ Wk.	Credits
1	18413T01 18413T02 18413T03	**Programme Elective V** 1. Advanced Computer Architecture 2. ASIC Design 3. Design for IOT	3	0	0	3	3
2	18413T04 18413T05 18413T06	**Programme Elective VI** 1. Image and Video Processing 2. Wireless communications and Networks 3. Multimedia Systems	3	0	0	3	3
3	18413P07	Project Work part-1	0	0	20	20	10
						Total Credits	**16**

II Year IV Semester

Sr. No.	Course Code	Course Title	L	T	P	Contact Hrs./ Wk.	Credits
1	18414S01	Comprehensive Viva-Voce	0	0	4	4	2
2	18414P02	Project Work Part -II	0	0	28	28	14
						Total Credits	**16**

Dr.M Rama Subba Reddy

Dr.I Santhi Prabha

Dr. Anil Kumar

Mr.N Pradeep

Dr. Goutam Kumar Gupta

DEPARTMENT OF COMPUTER APPLICATIONS
Proposed Course Structure (Autonomous) for MCA.
MCA I Semester

S.No	Course Code	Course Category	Course Title	Hours per week			Total Contact Hours	Credits
				Lecture	Tutorial	Practical		
1	18MC1T01	ESC	Introduction to Computer and C Programming	3			3	3
2	18MC1T02	PCC	Computer Organization	3			3	3
3	18MC1T03	PCC	Discrete Mathematical Structures and Graph Theory	3			3	3
4	18MC1T04	HSMC	Accountancy & Financial Management	3			3	3
5	18MC1T05	BSC	Probability & Statistics	3			3	3
6	18MC1L06	HSMC	English Communication Skills Lab			4	2	2
7	18MC1L07	ESC	C Programming Lab			4	2	2
8	18MC1T08	MC	Environmental Studies	2			2	--
								19

MCA II Semester

S.No	Course Code	Course Category	Course Title	Hours per week			Total Contact Hours	Credits
				Lecture	Tutorial	Practical		
1	18MC2T01	PCC	Data Structures	3			3	3
2	18MC2T02	PCC	Operating Systems	3			3	3
3	18MC2T03	PCC	Data Base Management Systems	3			3	3
4	18MC2T04	HSMC	Management Science	3			3	3
5	18MC2T05	PCC	Unix Shell Programming	3			3	3
6	18MC2L06	PCC	Data Structures through C Lab			4	2	2
7	18MC2L07	PCC	DBMS Lab			4	2	2
8	18MC2L08	PCC	Unix Shell Programming Lab			4	2	2
								21

MIC COLLEGE OF TECHNOLOGY
(Autonomous)

MCA III Semester

S.No	Course Code	Course Category	Course Title	Hours per week			Total Contact Hours	Credits
				Lecture	Tutorial	Practical		
1	18MC3T01	PCC	Java Programming	3			3	3
2	18MC3T02	ESC	R Programming	3			3	3
3	18MC3T03	PCC	Software Engineering	3			3	3
4	18MC3T04	PCC	Computer Networks	3			3	3
5	18MC3T05	PCC	Design & Analysis of algorithms	3			3	3
6	18MC3L06	PCC	Java Programming Lab			4	2	2
7	18MC3L07	ESC	R Programming Lab			4	2	2
8	18MC3T08	HSMC	Professional Ethics & Human Values	2			2	--
								19

MCA IV Semester

S.No	Course Code	Course Category	Course Title	Hours per week			Total Contact Hours	Credits
				Lecture	Tutorial	Practical		
1	18MC4T01	PCC	Web Technologies	3			3	3
2	18MC4T02	PCC	Python Programming	3			3	3
3	18MC4T03	PCC	Data warehousing & Data Mining	3			3	3
4	18MC4T04	PCC	E-Commerce	3			3	3
5	18MC4T05/18MC4T06/18MC4T07	PEC	Elective 1: Cryptography & Network Security Distributed Systems Artificial Intelligence	3			3	3
6	18MC4L08	PCC	Web Technologies Lab			4	2	2
7	18MC4L09	PCC	Python Programming Lab			4	2	2
8	18MC4L10	PCC	Object Oriented Analysis & Design Lab			4	2	2
9	18MC4T11	HSMC	Employability Skills	3			3	--
								21

MCA V Semester

S.No	Course Code	Course Category	Course Title	Hours per week			Total Contact Hours	Credits
				Lecture	Tutorial	Practical		
1	18MC5T01	PCC	Software Testing Methodologies	3			3	3
2	18MC5T02	PCC	Hadoop & Big Data	3			3	3
3	18MC5T03	PCC	Mobile Computing	3			3	3
4	18MC5T04/ 18MC5T05/ 18MC5T06	PEC	**Elective 2:** Machine learning &Deep Learning Cloud Computing Human Computer Interaction	3			3	3
5	18MC5T07/ 18MC5T08/ 18MC5T09	PEC	**Elective 3:** Internet of Things Software Project Management Data Analytics	3			3	3
6	18MC5L10	PCC	Hadoop & Big Data Lab			4	2	2
7	18MC5L11	PCC	Mobile Application Development Lab			4	2	2
8	18MC5T12	PROJ	Project – I			4	2	2
								21

MCA VI Semester

S.No	Course Code	Course Category	Course Title	Hours per week			Total Contact Hours	Credits
				Lecture	Tutorial	Practical		
1	18MC6T01	T	Technical Seminar		3		3	3
2	18MC6L02	PROJ	Project – II			32	16	16
								19

Devineni Venkata Ramana & Dr. Hima Sekhar

MIC College of Technology

Department of Mechanical Engineering

Course Structure

I Semester

S.No	Course Code	Course Category	Course Title	Hours per week			Total Contact Hours	Credits
				Lecture	Tutorial	Practical		
1	18ME1T01	HSMC	English-1	2	-	-	2	2
2	18ME1T02	BSC	Linear Algebra & Differential Equations	3	1	-	4	4
3	18ME1T03	BSC	Engineering Chemistry	3	-	-	3	3
4	18ME1T04	ESC	Problem solving through C	3	-	-	3	3
5	18ME1T05	ESC	Engineering Mechanics	3	1	-	4	4
6	18ME1L06	HSMC	English Communication Skill Lab-1	-	-	2	2	1
7	18ME1L07	BSC	Engineering Chemistry Lab	-	-	3	3	1.5
8	18ME1L08	ESC	Problem solving through C Lab	-	-	3	3	1.5
9	18ME1T09	MC	Environmental Studies	2	-	-	2	-
							Total number of credits	**20**

II Semester

S.No	Course Code	Course Category	Course Title	Hours per week			Total Contact Hours	Credits
				Lecture	Tutorial	Practical		
1	18ME2T01	HSMC	English-II	1	0	**2**	3	2
2	18ME2T02	BSC	Vector Calculus and Fourier Transforms	3	0	-	3	3
3	18ME2T03	BSC	Engineering Physics	3	0	-	3	3
4	18ME2T04	BSC	Biology for Engineers	2	-	-	2	2
5	18ME2T05	ESC	Basic Electrical & Electronics Engineering	3	-	-	3	3
6	18ME2T06	ESC	Engineering Graphics	3	-	-	3	3
7	18ME2L07	BSC	Engineering Physics Lab	-	-	3	3	1.5
8	18ME2L08	ESC	Basic Electrical & Electronics Engineering Lab	-	-	2	2	1
9	18ME2L09	ESC	Basic Engineering & IT Workshop	-	-	3	3	1.5
							Total number of credits	**20**

Devineni Venkata Ramana & Dr. Hima Sekhar

MIC College of Technology

Department of Mechanical Engineering

III Semester

S.No	Course Code	Course Category	Course Title	Hours per week			Total Contact Hours	Credits
				Lecture	Tutorial	Practical		
1	18ME3T01	PCC	Complex variables & Numerical methods	2	1	0	3	3
2	18ME3T02	BSC	Mechanics of Solids	2	1	0	3	3
3	18ME3T03	PCC	Kinematics of Machines	2	1	0	3	3
4	18ME3T04	PCC	Thermodynamics	2	1	0	3	3
5	18ME3T05	ESC	Materials science and Engineering	3	0	0	3	3
6	18ME3T06	PCC	Fluid mechanics & hydraulic machines	3	0	0	3	3
7	18ME3L07	PCC	Fluid mechanics & Hydraulic machines lab	0	0	3	1.5	1.5
8	18ME3L08	PCC	Mechanics of Solids & Metallurgy LAB	0	0	3	1.5	1.5
9	18ME3L09	HSMC	Proficiency through Reading and Writing	0	0	2	2	1
				Total number of credits				22

