CURRICULUM
&
SYLLABUS
2020 Scheme
(Revised in 2022)
(Autonomous)

B.TECH
ELECTRICAL AND ELECTRONICS ENGINEERING

MAR BASELIOS COLLEGE OF ENGINEERING AND TECHNOLOGY

Mar Ivanios Vidyanagar, Nalanchira, Thiruvananthapuram – 695 015

August 2022

CURRICULUM & DETAILED SYLLABI

FOR

B. TECH DEGREE PROGRAMME

IN

ELECTRICAL AND ELECTRONICS ENGINEERING

SEMESTERS I to VIII

2020 SCHEME (REVISED IN 2022)
(AUTONOMOUS)

MAR BASELIOS COLLEGE OF ENGINEERING AND TECHNOLOGY

(Approved by AICTE, Autonomous Institution Affiliated to APJ Abdul Kalam Technological University)
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MAR BASELIOS COLLEGE OF ENGINEERING AND TECHNOLOGY
DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

B. TECH DEGREE PROGRAMME
IN
ELECTRICAL AND ELECTRONICS ENGINEERING

CURRICULUM & SYLLABUS
2020 SCHEME (REVISED IN 2022)

Items	Board of Studies (BOS)	Academic Council (AC)
Date of Approval	19.11.2021	22.04.2022
	10.08.2022	21.11.2022
	22.02.2023	20.03.2023
	01.04.2024	19.06.2024
	30.04.2025	28.05.2025

Head of Department
Chairman, Board of Studies

Principal
Chairman, Academic Council

MAR BASELIOS COLLEGE OF ENGINEERING AND TECHNOLOGY
DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Vision and Mission of the Institution

Vision:

To be an Institution moulding globally competent professionals as epitomes of Noble Values.

Mission:

To transform the Youth as technically competent, ethically sound and socially committed professionals, by providing a vibrant learning ambience for the welfare of humanity.

Vision and Mission of the Department

Vision:

To be a Centre of Excellence in Electrical and Electronics Engineering Education, Research and Application of knowledge to benefit the society at large.

Mission:

To mould quality Electrical Engineers, fostering creativity and innovation to address global issues.

Programme Educational Objectives (PEOs)

1. Graduates will succeed as Professionals in Industry or as Entrepreneurs in Electrical and Electronics Engineering and related disciplines.

2. Graduates will be able to adapt to the advances in Technology by continuously acquiring knowledge and skills, with an urge for innovation.

3. Graduates will be socially committed individuals, exhibiting professional ethics in addressing technical and engineering challenges.

Programme Outcomes (POs)

Engineering Graduates will have the ability to:

1. **Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

2. **Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

3. **Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

4. **Conduct investigations of complex problems**: Use research-based knowledge and

research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

5. **Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

6. **The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

7. **Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

8. **Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

9. **Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

10. **Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

11. **Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

12. **Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Programme Specific Outcomes (PSOs)

Engineering Graduates will have the ability:
1. To apply the knowledge in Electrical and Electronics Engineering for the design of Power Generation, Transmission, Distribution and Utilization systems.

2. To demonstrate the knowledge required to design, develop, test, and implement Electrical & Electronics systems.

CURRICULUM UNDER AUTONOMY STATUS

Medium of Instruction: English

i) Knowledge Segments and Credits

Every course of BTech Programme is placed in one of the nine categories as listed in table below. No semester shall have more than six lecture-based courses and two laboratory courses, and/or drawing/seminar/project courses in the curriculum.

Sl. No.	Category	Category Code	Total credits
1	Humanities and Social Sciences including Management Courses	HSC	8
2	Basic Science Courses	BSC	26
3	Engineering Science Courses	ESC	22
4	Programme Core Courses, Comprehensive Course Work and Viva Voce	PCC	70
5	Programme Elective Courses	PEC	18
6	Open Elective Courses	OEC	6
7	Project Work and Seminar	PWS	10
8	Mandatory Non-credit Courses (P/F) with Grade	MNC	---
9	Mandatory Student Activities (P/F)	MSA	2
	Total Mandatory Credits		**162**
	Value Added Courses (Optional) – Honours/Minor	VAC	20

Humanities and Social Sciences including Management Courses: Life Skills, Professional Communication, Professional Ethics, Management for Engineers, Industrial Economics and Foreign Trade.

Basic Science Courses: Mathematics, Engineering Physics and Engineering Chemistry, Physics and Chemistry Labs.

