RAMAIAH UNIVERSITY OF APPLIED SCIENCES

Programme Specifications

B. Tech. Programme

| Programme: | Department: |
| Electrical and Electronics Engineering | Electrical Engineering |

Faculty of Engineering & Technology

M.S. Ramaiah University of Applied Sciences

University House, New BEL Road, MSR Nagar, Bangalore – 560 054

www.msruas.ac.in

PROGRAMME SPECIFICATIONS: ELECTRICAL AND ELECTRONIC ENGINEERING

Faculty	Engineering and Technology (FET)
Department	Electrical Engineering
Programme	Electrical and Electronic Engineering
Dean of Faculty	Dr. H.M. Rajashekara Swamy
Head of Department	Dr. K. Manickavasagam

1	**Title of The Award**
	B. Tech. in Electrical and Electronic Engineering
2	**Modes of Study**
	Full Time
3	**Awarding Institution /Body**
	M.S. Ramaiah University of Applied Sciences
4	**Joint Award**
	Not Applicable
5	**Teaching Institution**
	Faculty of Engineering and Technology,
	M.S. Ramaiah University of Applied Sciences
6	**Date of Programme Specifications**
	July 2020
7	**Date of Programme Approval by the Academic Council of MSRUAS**
8	**Next Review Date:**
9	**Programme Approving Regulating Body and Date of Approval**
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10	**Programme Accredited Body and Date of Accreditation**
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11	**Grade Awarded by the Accreditation Body**
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12	**Programme Accreditation Validity**
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13	**Programme Benchmark**
	N/A

14	**Rationale for the Programme**
	Electrical and Electronics Engineering is one of the most sought after disciplines of engineering. Electrical engineering plays a vital role in problems associated with systems such as electric power generation, transmission, distribution and utilization. Designing, manufacturing and testing of electrical machinery and equipment have been there world over for many decades. Electrical engineering is a foundational discipline, critical to the success of many human enterprises.
	Electrical engineers are critical to power sector, design and development of energy systems and communication systems. Indeed, virtually every product or service in modern life has probably been touched in some way by an electrical and electronics engineer. Electrical and Electronic engineers design, analyse, evaluate, develop, test and manufacture electrical products to meet the requirements of Power sector, Industry and society at large.
	The electrical engineering programme at Faculty of Engineering and Technology at MSRUAS has been developed by the members of the faculty based on their teaching experience and long standing interactions with various universities and industries in India and abroad.
	The curriculum is outcome based and helps students to develop critical thinking abilities and imbibe relevant practical skills for a smooth transition from academics to real-life work environment. Opportunities are provided for the students to do their internship in India or abroad depending on their preferences.
	The faculty interacts with the industry and business offering engineering and consultancy, product design and development services along with training modules to practicing professionals. The above mentioned features of the programme and the faculty members' strong footing in industry and business make the programme unique. The student admitted to the programme in electrical engineering is given a strong foundation in real-life problem solving which is quite rare with many institutions offering similar programme.
	The Faculty of Engineering and Technology at MSRUAS would like to offer electrical and electronic engineering programme to produce imaginative, creative and innovative electrical and electronic engineers.

15	**Programme Mission**
	The purpose of the programme is creation of innovative problem solvers in multi-disciplinary settings, entrepreneurs and leaders applying the knowledge, understanding, cognitive abilities, practical skills and transferrable skills gained through systematic, flexible and rigorous learning in the chosen academic domain
16	**Graduate Attributes**
	1. Ability to apply knowledge of mathematics, science, and Engineering fundamentals to solve complex problems in engineering
	2. Ability to analyse engineering problems, interpret data and arrive at meaningful conclusions involving mathematical inferences
	3. Ability to design an engineering system, component, or process to meet desired needs considering public health and safety, and the cultural, societal, and environmental considerations
	4. Ability to understand and solve complex engineering problems by conducting experimental investigations
	5. Ability to apply appropriate tools and techniques and understand utilization of resources appropriately to complex engineering activities
	6. Ability to understand the effect of engineering solutions on legal, cultural, social and public health and safety aspects
	7. Ability to develop sustainable solutions and understand their effect on society and environment
	8. Ability to apply ethical principles to engineering practices and professional responsibilities
	9. Ability to work as a member of a team, to plan and to integrate knowledge of various engineering disciplines and to lead teams in multidisciplinary settings
	10. Ability to make effective oral presentations and communicate technical ideas to a broad audience using written and oral means
	11. Ability to lead and manage multidisciplinary teams by applying engineering and management principles