IV Semester

S.No	Course Code	Course Category	Course Title	Hours per week			Total Contact Hours	Credits
				Lecture	Tutorial	Practical		
1	18ME4T01	BSC	Probability & Statistics	2	1	0	3	3
2	18ME4T02	ESC	Production Technology	3	0	0	3	3
3	18ME4T03	PCC	Design of Machine Elements	2	1	0	3	3
4	18ME4T04	ESC	IC Engines & Air Compressors	2	1	0	3	3
5	18ME4T05	PCC	Computer Aided Machine Drawing	1	0	4	3	3
6		OEC	**Open Elective-1**	3	0	0	3	3
	18ME4T06		1. Engineering Economics & Financial Analysis					
	18ME4T07		2. Management Information System					
	18ME4T08		3. Entrepreneurship & Project Management					
7	18ME4L09	ESC	Production Technology Lab	0	0	3	3	1.5
8	18ME4L10	PCC	Thermal engineering Lab	0	0	3	3	1.5
9	18ME4T11	MC	Indian constitution	2	0	0	2	0
10	18ME4I12	P	Summer Internship	0	0	0	0	1
				Total number of credits				22

Devineni Venkata Ramana & Dr. Hima Sekhar

MIC College of Technology

Department of Mechanical Engineering

V Semester

S.No	Course Code	Course Category	Course Title	Hours per week			Total Contact Hours	Credits
				Lecture	Tutorial	Practical		
1	18ME5T01	PCC	Dynamics of Machines	2	1	0	3	3
2	18ME5T02	HSMC	Management Science & Productivity	3	0	0	3	3
3	18ME5T03	PCC	Turbo machines	3	0	0	3	3
4	18ME5T04	PCC	MC&MT	3	0	0	3	3
5		OEC	**Open Elective-2**	3	0	0	3	3
	18ME5T05		1. Internet of Things					
	18ME5T06		2. Employability skills-1					
	18ME5T07		3.Design Thinking & Product Innovation					
6	18ME5L08	PCC	Theory of machines Lab	0	0	3	1.5	1.5
7	18ME5L09	PCC	MT Lab	0	0	3	1.5	1.5
8	18ME5L10	HSMC	Communication Skills Lab	0	0	2	2	1
9	18ME5T11	MC	Essence of Indian Traditional Culture	2	0	0	0	0
				Total number of credits				19

VI Semester

S.No	Course Code	Course Category	Course Title	Hours per week			Total Contact Hours	Credits
				Lecture	Tutorial	Practical		
1	18ME6T01	PCC	Design of Transmission Elements	2	1	0	3	3
2	18ME6T02	PCC	Heat Transfer	2	1	0	3	3
3	18ME6T03	PCC	Metrology and measurements	3	0	3	3	3
4		OEC	**Open Elective-3**	3	0	0	3	3
	18ME6T04		1. Robotics					
	18ME6T05		2. Rapid Proto Typing					
	18ME6T06		3. Green Engineering Systems					
5		OEC	**Open Elective-4**	3	0	0	3	3
	18ME6T07		1. Aritificial Intelligence and Neural networks					
	18ME6T08		2. Nano Technology					
	18ME6T09		3. Employability skills-2					
6	18ME6L10	PCC	Metrology & Instrumentation Lab	0	0	3	3	1.5
7	18ME6L11	PCC	Heat Transfer Lab	0	0	3	3	1.5
8	18ME6T12	MC	Disaster Management	2	0	0	2	0
9	18ME6I13	P	Summer Internship	-	-	-	-	1
				Total number of credits				19

Devineni Venkata Ramana & Dr. Hima Sekhar

MIC College of Technology

Department of Mechanical Engineering

VII Semester

S.No	Course Code	Course Category	Course Title	Hours per week			Total Contact Hours	Credits
				Lecture	Tutorial	Practical		
1	18ME7T01	PCC	CAD CAM	3	0	0	3	3
2	18ME7T02	HSMC	Operational Research	3	0	0	3	3
3		PEC	**Professional Elective -1**	3	0	0	3	3
	18ME7T03		1. Finite Element Methods					
	18ME7T04		2. Gas Dynamics & Jet Propulsion					
	18ME7T05		3. Production Planning & Control					
4		PEC	**Professional Elective -2**	3	0	0	3	3
	18ME7T06		1. Advanced Materials					
	18ME7T07		2. Power plant Engineering					
	18ME7T08		3. Optimization Techniques through MATLAB					
5		OEC	**Open Elective-5**	3	0	0	3	3
	18ME7T09		1. Mechatronics					
	18ME7T10		2. Micro-Electro- Mechanical Systems					
	18ME7T11		3. Solar Energy Systems					
6	18ME7L12	PCC	CAD CAM Lab	-	-	4	2	2
7	18ME7P13	P	Mini project	-	-	4	2	2
			Total number of credits					19

VIII Semester

S.No	Course Code	Course Category	Course Title	Hours per week			Total Contact Hours	Credits
				Lecture	Tutorial	Practical		
1		PEC	**Professional Elective -3**	3	0	0	3	3
	18ME8T01		1. Mechanical Vibrations					
	18ME8T02		2. Automobile Engineering					
	18ME8T03		3. Non Destructive Evaluation					
2		PEC	**Professional Elective -4**	3	0	0	3	3
	18ME8T04		1. Experimental Stress Analysis					
	18ME8T05		2. Designfor Manufacturing					
	18ME8T06		3. R & AC					
3		PEC	**Professional Elective -2**	3	0	0	3	3
	18ME8T07		1. Condition Monitoring and Signal Conditioning					
	18ME8T08		2. Computational Fluid Dynamics					
	18ME8T09		3. Advanced Machining Processes					
4	18ME8S10	P	Seminar	-	-	4	4	2
5	18ME8P11	P	Project	-	-	16	16	8
			Total number of credits					19

Department of Civil Engineering

Course Structure for Semester -I

S.No	Course Code	Course Category	Course Title	Hours per week			Total Contact Hours	Credits
				Lecture	Tutorial	Practical		
1	18CE1T01	HSMC	English-I	2	-	-	2	2
2	18CE1T02	BSC	Linear Algebra & Differential Equations	3	1	-	4	4
3	18CE1T03	BSC	Engineering Chemistry	3	-	-	3	3
4	18CE1T04	ESC	Problem Solving through C	3	-	-	3	3
5	18CE1T05	ESC	Engineering Mechanics	3	1	-	4	4
6	18CE1L06	HSMC	English Communication Skill Lab-1	-	-	2	2	1
7	18CE1L07	BSC	Engineering Chemistry Lab	-	-	3	3	1.5
8	18CE1L08	ESC	Problem Solving through C Lab	-	-	3	3	1.5
9	18CE1T09	MC	Environmental Studies	2	-	-	2	-
							Total number of credits	**20**

Course Structure for Semester -II

S.No	Course Code	Course Category	Course Title	Hours per week			Total Contact Hours	Credits
				Lecture	Tutorial	Practical		
1	18CE2T01	HSMC	English – II	1	-	2	3	2
2	18CE2T02	BSC	Vector Calculus & Fourier Transforms	3	-	-	3	3
3	18CE2T03	BSC	Engineering Physics	3	-	-	3	3
4	18CE2L04	BSC	Biology for Engineers	2	-	-	2	2
5	18CE2T05	ESC	Basic Electrical & Electronics Engineering	3	-	-	3	3
6	18CE2T06	ESC	Engineering Graphics	3	-	-	3	3
7	18CE2L07	ESC	Engineering Physics Lab	-	-	3	3	1.5
8	18CE2L08	ESC	Basic Electrical & Electronics Engineering Lab	-	-	2	2	1
9	18CE2L09	ESC	Basic Engineering & IT Workshop	-	-	3	3	1.5
							Total number of credits	**20**