Engineering Science Courses: Basics of Civil and Mechanical Engineering, Basics of Electrical and Electronics Engineering., Civil and Mechanical Workshop, Electrical and Electronics Workshop, Engineering Mechanics, Engineering Graphics, Design and Engineering, Programming in C.

Mandatory Non-credit Courses: Sustainable Engineering, Constitution of India, Universal Human Values, Disaster Management, Industrial Safety Engineering.

ii) Semester-wise Credit Distribution

Semester	I	II	III	IV	V	VI	VII	VIII	Total
Credits for Courses	17	21	22	22	22	23	16	17	160
Year wise Credit	38		44		45		33		
Activity Points (Min.)	40				60				100
Credits for Activities	2								2
Total Credits									162
Value Added Courses (Optional) – Honours / Minor									20
Total Credits									182

iii) Minor

Purpose

Minor is an additional credential a student may earn if he/she does 20 credits worth of additional learning in a discipline other than her/his major discipline of the BTech Degree. The objective is to permit a student to customize their Engineering degree to suit their specific interests. Engineering Minors allow a student to gain interdisciplinary experience and exposure to concepts and perspectives that may not be a part of their major degree programmes.

To earn credits in Minor

A set of courses and/or other activities like projects necessary for earning a Minor is prescribed in specialist baskets. Each basket has 4 courses and two mini projects. Each basket has sequences within it, i.e., advanced courses rest on basic courses in the basket.

Student accumulates credits by registering for the required courses, and if the requirements for a particular minor are met within the time limit for the course, the minor will be awarded. This will be mentioned in the Degree Certificate as "Bachelor of Technology in Electrical and Electronics Engineering with Minor in xxx". The fact will also be reflected in the consolidated grade card, along with the list of courses taken. If one specified course cannot be earned during the course of the programme, that minor will not be awarded. The individual course credits earned, however, will be reflected in the consolidated Grade Card.

(a) All BTech students shall be eligible to register for Minor in Engineering.

(b) The Registration for Minor Programme is permitted at the beginning of third semester.

(c) The batch size of a Minor Programme can be between 20(-)10% to 60(+)10%. That is number of students in a batch be in between 18 to 66. Each batch shall be mapped to a faculty member.

(d) A student can take Honours and Minor together, if all eligibility criteria are satisfied.

(e) Total credits required for award of Minor is **182** (162 + 20 credits from value added courses).

(f) Out of the 20 Credits, 12 credits shall be earned by undergoing a minimum of three courses listed in one of the baskets in the curriculum for Minor. Of these three courses, one shall be a mini project to be done in the seventh or eighth semester (Fourth level) based on the chosen area of study.

(g) The remaining 8 credits could be acquired by undergoing approved MOOCs or through courses listed in the curriculum. The MOOC courses chosen shall be relevant to the concerned courses in the respective minor basket.

(h) Reshuffling of courses between various baskets will not be allowed. New baskets will be added from time to time

(i) The classes for Minor will be conducted along with regular classes and no extra time shall be required for conducting the courses.

(j) If a student fails in any course of the minor, he/she shall not be eligible to continue the BTech Minor. There won't be any supplementary examination for the courses chosen for Minor. However, the additional credits and grades thus far earned by the student shall be included in the grade card.

(k) Under graduate Degree with Minor shall be issued by the University to the students who fulfil all the academic eligibility requirements for the BTech Programme and Minor.

iv) B.Tech (Honours)

Purpose

Honours is an additional credential a student may earn if he/she opts for the extra 20 credits over and above the normal number of credits needed for the award of the degree in her/his own discipline. Honours is not indicative of class but it is definitely a value addition. It is intended for an academically outstanding student to gain expertise/specialize in an area inside his/her major BTech discipline and to enrich knowledge in emerging/advanced areas in the branch of engineering concerned. It is particularly suited for students intending to pursue higher studies in the discipline in which they will graduate.

To earn credits for Honours

On successful accumulation of credits at the end of the Programme, this will be mentioned in the Degree Certificate as "Bachelor of Technology in Electrical and Electronics Engineering, with Honours." The fact will also be reflected in the consolidated grade card, along with the list of courses taken. If one specified course cannot be earned during the course of the Programme, Honours will not be awarded. The individual course credits earned, however, will be reflected in the consolidated grade card.

(a) The courses are grouped into maximum of 3 groups, each group representing a particular specialization in the branch. The students shall select only the courses from same group in all semesters. It means that the specialization is to be fixed by the student and cannot be changed subsequently. The internal evaluation, examination and grading shall be exactly as for other mandatory courses.