17	**Programme Goal**
	The programme goal is to produce graduates with critical, analytical and problem solving skills, and ability to think independently, to pursue a career in Electrical and Electronic Engineering.
18	**Programme Objectives**
	The programme will impart knowledge of electrical and electronic systems and their sub systems, enhances the understanding of underlying engineering principles that govern the behavior of electrical and electronic systems, teach analytical modelling, simulation and analysis to study the behavior of electrical and electronic systems, provide the skills to design, build and test electrical and electronic systems. The objectives of the programme are: 1. To impart knowledge on electrical and electronic systems and their subsystems 2. To enhance the understanding of the underlying engineering principles of electrical and electronic systems 3. To model, simulate and analyze the behavior of electrical and electronic systems to predict and improve their performance 4. To design and build models of electrical and electronic systems to meet the specific needs 5. To impart training on instrumentation and testing of electrical and electronic systems 6. To train on industry standard simulation tools for simulation and analysis of electrical and electronic systems 7. To build and test electrical and electronic systems 8. To impart training on professional ethics, history, economics, social sciences and interactive skills relevant to professional practice 9. To provide a general perspective and opportunities for a career in industry, business and commerce

19	**Programme Intended Learning Outcomes**

The intended learning outcomes are listed under four headings:

1. Knowledge and Understanding, 2. Cognitive skills 3. Practical skills and

4. Capability/ Transferable skills.

Knowledge and Understanding

After undergoing this programme, a student will be able to

KU1: Identify and describe the various electrical and electronic systems

KU2: Explain the underlying engineering principles that govern the electrical and electronic systems

KU3: Compare and contrast newer technologies over the existing technologies

KU4: Able to collect, classify information and interpret information

Cognitive Skills

After undergoing this programme, a student will be able to

CS1: Design electrical and electronic systems and subsystems

CS2: Model, simulate and analyse the electrical and electronic systems

CS3: Able to modify the existing design to meet newer requirements

CS4: Apply engineering principles to evaluate performance of electrical and electronic systems and answer what if questions

Practical Skills

After undergoing this programme, a student will be able to

PS1: Analyse complex electrical component and assemble a complex electrical and electronic system

PS2: Instrument a electrical and electronic system and test its performance

PS3: Critically assess the operation or design of a simple power system

PS4: Design a high voltage insulation system for the test

Capability/Transferrable Skills

After undergoing the programme, a student will be able to-

TS1: Manage information, develop technical reports and make presentations

TS2: Build, Manage and Lead a team to successfully complete a project and communicate across teams and organizations to achieve professional objectives

TS3: Work under various constraints to meet project targets

TS4: Adopt to the chosen profession by continuously upgrading his/her knowledge and understanding through Life-long Learning philosophy

20   **B. Tech. Programme Structure**

Programme Structure

SEMESTER 1

Physics Cycle:

Sl. No.	Code	Course Title	Theory (h/W/S)	Tutorials (h/W/S)	Practical (h/W/S)	Total Credits	Max. Marks
1	20MTB101A	Engineering Mathematics-1	3	1	0	4	100
2	20PHB102A	Engineering Physics	3	0	0	3	100
3	20CES101A	Engineering Mechanics	3	0	0	3	100
4	20ECS102A	Elements of Electronics Engineering	3	0	0	3	100
5	20MES103A	Engineering Drawing	1	0	4	3	100
6	20PHL103A	Engineering Physics Laboratory	0	0	2	1	50
7	20ECL104A	Basic Electronics Laboratory	0	0	2	1	50
8	20TSH101A	Constitution, Human Rights and Law	2	0	0	2	50
		Total	**15**	**1**	**8**	**20**	**650**
	Total number of contact hours per week		**24 Hours**				
	Number of credits can be registered		**Minimum**	**16**		**Maximum**	**20**

Chemistry Cycle:

Sl. No.	Code	Course Title	Theory (h/W/S)	Tutorials (h/W/S)	Practical (h/W/S)	Total Credits	Max. Marks
1	20MTB101A	Engineering Mathematics-1	3	1	0	4	100
2	20CHB105A	Engineering Chemistry	3	0	0	3	100
3	20MES105A	Elements of Mechanical Engineering and Work shop Practice	2	0	2	3	100
4	20EES106A	Elements of Electrical Engineering	3	0	0	3	100
5	20CSS107A	Elements of Computer Science and Engineering	3	0	0	3	100
6	20CHL106A	Engineering Chemistry Laboratory	0	0	2	1	50
7	20CSL108A	Computer Programming Laboratory	0	0	2	1	50
8	20EEL109A	Basic Electrical Engineering Laboratory	0	0	2	1	50
9	20TSH102A	Professional Communication	2	0	0	2	50
Total			16	1	8	21	700
Total number of contact hours per week			**25 Hours**				
Number of credits can be registered			**Minimum**	**17**	**Maximum**		**21**

SEMESTER 2

Chemistry Cycle:

Sl. No.	Code	Course Title	Theory (h/W/S)	Tutorials (h/W/S)	Practical (h/W/S)	Total Credits	Max. Marks
1	20MTB104A	Engineering Mathematics-2	3	1	0	4	100
2	20CHB105A	Engineering Chemistry	3	0	0	3	100
3	20MES105A	Elements of Mechanical Engineering and Work shop Practice	2	0	2	3	100
4	20EES106A	Elements of Electrical Engineering	3	0	0	3	100
5	20CSS107A	Elements of Computer Science and Engineering	3	0	0	3	100
6	20CHL106A	Engineering Chemistry Laboratory	0	0	2	1	50
7	20CSL108A	Computer Programming Laboratory	0	0	2	1	50
8	20EEL109A	Basic Electrical Engineering Laboratory	0	0	2	1	50
9	20TSH102A	Professional Communication	2	0	0	2	50
Total			16	1	8	21	700
Total number of contact hours per week			**25 Hours**				
Number of credits can be registered			**Minimum**		**17**	**Maximum**	**21**

Physics Cycle:

Sl. No.	Code	Course Title	Theory (h/W/S)	Tutorials (h/W/S)	Practical (h/W/S)	Total Credits	Max. Marks
1	20MTB104A	Engineering Mathematics-2	3	1	0	4	100
2	20PHB102A	Engineering Physics	3	0	0	3	100
3	20CES101A	Engineering Mechanics	3	0	0	3	100
4	20ECS102A	Elements of Electronics Engineering	3	0	0	3	100
5	20MES103A	Engineering Drawing	1	0	4	3	100
6	20PHL103A	Engineering Physics Laboratory	0	0	2	1	50
7	20ECL104A	Basic Electronics Laboratory	0	0	2	1	50
8	20TSH101A	Constitution, Human Rights and Law	2	0	0	2	50
Total			**15**	**1**	**8**	**20**	**650**
Total number of contact hours per week			**24 Hours**				
Number of credits can be registered			**Minimum**	**16**		**Maximum**	**20**

SEMESTER 3

Sl.No.	Code	Course Title	Theory (h/W/S)	Tutorials (h/W/S)	Practical (h/W/S)	Total Credits	Max. Marks
1	20MTB201A	Engineering Mathematics - 3	2	2	0	4	100
2	20EEC202A	Signals and Systems	3	0	0	3	100
3	20EEC203A	Electronic Circuits	3	0	0	3	100
4	20EEC204A	Network Analysis	3	0	0	3	100
5	20EEC205A	Measurement and Instrumentation	3	0	0	3	100
6	20EEC206A	Electrical Machines - 1	3	0	0	3	100
7	20EEL207A	Electrical Machines Laboratory- 1	0	0	2	1	50
8	20EEL208A	Electrical Circuits and Measurements Laboratory	0	0	2	1	50
9	20CEM210A	Environmental Studies	2	0	0	0	Audit
		Total	**19**	**2**	**4**	**21**	**700**
Total number of contact hours per week			**25 hours**				
Number of credits can be registered			**Minimum**	**17**		**Maximum**	**21**