Course Structure for Semester - III

S.No	Course Code	Course Category	Course Title	Hours per week			Total Contact Hours	Credits
				Lecture	Tutorial	Practical		
1	18CE3T01	HSMC	Humanities (Effective Technical Communication)	3	-	-	2	3
2	18CE3T02	BSC	Numerical Methods and Probability Statistics	3	-	-	3	3
3	18CE3T03	BSC	Life Science	2	-	-	2	2
4	18CE3T04	PEC	Professional Elective- I	2	-	-	2	2
5	18CE3T05	PCC	Strength of Materials- I	3	-	-	3	3
6	18CE3T06	PCC	Fluid Mechanics	3	-	-	3	3
7	18CE3T07	PCC	Surveying	3	-	-	3	3
8	18CE3L08	PCC	Strength of Materials Lab	-	-	3	3	1.5
9	18CE3L09	PCC	Surveying Field Work -I	-	-	3	3	1.5
10	18CE3N10	MC	Management 1 (Organizational Behavior)	2	-	-	2	0
							Total number of credits	**22**

Course Structure for Semester - IV

S.No	Course Code	Course Category	Course Title	Hours per week			Total Contact Hours	Credits
				Lecture	Tutorial	Practical		
1	18CE4T01	HSMC	Professional Practice, Law & Ethics	2	-	-	2	2
2	18CE4T02	ESC	Energy science & Engineering	2	-	-	2	2
3	18CE4T03	ESC	Building Planning and Drawing	3	1	-	4	4
4	18CE4T04	PEC	Professional Elective – II	2	1	-	3	3
5	18CE4T05	PCC	Concrete Technology	3	-	-	3	3
6	18CE4T06	PCC	Hydraulic Engineering	2	1	-	3	3
7	18CE4L07	PCC	Surveying Field Work – II	-	-	4	4	2
8	18CE4L08	PCC	Concrete Technology Lab	-	-	3	3	1.5
9	18CE4L09	PCC	Fluid Mechanics and Hydraulic Machinery Lab	-	-	3	3	1.5
							Total number of credits	**22**

Proposed Course Structure for Semester - V

S.No	Course Code	Course Category	Course Title	Hours per week			Total Contact Hours	Credits
				Lecture	Tutorial	Practical		
1	18CE5T01	PCC	Engineering Geology	2	-	-	2	2
2	18CE5T02	PCC	Transportation Engineering	2	-	-	2	2
3	18CE5T03	PCC	Structural Analysis	2	1	-	3	3
4	18CE5T04	PCC	Geotechnical Engineering	2	1	-	3	3
5	18CE5T05	PCC	Hydrology &Water Resources Engineering	2	1	-	3	3
6	18CE5T06	PCC	Structural Engineering -I (RCC)	3	-	2	4	4
7	18CE5L07	PCC	Engineering Geology Lab	-	-	3	3	1.5
8	18CE5L08	PCC	Geotechnical Engineering Lab	-	-	3	3	1.5
9	18CE5N09	MC	Constitution of India/ Essence of Indian Traditional Knowledge	2	-	-	2	0
							Total number of credits	**20**

Proposed Course Structure for Semester - VI

S.No	Course Code	Course Category	Course Title	Hours per week			Total Contact Hours	Credits
				Lecture	Tutorial	Practical		
1	18CE6T01	PCC	Structural Engineering – II (Steel)	2	1	-	3	3
2	18CE6T02	PCC	Environmental Engineering-I	3	-	-	3	3
3	18CE6T03	PEC	Professional Elective-III	2	1	-	3	3
4	18CE6T04	PEC	Professional Elective -IV	2	-	-	2	2
5	18CE6T05	OEC	Open Elective – I	3	-	-	3	3
6	18CE6T06	OEC	Open Elective – II	3	-	-	3	3
7	18CE6L07	PCC	Architectural Planning and CAD Lab	-	-	3	3	1.5
8	18CE6L08	PCC	Transportation Engineering Lab	-	-	3	3	1.5
							Total number of credits	**20**

Proposed Course Structure for Semester - VII

S.No	Course Code	Course Category	Course Title	Hours per week			Total Contact Hours	Credits
				Lecture	Tutorial	Practical		
1	18CE7T01	PCC	Estimation, Costing and Project Management	2	1	-	3	3
2	18CE7T02	PEC	Professional Elective – V	3	-	-	3	3
3	18CE7T03	PEC	Professional Elective – VI	3	-	-	3	3
4	18CE7T04	PEC	Professional Elective – VII	3	-	-	3	3
5	18CE7T05	OEC	Open Elective – III	3	-	-	3	3
6	18CE7L06	PCC	STAAD Pro& GIS Lab	-	-	3	3	1.5
7	18CE7L07	PCC	Environmental Engineering Lab	-	-	3	3	1.5
8	18CE7L08	PROJ	Internship/ Social Responsibility Project	-	-	2	2	2
							Total number of credits	**20**

Proposed Course Structure for Semester - VIII

S.No	Course Code	Course Category	Course Title	Hours per week			Total Contact Hours	Credits
				Lecture	Tutorial	Practical		
1	18CE8T01	PEC	Professional Elective -VIII	2	-	-	2	2
2	18CE8T02	PEC	Professional Elective - IX	2	-	-	2	2
3	18CE8T03	OEC	Open Elective – IV	3	-	-	3	3
4	18CE8L04	PROJ	MOOCs/ Survey Camp	-	-	2	2	1
5	18CE8L05	PROJ	Project	-	-	8	8	8
							Total number of credits	**16**

Professional Elective I:

1. Building Materials andconstruction
2. Rural Water Supply and OnsiteSanitation
3. Infra Structure Planning &Management
4. Architecture and TownPlanning

Professional Elective II:

1. Strength of MaterialsII
2. Environmental Geo-technology
3. GreenTechnologies
4. DisasterManagement

Professional Elective III:

1. Structural Analysis – II
2. Introduction to Composite Materials
3. Advanced Structural Engineering
4. Air Pollution and Control

Professional Elective IV:

1. Transportation Engineering-II
2. Advanced Surveying
3. Ground Water Development and Management
4. Geotextiles

Professional Elective V:

1. Water Resources Engineering-II
2. Design & Drawing of IrrigationStructures
3. Advanced FoundationEngineering
4. Solid Waste Management

Professional Elective VI:

1. Environmental Engineering–II
2. Theory and Applications of CementComposites
3. PavementDesign
4. Repair and Rehabilitation of Structures

Professional Elective VII:

1. Geotechnical Engineering - II
2. Bridge Engineering
3. Finite Element Methods
4. Ground Improvement Techniques

Professional Elective VIII:

1. Prestressed Concrete
2. Building Services and Maintanence
3. Urban transportationengineering
4. Earth Quake Resistant Structures

Professional Elective IX:

1. Construction Technology and Management
2. Port and Harbour structures
3. Elements of Earthquake Engineering
4. Traffic Engineering

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Course Structure for I Year, Semester- I(1st Semester)

S.No	Course Code	Course Category	Course Title	Hours per week			Total Contact Hours	Credits
				Lecture	Tutorial	Practical		
1	18CS1T01	HSMC	English-I	2	-	-	2	2
2	18CS1T02	BSC	Linear Algebra &Differential Equations	3	1	-	4	4
3	18CS1T03	BSC	Applied Physics	3	-	-	3	3
4	18CS1T04	ESC	Problem Solving Approaches	3	-	-	3	3
5	18CS1T05	ESC	Engineering Graphics	3	-	-	3	3
6	18CS1L06	HSMC	Communication Skills Lab	-	-	2	2	1
7	18CS1L07	BSC	Applied Physics Lab	-	-	3	3	1.5
8	18CS1L08	ESC	Problem Solving Lab	-	-	3	3	1.5
9	18CS2L09	ESC	IT Workshop	-	-	2	2	1
							Total Number of Credits	**20**

Course Structure for I Year, Semester- II(2nd Semester)