(b) The Honours courses are included in the curriculum from fourth to eight semesters for all branches.

(c) Registration is permitted for Honours at the beginning of fourth semester.

(d) Total credits required is **182** (162 + 20 credits from value added courses).

(e) Out of the 20 Credits, 12 credits shall be earned by undergoing a minimum of three courses listed in the curriculum for Honours, of which one course shall be a mini project based on the chosen area. The mini project shall be done in S8.

(f) The remaining 8 credits could be acquired by undergoing approved MOOCs or through courses listed in the curriculum.

(g) The classes for Honours will be conducted along with regular classes and no extra time shall be required for conducting the courses.

(h) The students should earn a grade of 'C' or better for all courses under Honours.

(i) There won't be any supplementary examination for the courses chosen for Honours.

(j) On successful accumulation of credits at the end of the Programme, "Bachelor of Technology in Electrical and Electronics Engineering, with Honours" will be awarded if overall CGPA is greater than or equal to 8.5, earned a grade of 'C' or better for all courses chosen for Honours and without any history of 'F' Grade.

v) General Guidelines

Four hours are kept exclusively for the Remedial / Minor/ Honours courses from third to seventh semester. For the mini project of Minor or Honours in S7/S8, 7 hours are allotted. If a student does not opt for Minor/Honours courses, he/she can be given remedial classes.

SEMESTER I

Slot	Cate-gory Code	Course Number	Courses	L-T-P	Hours	Credit
A	BSC	MA0U10A	Linear Algebra and Calculus	3-1-0	4	4
B 1/2	BSC	PH0U10A	Engineering Physics A	3-1-0	4	4
		CY0U10A	Engineering Chemistry	3-1-0	4	4
C 1/2	ESC	ES0U10A	Engineering Mechanics	2-1-0	3	3
		ES0U10B	Engineering Graphics	2-0-2	4	3
D 1/2	ESC	ES0U10C	Basics of Civil and Mechanical Engineering	4-0-0	4	4
		ES0U10D	Basics of Electrical and Electronics Engineering	4-0-0	4	4
E	HSC	HS0U10A	Life Skills	2-0-2	4	---
S 1/2	BSC	PH0U18A	Engineering Physics Lab	0-0-2	2	1
		CY0U18A	Engineering Chemistry Lab	0-0-2	2	1
T 1/2	ESC	ES0U18A	Civil and Mechanical Workshop	0-0-2	2	1
		ES0U18B	Electrical and Electronics Workshop	0-0-2	2	1
				TOTAL	25/24	17

SEMESTER II

Slot	Cate-gory Code	Course Number	Courses	L-T-P	Hours	Credit
A	BSC	MA0U10B	Vector Calculus, Differential Equations and Transforms	3-1-0	4	4
B 1/2	BSC	PH0U10A	Engineering Physics A	3-1-0	4	4
		CY0U10A	Engineering Chemistry	3-1-0	4	4
C 1/2	ESC	ES0U10A	Engineering Mechanics	2-1-0	3	3
		ES0U10B	Engineering Graphics	2-0-2	4	3
D 1/2	ESC	ES0U10C	Basics of Civil and Mechanical Engineering	4-0-0	4	4
		ES0U10D	Basics of Electrical and Electronics Engineering	4-0-0	4	4
E	HSC	HS0U10B	Professional Communication	2-0-2	4	---
F	ESC	ES0U10E	Programming in C	2-1-2	5	4
S 1/2	BSC	PH0U18A	Engineering Physics Lab	0-0-2	2	1
		CY0U18A	Engineering Chemistry Lab	0-0-2	2	1
T 1/2	ESC	ES0U18A	Civil and Mechanical Workshop	0-0-2	2	1
		ES0U18B	Electrical and Electronics Workshop	0-0-2	2	1
				TOTAL	28/29	21

			SEMESTER III			
Slot	**Cate-gory**	**Course Code**	**Courses**	**L-T-P**	**Hours**	**Credit**
A	BSC	MA0U20A	Partial Differential Equation and Complex Analysis	3-1-0	4	4
B	PCC	EE1U20B	Measurements and Instrumentation	3-1-0	4	4
C	PCC	EE1U20C	Analog Electronics	3-1-0	4	4
D	PCC	EE1U20F	Digital Electronics	3-1-0	4	4
E	ESC	ES0U20A	Design and Engineering	2-0-0	2	2
F	MNC	NC0U20B	Constitution of India	2-0-0	2	-
S	PCC	EE1U28B	Analog Electronics Lab	0-0-3	3	2
T	PCC	EE1U28D	Digital Electronics Lab	0-0-3	3	2
R/M	VAC		Remedial/Minor Course	4-0-0/ 3-1-0	4	4
				TOTAL	**26/30**	**22/26**