SEMESTER 4

Sl.No.	Code	Course Title	Theory (h/W/S)	Tutorials (h/W/S)	Practical (h/W/S)	Total Credits	Max. Marks
1	20MTB211A	Engineering Mathematics - 4	2	2	0	4	100
2	20EEC212A	Digital Logic Circuits	3	0	0	3	100
3	20EEC213A	Electromagnetic Field Theory	3	0	0	3	100
4	20EEC214A	Embedded Microprocessor and Controllers	3	0	0	3	100
5	20EEC215A	Electrical Machines - 2	3	1	0	4	100
6	20EEC216A	Linear Integrated Circuits	3	0	0	3	100
7	20EEL217A	Embedded Microprocessor and Controllers Laboratory	0	0	2	1	50
8	20EEL218A	Digital Electronics Laboratory	0	0	2	1	50
		Total	**17**	**3**	**4**	**22**	**700**
Total number of contact hours per week			**24 hours**				
Number of credits can be registered			**Minimum**	**18**		**Maximum**	**22**

SEMESTER 5

Sl.No.	Code	Course Title	Theory (h/W/S)	Tutorials (h/W/S)	Practical (h/W/S)	Total Credits	Max. Marks
1	20EEC301A	Transmission and Distribution	3	0	0	3	100
2	20EEC302A	Digital Signal Processing	3	0	0	3	100
3	20EEC303A	PLC and SCADA	3	0	0	3	100
4	20EEC304A	Control Systems	3	1	0	4	100
5	20EEC305A	Electrical Machine Design	3	0	0	3	100
6	20EEC306A	Estimation and Costing of Electrical Installations	3	0	0	3	100
7	20EEL307A	Electrical Machines - 2 Laboratory	0	0	2	1	50
8	20EEL308A	Control System Laboratory	0	0	2	1	50
		Total	**18**	**1**	**4**	**21**	**600**
Total number of contact hours per week			**23 hours**				
Number of credits can be registered			**Minimum**	**17**	**Maximum**		**21**

SEMESTER 6

Sl.No.	Code	Course Title	Theory (h/W/S)	Tutorials (h/W/S)	Practical (h/W/S)	Total Credits	Max. Marks
1	20EEC311A	Design and Computer Aided Drawing of Electrical Machine	3	0	0	3	100
2	20EEC312A	Switchgear and Protection	3	0	0	3	100
3	20EEC313A	Power Electronics and Drives	3	1	0	4	100
4	20EEC314A	Power System Analysis	3	1	0	4	100
5	20EEC315A	High Voltage Engineering	3	0	0	3	100
6	20EEL316A	Power Electronics and Drives Laboratory	0	0	2	1	50
7	20EEL317A	Power Systems Simulation Laboratory	0	0	2	1	50
8	20EEL318A	High Voltage and Relay Laboratory	0	0	2	1	50
		Total	**15**	**21**	**6**	**20**	**650**
Total number of contact hours per week			**23 hours**				
Number of credits can be registered			**Minimum**	**16**	**Maximum**		**20**

SEMESTER 7

Sl.No.	Code	Course Title	Theory (h/W/S)	Tutorials (h/W/S)	Practical (h/W/S)	Total Credits	Max. Marks
1	20EEE41XA	Professional Core Elective - 1	3	1	0	4	100
2	20EEE42XA	Professional Core Elective - 2	3	1	0	4	100
3	20EEE43XA	Professional Core Elective - 3	3	1	0	4	100
4	20EEO401A	Open Elective - 1/ Mooc Course / Paper publication in Journal	3	0	0	3	100
5	20EEP402A	I] Project Work - 1	0	0	8	4	100
	20EEP403A	II]Internship (Choose one)					
6	20EEP404A	Seminar	0	0	2	1	50
		Total	**12**	**3**	**10**	**20**	**650**
Total number of contact hours per week			**25 hours**				
Number of credits can be registered			**Minimum**	**16**	**Maximum**		**20**

SEMESTER 8

Sl.No.	Code	Course Title	Theory (h/W/S)	Tutorials (h/W/S)	Practical (h/W/S)	Total Credits	Max. Marks
1	20EEE44XA	Professional Core Elective -4	3	1	0	4	100
2	20EEO411A	Open Elective - 2/ Mooc Course/ Innovation competition	3	**0**	0	3	100
4	20EEP412A	Project Work - 2	0	**0**	16	8	100
		Total	**06**	**01**	**16**	**15**	**300**
	Total number of contact hours per week		**23 hours**				
	Number of credits can be registered		**Minimum**	**11**	**Maximum**		**15**