S.No	Course Code	Course Category	Course Title	Hours per week			Total Contact Hours	Credits
				Lecture	Tutorial	Practical		
1	18CS2T01	HSMC	English-II	1	-	**2**	3	2
2	18CS2T02	BSC	Vector Calculus & Fourier Transforms	3	-	-	3	3
3	18CS2T03	BSC	Applied Chemistry	3	-	-	3	3
4	18CS2T04	BSC	Biology for Engineers	2	-	-	2	2
5	18CS2T05	ESC	Basic Electrical & Electronics Engineering	3	-	-	3	3
6	18CS2T06	ESC	Data Structures	3	1	-	4	4
7	18CS2L07	BSC	Applied Chemistry Lab	-	-	3	3	1.5
8	18CS2L08	ESC	Data Structures Lab	-	-	3	3	1.5
9	18CS2T09	MC	Environmental Studies	-	-	2	2	-
							Total Number of Credits	**20**

Course Structure for II Year, Semester- I(3rd Semester)

S.No	Course Code	Course Category	Course Title	Hours per week			Total Contact Hours	Credits
				Lecture	Tutorial	Practical		
1	18CS3T01	BSC	Probability & Statistics	3			3	3
2	18CS3T02	PCC	Object Oriented Programming	3			3	3
3	18CS3T03	PCC	Advanced Data Structures	3			3	3
4	18CS3T04	ESC	Digital Logic Design	3			3	3
5	18CS3T05	HSMC	Effective Technical Communication	3			3	3
6	18CS3L07	PCC	Object Oriented Programming Lab			4	2	2
7	18CS3L08	PCC	Advanced Data Structures Lab			4	2	2
8	18CS3L09	ESC	R programming Lab			4	2	2
9	18CS3T06	MC	Indian Constitution	2			2	--
10	18CS3L10	P	Technical Seminar	1			1	1
						Total Number of Credits		22

Course Structure for II Year, Semester- II(4th Semester)

S.No	Course Code	Course Category	Course Title	Hours per week			Total Contact Hours	Credits
				Lecture	Tutorial	Practical		
1	18CS4T01	PCC	Discrete Mathematics	2			2	2
2	18CS4T02	PCC	Database Management Systems	3			3	3
3	18CS4T03	PCC	Computer Organization & Architecture	2			2	2
4	18CS4T04	PCC	Operating Systems	3			3	3
5	18CS4T05	HSMC	Managerial Economics and Financial Analysis	3			3	3
6	18CS4T06	HSMC	Professional Ethics	3			3	3
7	18CS4L07	PCC	Operating Systems &linux programmingLab			4	2	2
8	18CS4L08	PCC	Database Management Systems Lab			4	2	2
9	18CS4L09	ESC	Python Programming Lab			4	2	2
						Total Number of Credits		22

Course Structure for III Year, Semester- I (5th Semester)

S.No	Course Code	Course Category	Course Title	Hours per week			Total Contact Hours	Credits
				Lecture	Tutorial	Practical		
1.	18CS5T01	PCC	Data Mining & Warehousing	2	1	-	3	3
2.	18CS5T02	PCC	Web Technologies	2	-	-	2	2
3.	18CS5T03	PCC	Design and Analysis of Algorithms	2	1	-	3	3
4.	18CS5T04	PCC	Formal Languages & Automata Theory	2	-	-	2	2
5.	18CS5T 05/06/07	PEC	**Program Elective-I** 18CS5T 05: Object Oriented Analysis and Design 18CS5T 06: Advanced Computer Architecture 18CS5T 07: Advanced Operating Systems	2	1	-	3	3
6.	**OEC Open Elective-I**			3	-	-	3	3
7.	18CS5L16	PCC	Data Mining Lab	-	-	3	1.5	1.5
8.	18CS5L17	PCC	Web Technologies Lab	-	-	3	1.5	1.5
							Total Number of Credits	**19**

Course Structure for III Year, Semester- II (6th Semester)

S.No	Course Code	Course Category	Course Title		Hours per week			Total Contact Hours	Credits
					Lecture	Tutorial	Practical		
1	18CS6T01	PCC	Compiler Design		2	1	-	3	3
2	18CS6T02	PCC	Computer Networks		3	-	-	3	3
3	18CS6T03	PCC	Software Engineering		3	-	-	3	3
4	18CS6T 04/05/06	PEC	**Program Elective-II**		3	-	-	3	3
			18CS6T04	Unix & Shell Programming					
			18CS6T05	Internet of Things					
			18CS6T06	Distributed Systems					
5	**OEC Open Elective-II**				3	-	-	3	3
6	18CS6L21	PCC	Computer Networks Lab		-	-	4	2	2
7	18CS6L22	PCC	Software Engineering Lab		-	-	4	2	2
8	18CS6T23	MC	Essence of Indian Traditional Knowledge		2	-	-	2	--
							Total Number Of Credits		**19**

Course Structure for IV Year, Semester- I (7th Semester)

S.No	Course Code	Course Category	Course Title		Hours per week			Total Contact Hours	Credits
					Lecture	Tutorial	Practical		
1	18CS7T01	PCC	Big Data & Hadoop		3	-	-	3	3
2	18CS7T02	PCC	Cryptography & Network Security		2	1	-	3	3
3	18CS7T 03/04/05	PEC	**Program Elective-III**		2	1	-	3	3
			18CS 7T03	Machine Learning & Deep Learning					

			18CS 7T04	Soft Computing					
			18CS 7T05	Data Analytics					
4	18CS7T 06/07/08	PEC	**Program Elective-IV**		3	-	-	3	3
			18CS 7T06	Embedded Systems					
			18CS 7T07	Software Testing Methodologies					
			18CS 7T08	Software Project Management					
5	**OEC Open Elective-III**				3	-	-	3	3
6	18CS7L20	PCC	Big Data & Hadoop Lab		-	-	4	2	2
7	18CS7L21	PROJ	Mini Project /Internship		-	-	4	2	2
Total Number Of Credits									**19**

Course Structure for IV Year, Semester- II (8th Semester)

S.No	Course Code	Course Category	Course Title		Hours per week			Total Contact Hours	Credits
					Lecture	Tutorial	Practical		
1	18CS8T 01/02/03	PEC	**Program Elective-V**		3	-	-	3	3
			18CS8T 01	Cloud Computing					
			18CS8T 02	Mobile Computing					
			18CS8T 03	Image Processing					
2	18CS8T 04/05/06	PEC	**Program Elective-VI**		3	-	-	3	3
			18CS8T 04	Adhoc And Sensor Networks					
			18CS8T 05	Human Computer					

				Interaction					
			18CS8T06	Artificial Intelligence & Neural Networks					
3	**OEC Open Elective-IV**				3	-	-	3	3
4	**OEC Open Elective-V or MOOC**				2	-	-	2	2
5	18CS8L22	PROJ	Major Project		-	-	16	8	8
								Total Number Of Credits	**19**

Open Elective 1

S.No	Course Code	Course Title	Offering Dept
1	18CS5T08	Employability Skills: Competitive Coding	CSE/IT
2	18CS5T09	Optimization Techniques	BED
3	18CS5T10	Electrical Engineering Materials	EEE
4	18CS5T11	Basics of Control Systems	EEE
5	18CS5T12	Design Thinking &Product Innovation	ME
6	18CS5T13	Solid State Devices and Circuits	ECE
7	18CS5T14	Principles of Communication	ECE
8	18CS5T15	Employability Skills: Quantitative Aptitude & Reasoning	BED

Open Elective II

S.No	Course Code	Course Title	Offering Dept
1	18CS6T07	Employability Skills: Quantitative Aptitude & Reasoning	BED
2	18CS6T08	Basic Civil Engineering	CE
3	18CS6T09	Sustainable Engineering Practices	CE
4	18CS6T10	Disaster Management	CE
5	18CS6T11	Low Cost Housing	CE

6	18CS6T12	Design and Estimation of Electrical Systems	EEE
7	18CS6T13	Energy Audit, Conservation and Management	EEE
8	18CS6T14	Nanotechnology	ME
9	18CS6T15	Microprocessors and microcontroller	ECE
10	18CS6T16	Embedded Systems	ECE
11	18CS6T17	Employability Skills: Competitive Coding	CSE/IT
12	18CS6T18	Computer Networks	CSE/IT
13	18CS6T19	Managerial Economics and Financial Analysis	DMS
14	18CS6T20	Cross Cultural management	DMS