			SEMESTER IV			
Slot	**Cate-gory**	**Course Code**	**Courses**	**L-T-P**	**Hours**	**Credit**
A	BSC	MA0U20C	Probability, Random Processes and Numerical Methods	3-1-0	4	4
B	PCC	EE1U20A	Circuits and Networks	2-2-0	4	4
C	PCC	EE1U20D	DC Machines and Transformers	3-1-0	4	4
D	PCC	EE1U20G	Microcontroller and Applications	3-1-0	4	4
E	HSC	HS0U20A	Professional Ethics	2-0-0	2	2
F	MNC	NC0U20C	Universal Human Values	2-0-0	2	-
S	PCC	EE1U28A	Circuits and Measurements Lab	0-0-3	3	2
T	PCC	EE1U28F	Microcontroller Lab	0-0-3	3	2
R/M/H	VAC		Remedial/Minor/Honours Course	4-0-0/ 3-1-0	4	4
				TOTAL	**26/30**	**22/26**

			SEMESTER V			
Slot	Cate-gory	Course Code	Courses	L-T-P	Hours	Credit
A	PCC	EE1U30D	Synchronous and Induction Machines	3-1-0	4	4
B	PCC	EE1U30I	Introduction to Control Engineering	3-1-0	4	4
C	PCC	EE1U30G	Power Electronics	3-1-0	4	4
D	PEC	EE1UXXX	Program Elective I	3-0-0	3	3
E	HSC	HS0U30B	Management for Engineers	3-0-0	3	3
F	MNC	NC0U30A	Disaster Management	2-0-0	2	-
S	PCC	EE1U38E	Electrical Machines Lab	0-0-3	3	2
T	PCC	EE1U38D	Power Electronics Lab	0-0-3	3	2
R/M/H	VAC		Remedial/Minor/Honours Course	4-0-0/ 3-1-0	4	4
				TOTAL	26/30	22/26

PROGRAM ELECTIVE I

Slot	Cate-gory	Course Code	Course	L-T-P	Hours	Credit
D	PEC	EE1U31A	Biomedical Instrumentation	3-0-0	3	3
		EE1U31B	Renewable Energy Sources	3-0-0	3	3
		EE1U31Z	Electrical Drawing with CAD	2-1-0	3	3
		EE1U31Y	Illumination Engineering	3-0-0	3	3
		EE1U31E	Object Oriented Programming	3-0-0	3	3
		EE1U31F	Material Science	3-0-0	3	3
		EE1U31X	Fundamentals of Soft Computing	3-0-0	3	3

			SEMESTER VI			
Slot	Cate-gory	Course Code	Courses	L-T-P	Hours	Credit
A	PCC	EE1U30A	Power Systems I	3-1-0	4	4
B	PCC	EE1U30J	Engineering Electromagnetics	3-1-0	4	4
C	PCC	EE1U30K	Introduction to Signals and Systems	3-1-0	4	4
D	PEC	EE1UXXX	Program Elective II	3-0-0/ 2-1-0	3	3
E	OEC	EE0UXXX	Open Elective I	3-0-0	3	3
F	PCC	EE1U30L	Comprehensive Course work	1-0-0	1	1
S	PCC	EE1U38F	Control Systems Lab	0-0-3	3	2
T	PWS	EE1U39A	Mini Project	0-0-3	3	2
R/M/H	VAC		Remedial/Minor/Honours Course	4-0-0/ 3-1-0	4	4
				TOTAL	25/29	23/27

PROGRAM ELECTIVE II

Slot	Category	Course Code	Course	L-T-P	Hours	Credit
D	PEC	EE1U32Z	Electrical Machine Design	2-1-0	3	3
		EE1U32Y	Advanced Control Systems	2-1-0	3	3
		EE1U32X	Fundamentals of Machine Learning	3-0-0	3	3
		EE1U32W	Digital Signal Processing	2-1-0	3	3
		EE1U32V	Electric Drives	3-0-0	3	3
		EE1U32U	Sensors and Sensing Techniques	3-0-0	3	3
		EE1U32T	Embedded Systems	3-0-0	3	3