Professional Core Elective Courses:

Group	SEMESTER 7			SEMESTER 8
	PCE-1 Course Name	PCE-2 Course Name	PCE-3 Course Name	PCE-4 Course Name
Power Electronics	20EEE411A-Power Converter Control Techniques	20EEE421A- Industrial Drives and Applications	20EEE431A - Magnetics and Soft - Switching in Power Electronics	20EEE441A- Modelling and Control of Power Electronics System
Power Systems	20EEE412A- electrical Power Generation	20EEE422A- Power System Operation and Control	20EEE432A- Power Quality and Compensation Techniques	20EEE442A- Artificial Intelligence Applications to Power System
Control Systems	20EEE413A- Advanced Control System	20AIE405A- Computational Intelligence	20CSE404A- Internet of Things	20EEE443A- Embedded Systems
Common Group	20MTE401A- Probability and Statistics	20CSE421A- Data Sciences Foundation	20CSE431A- Data Sciences Algorithms and Applications	20CSE441A- Data Analytics
Applied Mathematics	20MTE411A- Advanced Mathematics	20MTE421A- Optimization Techniques – 1	20MTE431A- Advanced Numerical Methods	20MTE441A- Optimization Techniques – 2

Note: Student needs to select three professional core elective courses during 7th sem, each from PCE-1, PCE-2 and PCE-3 groups respectively.
   Student has to select one professional core elective course during 8th sem from PCE-4 group.

21	**Programme Delivery** As per the time table
22	**Teaching and Learning Methods** 1. Face to Face Lectures using Audio-Visuals 2. Workshops-Group Discussions, Debates, Presentations 3. Demonstrations 4. Guest Lectures 5. Laboratory-work/Field work/workshop 6. Industry Visit 7. Seminars 8. Group Exercises 9. Project work 10. Project Exhibitions 11. Technical Festivals

23	**Assessment and Grading**

1. Every course will be assessed for a weight of 100%

2. For the courses having 100% theory

There are two components-Component-1 and Component-2

Component-1 (CE) carries a weight of 50% and Component -2 (SEE) carries a weight of 50%

Component-1 (CE): 50% weight

The course leader will indicate the mode of assessment in consultation and approval of the respective HoD and the faculty Dean, before commencement of the semester.

The template for weightage of CE and SEE in percentages for each theory course is indicated in Table below.

ILO No.	Intended Learning Outcome	CE (Weightage: 50 %)				SEE (Weightage: 50 %)
		Assessment Type	Comp-1a	Comp-1b	Comp-1c	
		Comp Weightage (%)	00	00	00	Sem End Exam
1	ILO-1					
2	ILO-2					
3	ILO-3					
4	ILO-4					
5	ILO-5					
6	ILO-6					

CE – can be from any combination of the following:

Assignments, term Tests, Seminars, Tech Talks, Mini-Projects, Case-Studies, Self-Study, others, if any.

Component - 2 (SEE): 50% weight

A 3 hour duration Semester End Examination will be conducted for a maximum of 100 marks and will be reduced to 50% weight.

A student is required to score a minimum of 40% marks in Semester end examination and 40% marks overall in each theory course.

3.   For Laboratory/ Practical courses

Total Marks : 50

Component 1(CE) : Laboratory Report: 50% Weight

Component 2(SEE) Semester End Examination: 50% Weight

A 3 hour duration Semester End Examination will be conducted for a maximum of 50 marks.

The course leader will indicate the mode of assessment in consultation and approval of the respective HoD and the faculty Dean, before commencement of the semester.

The template for weightage of CE and SEE in percentages for each course is indicated in Table below.

ILO No.	Intended Learning Outcome	Assessment Type	CE (Weightage: 50 %)				SEE (Weightage: 50 %):
			Conduction of Lab Exercises)	(Viva)	(Lab Record Submission)	(Lab Test)	SEE
		Comp Weightage (%)					50
1	ILO-1						
2	ILO-2						

A student is required to score a minimum of 40% marks in Semester end examination and 40% marks overall in each laboratory course.