Open Elective III

S.No	Course Code	Course Title	Offering Dept
1	18CS7T09	Fuzzy Sets and Fuzzy Logic	BED
2	18CS7T10	Remote sensing and GIS	CE
3	18CS7T11	Green Buildings	CE
4	18CS7T12	Electric Vehicles	EEE
5	18CS7T13	Special Electrical Machines	EEE
6	18CS7T14	Bio Medical Instrumentation	ECE
7	18CS7T15	Nano Electronics	ECE
8	18CS7T16	Software Project Management.	CSE/IT
9	18CS7T17	Computer Architecture & Organization	CSE/IT
10	18CS7T18	Technology Innovation Management	DMS
11	18CS7T19	Global Environment Trends	DMS

Open Elective IV

S.No	Course Code	Course Title	Offering Dept
1	18CS8T07	Soft Computing Techniques	ECE
2	18CS8T08	Satellite communication	ECE
3	18CS8T09	Internet of Things	CSE
4	18CS8T10	Utilization of Electrical Energy	EEE
5	18CS8T11	Mechatronics	ME
6	18CS8T12	Green Engineering Systems	ME
7	18CS8T13	Micro - Electro - Mechanical Systems	ME
8	18CS8T14	Advanced Drawing for Civil Engineers	CE
9	18CS8T15	Polymer Chemistry	BED

Open Elective V

S.No	Course Code	Course Title	Offering Dept
1	18CS8T16	Operating Systems	CSE
2	18CS8T17	Robotics	ME
3	18CS8T18	Solar Energy Systems	ME
4	18CS8T19	Power Quality	EEE
5	18CS8T20	Additive Manufacturing	ME
6	18CS8T21	Advanced Civil Engineering Technologies	CE

Note: **Open Electives shall be selected in consultation with the department and prior approval is required**

MIC College of Technology
An Autonomous Institution
(Approved by AICTE & Permanently Affiliated to JNTUK, Kakinada)
Kanchikacherla – 521180, Krishna Dist., AP, India.
Phone: 08678 - 273535, Fax: 08678 - 273569
e-mail: dvrhsmic@mictech.ac.in, Website: mictech.ac.in

An ISO 9001:2015 Certified Institute

Department of Electronics & Communication Engineering
MIC18 Regulations
Course Structure for B. Tech I Semester

S. No	Course Code	Course Category	Course Title	Hours per week			Total Contact Hours	Credits
				Lecture	Tutorial	Practical		
1	18EC1T01	HSMC	English	2	-	-	2	2
2	18EC1T02	BSC	Linear Algebra & Differential Equations	3	1	-	4	4
3	18EC1T03	BSC	Applied Physics	3	-	-	3	3
4	18EC1T04	ESC	Problem solving through C and Python	3	-	-	3	3
5	18EC1T05	ESC	Engineering Graphics	3	-	-	3	3
6	18EC1L06	HSMC	English Communication Skills Lab-1	-	-	2	1	1
7	18EC1L07	BSC	Applied Physics Lab	-	-	4	4	2
8	18EC1L08	ESC	Problem solving through C and Python Lab	-	-	4	4	2
9	18EC1T09	MC	Environmental Studies	2	-	-	2	-
							Total number of credits	**20**

Course Structure for B. Tech II Semester

S.No	Course Code	Course Category	Course Title	Hours per week			Total Contact Hours	Credits
				Lecture	Tutorial	Practical		
1	18EC2T01	HSMC	English-II	1	-	**2**	3	2
2	18EC2T02	BSC	Numerical Methods &Vector Calculus	3	-	-	3	3
3	18EC2L03	BSC	Applied Chemistry	3	-	-	3	3
4	18EC2T04	BSC	Biology for Engineers	2	-	-	2	2
5	18EC2T05	ESC	Basic Electronics & Electrical Engineering	3	-	-	3	3
6	18EC2T06	ESC	Data Structures using C	2	-	-	2	2
7	18EC2L07	BSC	Applied Chemistry Lab	-	-	3	3	1.5
8	18EC2L08	ESC	Basic Electronics & Electrical Engineering Lab	-	-	4	4	2
9	18EC2L09	ESC	Data Structures using C Lab	-	-	3	3	1.5
							Total number of credits	**20**

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Kanchikacherla – 521180, Krishna Dist., AP, India.
Phone: 08678 - 273535, Fax: 08678 - 273569
e-mail: dvrhsmic@mictech.ac.in, Website: mictech.ac.in

Course Structure for B. Tech IIISemester

S.No	Course Code	Course Category	Course Title	Hours per week			Total Contact Hours	Credits
				Lecture	Tutorial	Practical		
1	18EC3T01	BSC	Probability Theory & Stochastic Processes	3	1	**0**	3	4
2	18EC3T02	PCC	Electronic Circuit Analysis	3	0	**0**	3	3
3	18EC3T03	PCC	Digital Electronics	3	0	0	3	3
4	18EC3T04	ESC	Network Theory	3	0	0	3	3
5	18EC3T05	PCC	Signals & Systems	3	0	0	3	3
6	18EC3T06	HSMC	Managerial Economics & Finance Analysis	3	0	0	3	3
7	18EC3L07	PCC	Electronic Circuit Analysis Lab	0	0	3	3	1.5
8	18EC3L08	PCC	Signals & Systems Lab	0	0	3	3	1.5
9	18EC3N09	MC	Constitution of India	2	0	0	2	0
							Total number of credits	**22**

Course Structure for B. Tech IVSemester

S.No	Course Code	Course Category	Course Title	Hours per week			Total Contact Hours	Credits
				Lecture	Tutorial	Practical		
1	18EC4T01	HSMC	Humanities (Effective Technical Communication)	3	0	0	3	3
2	18EC4T02	BSC	Physics of Materials	2	0	0	2	2
3	18EC4T03	PCC	Analog IC Applications	3	0	**0**	3	3
4	18EC4T04	PCC	Digital System Design Using HDL	3	0	0	3	3
5	18EC4T05	PCC	Electromagnetic Waves & Transmission lines	3	0	0	3	3
6	18EC4T06	PCC	Control Systems	3	0	0	3	3
7	18EC4L07	PCC	Analog IC Applications Lab	0	0	3	3	1.5
8	18EC4L08	PCC	Digital System Design Using HDL Lab	0	0	3	3	1.5
9	18EC4L09	Project	Mini Project	0	0	4	4	2
							Total number of credits	**22**

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e-mail: dvrhsmic@mictech.ac.in, Website: mictech.ac.in

Course Structure for B. Tech V Semester

S.No	Course Code	Course Category	Course Title	Hours per week			Total Contact Hours	Credits
				Lecture	Tutorial	Practical		
1	18EC5T01	PCC	Analog and Digital Communications	3	0	0	3	3
2	18EC5T02	PCC	Microcontroller and Microprocessors	3	0	0	3	3
3	18EC5T03	PCC	Digital Signal Processing	3	0	0	3	3
4	18EC5T04	HSMC	IPR & Patents	2	0	0	2	2
5	18EC5T05 18EC5T06 18EC5T07	OEC	Open Elective-1	3	0	0	3	3
6	18EC5L08	PCC	Microcontroller and Microprocessors Lab	0	0	3	3	1.5
7	18EC5L09	PCC	DSP Lab	0	0	3	3	1.5
8	18EC5L10	PCC	Communication Systems Lab	1	0	2	3	2
9	18EC5N11	MC	Essence of Indian Traditional Knowledge	2	-	-	2	0
							Total number of credits	**19**

Course Structure for B. Tech VI Semester

S.No	Course Code	Course Category	Course Title	Hours per week			Total Contact Hours	Credits
				Lecture	Tutorial	Practical		
1	18EC6T01	PCC	VLSIDesign	3	0	0	3	3
2	18EC6T02	PCC	Antenna and wave propagation	3	0	0	3	3
3	18EC6T03 18EC6T04 18EC6T05	PEC	Professional Elective1	3	0	0	3	3
4	18EC6T06	ESE	OOPS Through JAVA	3	0	0	3	3
5	18EC6T07 18EC6T08 18EC6T09	OEC	Open Elective-2	3	0	0	3	3
6	18EC6L10	PCC	VLSI LAB	1	0	2	3	1.5
7	18EC6L11	ESE	OOPS Through JAVA LAB	1	0	2	3	1.5
8	18EC6P11	Projects	Technical Seminar	1	0	0	1	1
							Total number of credits	**19**

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Course Structure for B. Tech VII Semester

S.No	Course Code	Course Category	Course Title	Hours per week			Total Contact Hours	Credits
				Lecture	Tutorial	Practical		
1	18EC7T01	PCC	Embedded Systems	3	0	0	3	3
2	18EC7T02	PCC	Microwave Engineering	3	0	0	3	3
3	18EC7T03 18EC7T04 18EC7T05	PEC	Professional Elective-2	3	0	0	3	3
4	18EC7T06 18EC7T07 18EC7T08	PEC	Professional Elective-3	3	0	0	3	3
5	18EC7T09 18EC7T10 18EC7T11	OEC	Open Elective-3	3	0	0	3	3
6	18EC7L12	PCC	Microwave & OC LAB	1	0	2	3	2
7	18EC7P13	Projects	INDUSTRIAL INTERNSHIP	0	0	2	2	2
							Total number of credits	**19**

Course Structure for B. Tech VIII Semester

S.No	Course Code	Course Category	Course Title	Hours per week			Total Contact Hours	Credits
				Lecture	Tutorial	Practical		
1	18EC8T01	PCC	Coding Theory & Techniques	3	0	0	3	3
2	18EC8T02 18EC8T03 18EC8T04	PEC	Professional Elective-4	3	0	0	3	3
3	18EC8T05 18EC8T06 18EC8T07	OEC	Open Elective-4	3	0	0	3	3
4	18EC8T08 18EC8T09 18EC8T10	OEC5/ MOOCS	Data Communication& Networking Renewable Energy sources Network Security & Cryptography	2	0	0	2	2
5	18EC8P11	PROJECTS	PROJECT	0	0	16	16	8
6	18EC8L12	Lab course	Comprehensive Viva Voice					0
								19

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LIST OF OPEN ELECTIVES

OPEN ELECTIVE-I **(V SEM)**

S No	Course Code	Title of the Course	Offered by Dept	Chosen by
1	18EC5T05	Quantitative Aptitude & Reasoning	BED	ECE
2	18EC5T06	Solid State Devices and Circuits	ECE	ECE,EEE
3	18EC5T07	Principals of Communication	ECE	EEE,CSE

OPEN ELECTIVE-II **(VI SEM)**

S No	Course Code	Title of the Course	Offered by Dept	Chosen by
1	18EC6T07	Employability skills 2	BED	ECE
2	18EC6T08	Computer Networks	CSE	ECE
3	18EC6T09	Embedded Systems	ECE	CSE

OPEN ELECTIVE-III **(VII SEM)**

S No	Course Code	Title of the Course	Offered by Dept	Chosen by
1	18EC7T09	Computer Architecture & Organization	CSE	ECE
2	18EC7T10	Bio Medical Instrumentation	ECE	ECE,EEE,CSE,ME
3	18EC7T11	Nano Electronics	ECE	ECE,CSE,EEE

OPEN ELECTIVE-IV **(VIII SEM)**

S No	Course Code	Title of the Course	Offered by Dept	Chosen by
1	18EC8T05	Operating Systems	CSE	ECE
2	18EC8T06	Soft Computing Techniques	ECE	ECE,CSE,EEE
3	18EC8T07	Digital Image Processing	ECE	ECE,CSE

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LIST OF PROFESSIONAL ELECTIVES

PROFESIONAL ELECTIVE-I **(VI SEM)**

S No	Course Code	Title of the Course
1	18EC6T03	Cellular Mobile Communication
2	18EC6T04	Internet of Things
3	18EC6T05	Digital Signal Processor andArchitecture

PROFESSIONAL ELECTIVE-II **(VIISEM)**

S No	Course Code	Title of the Course
1	18EC7T03	Wireless Sensor Network
2	18EC7T04	Radar Engineering
3	18EC7T05	Analog VLSI Design

PROFESSIONALELECTIVE-III **(VIISEM)**

S No	Course Code	Title of the Course
1	18EC7T06	Satellite Communication
2	18EC7T07	Consumer Electronics
3	18EC7T08	Optical Communication

PROFESSIONAL ELECTIVE-IV **(VIII SEM)**

S No	Course Code	Title of the Course
1	18EC8T02	Spread Spectrum Communication
2	18EC8T03	Statistical Signal Processing
3	18EC8T04	Electronic Measurements & Instrumentation

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Department Electrical & Electronics Engineering
MIC18 Regulations
Course Structure for B. Tech I Semester

S.No	Course Code	Course Category	Course Title	Hours per week			Total Contact Hours	Credits
				Lecture	Tutorial	Practical		
1	18EE1T01	HSMC	English - I	2	-	-	2	2
2	18EE1T02	BSC	Linear algebra and differential equations	3	1	-	4	4
3	18EE1T03	BSC	Applied Chemistry	3	-	-	3	3
4	18EE1T04	ESC	Problem Solving Approaches through C	3	-	-	3	3
5	18EE1T05	ESC	Engineering Graphics	3	-	-	3	3
6	18EE1L06	HSMC	English Communication Skills Lab-I	-	-	2	2	1
7	18EE1L07	BSC	Applied chemistry Lab	-	-	3	3	1.5
8	18EE1L08	ESC	Problem Solving Approaches through C Lab	-	-	3	3	1.5
9	18EE1L09	ESC	Field Practice Lab	-	-	2	2	1
							Total number of credits	**20**

Course Structure for B. Tech II Semester

S.No	Course Code	Course Category	Course Title	Hours per week			Total Contact Hours	Credits
				Lecture	Tutorial	Practical		
1	18EE2T01	HSMC	English – II	2	-	-	2	2
2	18EE2T02	BSC	Vector Calculus and Fourier Transforms	**3**	-	-	3	3
3	18EE2T03	BSC	Applied Physics	3	-	-	3	3
4	18EE2T04	BSC	Biology For Engineers	2	-	-	2	2
5	18EE2T05	PCC	Power Systems –I	3	-	-	3	3
6	18EE2T06	ESC	Electrical Circuit Analysis – I	4	-	-	4	4
7	18EE2L07	BSC	Applied Physics Lab	-	-	3	3	1.5
8	18EE2L08	ESC	Basic Engineering & IT Workshop	-	-	3	3	1.5
9	18EE2T09	MC	Environmental Science	2	-	-	2	-
							Total number of credits	**20**

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Course Structure for B. Tech III Semester

S.No	Course Code	Course Category	Course Title	Hours per week			Total Contact Hours	Credits
				Lecture	Tutorial	Practical		
1	18EE3T01	BSC	Complex Variables and Numerical Methods	3	-	-	3	3
2	18EE3T02	PCC	Electrical Circuit Analysis – II	3	1	-	4	4
3	18EE3T03	PCC	Analog Electronics-I	3	-	-	3	3
4	18EE3T04	PCC	Electrical Machines – I	3	-	-	3	3
5	18EE3T05	PCC	Electromagnetic Fields	3	-	-	3	3
6	18EE3T06	ESC	Basics of Mechanical Engineering	3	-	-	3	3
7	18EE3L07	PCC	Electrical Circuits Lab	-	-	3	3	1.5
8	18EE3L08	PCC	Analog Electronics Lab	-	-	3	3	1.5
9	18EE3T09	MC	Education Technology and Society	2	-	-	2	-
						Total number of credits		**22**

Course Structure for B. Tech IV Semester

S.No	Course Code	Course Category	Course Title	Hours per week			Total Contact Hours	Credits
				Lecture	Tutorial	Practical		
1	18EE4T01	PCC	Analog Electronics-II	3	-	-	3	3
2	18EE4T02	PCC	Electrical Machines – II	3	-	-	3	3
3	18EE4T03	PCC	Control Systems	3		-	3	3
4	18EE4T04	PCC	Power Systems –II	3	-	-	3	3
5	18EE4T05	PCC	Digital Electronics	3	-	-	3	3
6	18EE4T06	ESC	Data Structures Through C	3	-	-	3	3
7	18EE4L07	PCC	Control Systems & Simulation Lab	-	-	3	3	1.5
8	18EE4L08	PCC	Electrical Machines – I Lab	-	-	3	3	1.5
9	18EE4L09	ESC	Data Structures Through C Lab	-	-	2	2	1
						Total number of credits		**22**