4. **For courses with a combination of theory and laboratory**

There are two components-Component-1 and Component-2

Component-1 (CE) carries a weight of 50% and Component -2 (SEE) carries a weight of 50%.

Component-1 (CE): 50% weight

The course leader will indicate the mode of assessment in consultation and approval of the respective HoD and the faculty Dean, before commencement of the semester.

The template for weightage of CE and SEE in percentages for each course is indicated in Table below.

ILO No.	Intended Learning Outcome	CE (Weightage: 50 %)				SEE (Weightage: 50 %)
		Assessment Type	Comp-1a	Comp-1b	Comp-1c Lab	SEE
		Comp Weightage (%)	00	00	00	50
1	ILO-1					
2	ILO-2					
3	ILO-3					
4	ILO-4					
5	ILO-5					
6	ILO-6					

CE – can be from any combination of the following:

Assignments, term Tests, Seminars, Tech Talks, Mini-Projects, Case-Studies, Self-Study, others,

A 3 hour duration Semester End Examination will be conducted for a maximum of 100 marks and will be reduced to 50 marks.

A student is required to score a minimum of 40% marks in Semester end examination and 40% marks overall in each theory course.

5. Other flexibilities (exceptions) as per the programme regulations.

24	**Attendance**
	A minimum of 80% attendance compulsory to sit for semester end examinations.
	Any condoning is as per the Academic Regulations of B.Tech. Programme.
25	**Award of Class**
	As per the Academic Regulations of B.Tech. Programme.
26	**Student support for Learning**
	1. Course Notes
	2. Reference Books in the Library
	3. Magazines and Journals
	4. Internet Facility
	5. Computing Facility
	6. Laboratory Facility
	7. Workshop facility
	8. Staff support
	9. Lounges for Discussions
	10. Any other support that enhances their learning
27	**Quality Control Measures**
	1. Review of Course Notes
	2. Review of Question Papers and Assignment Questions
	3. Student Feedback
	4. Moderation of assessed work
	5. Opportunities for students to see their assessed work
	6. Review and audit by external examiners
	7. Staff Student Consultative Committee meetings
	8. Student exit feedback

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Curriculum Map

Course Code						Intended Learning Outcomes											
						Knowledge and Understanding				Cognitive (Thinking) Skills (Critical, Analytical, Problem Solving)				Practical skills			
a	**b**	**c**	**d**	**e**	**f**	**KU1**	**KU2**	**KU3**	**KU4**	**CS1**	**CS2**	**CS3**	**CS4**	**PS1**	**PS2**	**PS3**	**PS4**
20PSH120A	20PHB102A	20MES103A	20EEC202A	20EEE41XA	20EEO401A	e	bde	ce	abcdf	e	e		bd	f	ef	ef	f
20PSH110A	20PHL107A	20EES104A[1]	20EEC203A	20EEE42XA	20EEP402A	cd	bcde	c	abef	f	cdf	cdef	cdf	f	cdf	f	ef
	20CHB111A	20ECS105A[2]	20EEC204A	20EEE43XA	20EEP403A	cde	bcde	ce	bdef	df	cdef	cf	bf	f	cef	f	f
	20CHL116A	20MES106A	20EEC205A	20EEE44XA	20EEP404A	d	bcd	de	bcef	df	f	f	bcd	f	df	f	f
	20MHB101A	20EEL108A[1]	20EEC206A		20EEO411A	d	d	d	bf	c		d	b	cd	cf	f	f
	20MHB110A	20ECL109A[2]	20EEC207A		20EEP412A	d	d	d	bcf	cf	f	df	bf	cdf	cf	f	f
	20MHB201A	20CES112A[1]	20EEC208A			d	d	d	bc	d			bd	d	d		
	20MHB211A	20EES113A[2]	20EEC212A			cd	cd	c	bcd	cd			b	c			
		20CSS114A	20EEC213A				d	c	cd				c				
		20CSL115A	20EEC214A			d	d	cd	cd		d	d	c		d		
		20ECL109A[1]	20EEC215A			d	d	d		cd		d		cd	c		
		20EEL108A[2]	20EEC216A			d	d	d		c	d	d	d	c	cd		
			20EEL217A			d	d	d	d			d	d		d		
			20EEL218A			d	d		d	d							
			20EEC301A			d	d	d			d	d	d			d	
			20EEC302A				d		d				d				
			20EEC303A			d		d	d		d				d		
			20EEC304A			d	d	d	d		d				d		
			20EEC305A				d	d		d		d		d		d	d
			20EEC306A				d	d				d					
			20EEL307A			d	d	d		d		d		d			
			20EEL308A			d	d	d	d		d				d		
			20EEC311A				d	d		d		d		d		d	d
			20EEC312A				d		d				d				
			20EEC313A			d	d	d		d	d			d		d	
			20EEC314A				d		d				d				d
			20EEC315A				d		d				d				d
			20EEL316A			d	d	d		d	d			d		d	
			20EEL317A				d		d				d				d
			20EEL318A				d		d				d				d
04	**25**	**19**	**77**	**12**	**23**	**Total 160 credits**											