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Course Structure for B. Tech V Semester

S.No	Course Code	Course Category	Course Title	Hours per week			Total Contact Hours	Credits
				Lecture	Tutorial	Practical		
1	18EE5T01	PCC	Power Electronics	3	-	-	3	3
2	18EE5T02	PCC	Electrical Measurements	3	-	-	3	3
3	18EE5T03	ESC	Python Programing	3	-	-	3	3
4	18EE5T04	HSMC	Effective Technical Communication	3	-	-	3	3
5	**Open Elective – I**			3	-	-	3	3
6	18EE5L08	PCC	Electrical Machines – II Lab	-	-	3	3	1.5
7	18EE5L09	PCC	Electrical Measurements Lab	-	-	3	3	1.5
8	18EE5L10	ESC	Python Programing Lab	2	-	-	2	1
9	18EE5T11	MC	Constitution of India	2	-	-	2	-
						Total number of credits		**19**

Course Structure for B. Tech VI Semester

S.No	Course Code	Course Category	Course Title	Hours per week			Total Contact Hours	Credits
				Lecture	Tutorial	Practical		
1	18EE6T01	PCC	Microprocessors and Micro controllers	3	-	-	3	3
2	18EE6T02	PCC	Switchgear and Protection	3	-	-	3	3
3	18EE6T03	ESC	OOPS through JAVA	3	-	-	3	3
4	18EE6T04	HSMC	Management Science	3	-	-	3	3
5	**Open Elective – II**			3	-	-	3	3
6	18EE6L07	PCC	Microprocessors and Micro Controllers Lab	-	-	3	3	1.5
7	18EE6L08	PCC	Power Electronics & Simulation Lab	-	-	3	3	1.5
8	18EE6L09	ESC	OOPS through JAVA Lab	2	-	-	2	1
						Total number of credits		**19**

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Course Structure for B. Tech VII Semester

S.No	Course Code	Course Category	Course Title	Hours per week			Total Contact Hours	Credits
				Lecture	Tutorial	Practical		
	18EE7T01	PCC	Digital Signal Processing	3	-	-	3	3
	18EE7T02	PCC	Power System Operation & Control	3	-	-	3	3
1	**Professional Elective-I**			3	-	-	3	3
	18EE7T03	PEC-I	Electric Vehicles					
	18EE7T04		Renewable Energy Sources					
	18EE7T05		Smart Grid Technologies					
4	**Professional Elective-II**			3	-	-	3	3
	18EE7T06	PEC-II	Programmable Logic Controllers					
	18EE7T07		AI Techniques					
	18EE7T08		Special Electrical Machines					
5		OEC-III	**Open Elective-III**	3	-	-	3	3
6	18EE7L09	PCC	Digital Signal Processing Lab	-	-	3	3	1.5
7	18EE7L10	PCC	Power Systems & Simulation Lab	-	-	3	3	1.5
8	18EE7P11	PROJ	Summer Internship / Mini Project	-	-	-	-	1
							Total number of credits	**19**

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Course Structure for B. Tech VIII Semester

S.No	Course Code	Course Category	Course Title	Hours per week			Total Contact Hours	Credits
				Lecture	Tutorial	Practical		
1	18EE8T01	PCC	Utilization of Electrical Energy	3	-	-	3	3
2	**Professional Elective-III**			3	-	-	3	3
	18EE8T02	PEC-III	Digital Control Systems					
	18EE8T03		Electrical Distribution Systems					
	18EE8T04		Power Electronic Control of Electric Drives					
3	**Professional Elective-IV**			3	-	-	3	3
	18EE8T05	PEC-IV	HVDC & FACTS					
	18EE8T06		Instrumentation					
	18EE8T07		Advanced Control Systems					
4		OEC-IV	MOOC/Open Elective IV	-	-	-	-	2
5	18EE8P09	PROJ	Project	-	-	-	-	8
Total number of credits								**19**

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Open Elective-I (V Semester)

S.No	Course Code	Course Category	Course Title	Offering Dept
1	18EE5T05	OEC	Electrical Engineering Materials	EEE
2	18EE5T06	OEC	Basics of Control Systems	EEE
3	18EE5T07	OEC	Quantitative Aptitude and Reasoning	BED

Open Elective–II (VI Semester)

S.No	Course Code	Course Category	Course Title	Offering Dept
1	18EE6T05	OEC	Design and Estimation of Electrical Systems	EEE
2	18EE6T06	OEC	Energy Audit, Conservation and Management	EEE

Open Elective–III (VII Semester)

S.No	Course Code	Course Category	Course Title	Offering Dept
1	18EE7T03	OEC	Electric Vehicles	EEE
2	18EE7T08	OEC	Special Electrical Machines	EEE

Open Elective-IV (VIII Semester)

S.No	Course Code	Course Category	Course Title	Offered by Dept
1	18EE8T01	OEC	Utilization of Electrical Energy	EEE
2	18EE8T08	OEC	Power Quality	EEE

Note: Prior approval from the department is required for the selection of open electives

DEPARTMENT OF INFORMATION TECHNOLOGY

Course Structure for I Year, Semester- I(1st Semester)

S.No	Course Code	Course Category	Course Title	Hours per week			Total Contact Hours	Credits
				Lecture	Tutorial	Practical		
1	18IT1T01	HSMC	English-I	2	-	-	2	2
2	18IT1T02	BSC	Linear Algebra &Differential Equations	3	1	-	4	4
3	18IT1T03	BSC	Applied Physics	3	-	-	3	3
4	18IT1T04	ESC	Introduction to Programming & problem Solving	3	-	-	3	3
5	18IT1T05	ESC	Engineering Graphics	3	-	-	3	3
6	18IT1L06	HSMC	Communication Skills Lab	-	-	2	2	1
7	18IT1L07	BSC	Applied Physics Lab	-	-	3	3	1.5
8	18IT1L08	ESC	Problem Solving Lab	-	-	3	3	1.5
9	18IT2L09	ESC	IT Workshop	-	-	2	2	1
							Total Number of Credits	**20**

Course Structure for I Year, Semester- II(2nd Semester)

S.No	Course Code	Course Category	Course Title	Hours per week			Total Contact Hours	Credits
				Lecture	Tutorial	Practical		
1	18IT2T01	HSMC	English-II	1	-	**2**	3	2
2	18IT2T02	BSC	Vector Calculus & Fourier Transforms	3	-	-	3	3
3	18IT2T03	BSC	Applied Chemistry	3	-	-	3	3
4	18IT2T04	BSC	Biology for Engineers	2	-	-	2	2
5	18IT2T05	ESC	Basic Electrical & Electronics Engineering	3	-	-	3	3
6	18IT2T06	ESC	Data Structures	3	1	-	4	4
7	18IT2L07	BSC	Applied Chemistry Lab	-	-	3	3	1.5
8	18IT2L08	ESC	Data Structures Lab	-	-	3	3	1.5
9	18IT2T09	MC	Environmental Studies	-	-	2	2	-
							Total Number of Credits	**20**

Course Structure for II Year, Semester- I(3rd Semester)

S.No	Course Code	Course Category	Course Title	Hours per week			Total Contact Hours	Credits
				Lecture	Tutorial	Practical		
1	18IT3T01	BSC	Probability & Statistics	3			3	3
2	18IT3T02	PCC	Object Oriented Programming	3			3	3
3	18IT3T03	PCC	Advanced Data Structures	3			3	3
4	18IT3T04	ESC	Digital Logic Design	3			3	3
5	18IT3T05	HSMC	Effective Technical Communication	3			3	3
6	18IT3L07	PCC	Object Oriented Programming Lab			4	2	2
7	18IT3L08	PCC	Advanced Data Structures Lab			4	2	2
8	18IT3L09	ESC	R programming Lab			4	2	2
9	18IT3T06	MC	Indian Constitution	2			2	--
10	18IT3L10	P	Technical Seminar	1			1	1
						Total Number of Credits		**22**

Course Structure for II Year, Semester- II(4th Semester)

S.No	Course Code	Course Category	Course Title	Hours per week			Total Contact Hours	Credits
				Lecture	Tutorial	Practical		
1	18IT4T01	BSC	Discrete Mathematical structures	2			2	2
2	18IT4T02	PCC	Database Management Systems	3			3	3
3	18IT4T03	PCC	Computer Organization & Architecture	2			2	2
4	18IT4T04	PCC	Operating Systems	3			3	3
5	18IT4T05	HSMC	Managerial Economics and Financial Analysis	3			3	3
6	18IT4T06	HSMC	Professional Ethics	3			3	3
7	18IT4L07	PCC	Operating Systems &linux programmingLab			4	2	2
8	18IT4L08	PCC	Database Management Systmes Lab			4	2	2
9	18IT4L09	ESC	Python Programming Lab			4	2	2
						Total Number of Credits		**22**

Course Structure for III Year, Semester- I(5th Semester)

S.No	Course Code	Course Category	Course Title	Hours per week			Total Contact Hours	Credits
				Lecture	Tutorial	Practical		
1.	18IT5T01	PCC	Data Mining & Warehousing	2	1	-	3	3
2.	18IT5T02	PCC	Web Technologies	2	-	-	2	2
3.	18IT5T03	PCC	Design and Analysis of Algorithms	2	1	-	3	3
4.	18IT5T04	PCC	Formal Languages & Automata Theory	2	-	-	2	2
5.	18IT5T 05/06/07	PEC	**Program Elective-I** 18IT 5T05 Internet of Things 18IT 5T06 Unix & Shell Programming 18IT 5T07 Agile Technologies	3	-	-	3	3
6.	**OEC Open Elective-I**			3			3	3
7.	18IT5L16	PCC	Data Mining Lab			3	1.5	1.5
8.	18IT5L17	PCC	Web Technologies Lab			3	1.5	1.5
							Total Number of Credits	**19**

Course Structure for III Year, Semester- II(6th Semester)

S.No	Course Code	Course Category	Course Title	Hours per week			Total Contact Hours	Credits
				Lecture	Tutorial	Practical		
1.	18IT6T01	PCC	Compiler Design	2	1	-	3	3
2.	18IT6T02	PCC	Computer Networks	3	-	-	3	3
3.	18IT6T03	PCC	Software Engineering	3	-	-	3	3
4.	18IT6T 04/05/06	PEC	**Program Elective-II**	3	-	-	3	3
			18IT6T 04 Business Intelligence					
			18IT6T 05 UML & Design Patterns					
			18IT6T 06 Advanced Java Programming					
5.	OEC **Open Elective-II**			3	-	-	3	3
6.	18IT6L21	PCC	Computer Networks Lab	-	-	4	2	2
7.	18IT6L22	PCC	Software Engineering Lab	-	-	4	2	2
8.	18IT6T23	MC	Essence of Indian Traditional Knowledge	2	-	-	2	-
						Total Number of Credits		**19**

Proposed Course Structure for IV Year, Semester- I(7th Semester)

S.No	Course Code	Course Category	Course Title	Hours per week			Total Contact Hours	Credits
				Lecture	Tutorial	Practical		
1	18IT7T01	PCC	Big Data & Hadoop	3			3	3
2	18IT7T02	PCC	E-Commerce	3			3	3
3	18IT7T 03/04/05	PEC	**Program Elective-III** 18IT7T 03 Information Retrieval Systems 18IT7T 04 Software Testing Methodologies 18IT7T 05 Software Project Management	2	1		3	3
4	18IT7T 06/07/08	PEC	**Program Elective-IV** 18IT7 T06 Cryptography and Network Security 18IT7 T07 Mobile Computing 18IT7 T08 Multimedia and Application Development	2	1		3	3
5	**OEC Open Elective-III**			3			3	3
6	18IT7L20	PCC	Big Data & Hadoop Lab			4	2	2
7	18IT7T21	PROJ	Mini Project/Internship			4	2	2
							Total Number of Credits	**19**

Course Structure for IV Year, Semester- II(8th Semester)

S.No	Course Code	Course Category	Course Title	Hours per week			Total Contact Hours	Credits
				Lecture	Tutorial	Practical		
1	18IT8T 01/02/03	PEC	**Program Elective-V** 18IT8 T01 Cloud Computing 18IT8 T02 Machine Learning & Deep Learning 18IT8 T03 Principles of TCP/IP	3	-	-	3	3
2	18IT8T 04/05/06	PEC	**Program Elective-VI** 18IT8T04 Real Time Systems 18IT8T05 Human Computer Interaction 18IT8T06 Introduction to Main-Frame Systems	3	-	-	3	3
3	**OEC Open Elective-IV**			3	-	-	3	3
4	**OEC Open Elective-V OR MOOC**			2	-	-	2	2
5	18IT8L 22	PROJ	Major Project	-	-	16	8	8
							Total Number of Credits	**19**

Open Elective – 1

S.No	Course Code	Course Title	Offering Dept
1	18IT5T08	Employability Skills: Competitive Coding	CSE/IT
2	18IT5T09	Optimization Techniques	BED
3	18IT5T10	Electrical Engineering Materials	EEE
4	18IT5T11	Basics of Control Systems	EEE
5	18IT5T12	Design Thinking &Product Innovation	ME
6	18IT5T13	Solid State Devices and Circuits	ECE
7	18IT5T14	Principles of Communication	ECE
8	18IT5T15	Employability Skills: Quantitative Aptitude & Reasoning	BED

Open Elective II

S.No	Course Code	Course Title	Offering Dept
1	18IT6T07	Employability Skills: Quantitative Aptitude & Reasoning	BED
2	18IT6T08	Basic Civil Engineering	CE
3	18IT6T09	Sustainable Engineering Practices	CE
4	18IT6T10	Disaster Management	CE
5	18IT6T11	Low Cost Housing	CE
6	18IT6T12	Design and Estimation of Electrical Systems	EEE
7	18IT6T13	Energy Audit, Conservation and Management	EEE
8	18IT6T14	Nanotechnology	ME
9	18IT6T15	Microprocessors and microcontroller	ECE
10	18IT6T16	Embedded Systems	ECE
11	18IT6T17	Employability Skills: Competitive Coding	CSE/IT
12	18IT6T18	Computer Networks	CSE/IT
13	18IT6T19	Managerial Economics and Financial Analysis	DMS
14	18IT6T20	Cross Cultural management	DMS

Open Elective III

S.No	Course Code	Course Title	Offering Dept
1	18IT7T09	Fuzzy Sets and Fuzzy Logic	BED
2	18IT7T10	Remote sensing and GIS	CE
3	18IT7T11	Green Buildings	CE
4	18IT7T12	Electric Vehicles	EEE
5	18IT7T13	Special Electrical Machines	EEE
6	18IT7T14	Bio Medical Instrumentation	ECE
7	18IT7T15	Nano Electronics	ECE
8	18IT7T16	Software Project Management.	CSE/IT
9	18IT7T17	Computer Architecture & Organization	CSE/IT
10	18IT7T18	Technology Innovation Management	DMS
11	18IT7T19	Global Environment Trends	DMS

Open Elective IV

S.No	Course Code	Course Title	Offering Dept
1	18IT8T07	Soft Computing Techniques	ECE
2	18IT8T08	Satellite communication	ECE
3	18IT8T09	Internet of Things	CSE
4	18IT8T10	Utilization of Electrical Energy	EEE
5	18IT8T11	Mechatronics	ME
6	18IT8T12	Green Engineering Systems	ME
7	18IT8T13	Micro - Electro - Mechanical Systems	ME
8	18IT8T14	Advanced Drawing for Civil Engineers	CE
9	18IT8T15	Polymer Chemistry	BED

Open Elective V

S.No	Course Code	Course Title	Offering Dept
1	18IT8T16	Operating Systems	CSE
2	18IT8T17	Robotics	ME
3	18IT8T18	Solar Energy Systems	ME
4	18IT8T19	Power Quality	EEE
5	18IT8T20	Additive Manufacturing	ME
6	18IT8T21	Advanced Civil Engineering Technologies	CE

Note: Prior approval from the department is required for the selection of Open Electives