EEE ** Depends on elective course chosen

29 Capability Map

Course Code						Skills									
a	b	c	d	e	f	GK	SL	WC	OC	P	B	IM	EM	L	AO
20PSH120A	20PHB102A	20MES103A	20EEC202A	20EEE41XA	20EEO401A	abcdef	abcdef	abcdef	af	af	af	abcdef	abcd	af	af
20PSH110A	20PHL107A	20EES104A[1]	20EEC203A	20EEE42XA	20EEP402A	abcdef	abcdef	abcdef	abf	af	abf	abcdef	abcd	f	f
	20CHB111A	20MES106A	20EEC204A	20EEE43XA	20EEP403A	bcdef	bcdef	bcdef	f	f	f	bcdef	bcde	f	f
	20CHL116A	20EEL108A[1]	20EEC205A	20EEE44XA	20EEP404A	bcdef	bcdef	bcdef	bf	f	f	bcdef	bcdef	f	f
	20MHB110A	20ECL109A[2]	20EEC206A		20EEO411A	bcdef	bcdef	bcdef	cf	f	cf	bcdef	bcdef		
	20MHB201A	20CES112A[1]	20EEL207A		20EEP412A	bcdef	bcdef	bcdef	df	f	df	bcdef	bcdef	f	f
	20MHB211A	20CSS114A	20EEL208A			bcdef	bcdef	bcdef	d		d	bcdef	bcdef		
		20CSL115A	20EEC212A			cdef	cdef	cdef	c		c	cdef	cdef		
		20ECL109A[1]	20EEC213A			cdef	cdef	cdef	c		c	cdef	cdef		
		20EEL108A[2]	20EEC214A			cdef	cdef	cdef	c		c	cdef	cdef		
			20EEC215A			d	d	d				d	d		
			20EEC216A			d	d	d				d	d		
			20EEL217A			d	d	d	d		d	d	d		
			20EEL218A			d	d	d	d		d	d	d		
			20EEC301A			d	d	d				d	d		
			20EEC302A			d	d	d				d	d		
			20EEC303A			d	d	d				d	d		
			20EEC304A			d	d	d				d	d		
			20EEC305A			d	d	d				d	d		
			20EEC306A			d	d	d				d	d		
			20EEL307A			d	d	d	d		d	d	d		
			20EEL308A			d	d	d	d		d	d	d		
			20EEC311A			d	d	d				d	d		
			20EEC312A			d	d	d				d	d		
			20EEC313A			d	d	d				d	d		
			20EEC314A			d	d	d				d	d		
			20EEC315A			d	d	d				d	d		
			20EEL316A			d	d	d	d		d	d	d		
			20EEL317A			d	d	d	d		d	d	d		
			20EEL318A			d	d	d	d		d	d	d		

GK: Group Work, SL: Self Learning, WC: Written Communication, OC: Oral Communication, P: Presentation, B: Behavioral, IM: Information Management, PM: Personal Management, L: Leadership, AO: Any Other

30 Co-curricular Activities

Students are encouraged to take part in co-curricular activities like seminars, conferences, symposia, paper writing, attending industry exhibitions, project competitions and related activities for enhancing their knowledge and networking.

31 Cultural and Literary Activities

Annual cultural festivals are held to showcase the creative talents in students. They are involved in planning and organizing the activities.

32 Sports and Athletics

Students are encouraged to take part in sports and athletic events regularly. Annual sports meet will be held to demonstrate sportsmanship and competitive spirit.

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