OPEN ELECTIVE I

Slot	Category	Course Code	Course	L-T-P	Hours	Credit
E	OEC	EE0U33Z	Introduction to Flight Dynamics and Control	3-0-0	3	3
		EE0U33Y	Introduction to Power Processing	3-0-0	3	3
		EE0U33X	Sports Engineering	3-0-0	3	3
		EE0U33W	Electrical Drives and Control for Automation	3-0-0	3	3
		EE0U33V	Renewable Energy Systems	3-0-0	3	3

SEMESTER VII						
Slot	Category	Course Code	Courses	L-T-P	Hours	Credit
A	PCC	EE1U40D	Power Systems II	3-1-0	4	4
B	PEC	EE1UXXX	Program Elective III	3-0-0/ 2-1-0	3	3
C	OEC	EE0UXXX	Open Elective II	3-0-0/ 2-1-0	3	3
D	MNC	NC0U40A	Industrial Safety Engineering	2-1-0	3	---
S	PCC	EE1U48B	Power Systems Lab	0-0-3	3	2
T	PWS	EE1U49A	Seminar	0-0-3	3	2
U	PWS	EE1U49B	Project Phase I	0-0-6	6	2
R/M/H	VAC		Remedial/Minor/Honours Course	0-1-6/ 4-0-0	7/4	4
			TOTAL		25/ (32/29)	16/20

PROGRAM ELECTIVE III

Slot	Category	Course Code	Course	L-T-P	Hours	Credit
B	PEC	EE1U41Z	Fundamentals of Robotics	2-1-0	3	3
		EE1U41Y	Electrical System Design for Domestic Dwellings	2-1-0	3	3
		EE1U41X	Distributed Generation and Smart Grids	3-0-0	3	3
		EE1U41W	Special Electrical Machines	3-0-0	3	3
		EE1U41V	Emerging Technologies in Sports	3-0-0	3	3
		EE1U41U	Power System Protection	3-0-0	3	3
		EE1U41D	Data Structures	2-1-0	3	3

OPEN ELECTIVE II

Slot	Category	Course Code	Course	L-T-P	Hours	Credit
C	OEC	EE0U41Z	Architectural Lighting Design and Control	2-1-0	3	3
		EE0U41Y	Electric Vehicles	3-0-0	3	3
		EE0U41X	Process Control and Automation	3-0-0	3	3
		EE0U41W	Sustainable Energy Management	3-0-0	3	3

SEMESTER VIII						
Slot	Category	Course Code	Courses	L-T-P	Hours	Credit
A	PEC	EE1UXXX	Program Elective IV	3-0-0	3	3
B	PEC	EE1UXXX	Program Elective V	3-0-0/ 2-1-0	3	3
C	PEC	EE1UXXX	Program Elective VI	3-0-0/ 2-1-0	3	3
D	HSC	HS0U40A	Industrial Economics & Foreign Trade	3-0-0	3	3
T	PCC	EE1U40E	Comprehensive Course Viva	1-0-0	1	1
U	PWS	EE1U49C	Project Phase II	0-0-12	12	4
R/M/H	VAC		Remedial/Minor/Honours Course	0-1-6	7	4
				TOTAL	25/32	17/21

PROGRAM ELECTIVE IV

Slot	Category	Course Code	Course	L-T-P	Hours	Credit
A	PEC	EE1U42Z	Communication Engineering	3-0-0	3	3
		EE1U42Y	Internet of Things	3-0-0	3	3
		EE1U42X	Power Quality	3-0-0	3	3
		EE1U42W	Computer Networks	3-0-0	3	3
		EE1U42V	Energy Management and Auditing	3-0-0	3	3
		EE1U42U	Automotive Electrical and Electronic Systems	3-0-0	3	3
		EE1U42T	Digital Control Systems	2-1-0	3	3

PROGRAM ELECTVE V

Slot	Category	Course Code	Course	L-T-P	Hours	Credit
B	PEC	EE1U43Z	Switched Mode Power Converters	3-0-0	3	3
		EE1U43Y	Industrial Instrumentation and Automation	3-0-0	3	3
		EE1U43X	VR and AR for Assistive Technology	3-0-0	3	3
		EE1U43W	Electrical System Design for Industry and Infrastructure	2-1-0	3	3
		EE1U43V	Computer Aided Power System Analysis	2-1-0	3	3
		EE1U43U	Fundamentals of Nanotechnology	3-0-0	3	3
		EE1U43T	Energy Storage Systems	3-0-0	3	3

PROGRAM ELECTIVE VI

Slot	Category	Course Code	Course	L-T-P	Hours	Credit
C	PEC	EE1U44A	Electric and Hybrid Vehicles	3-0-0	3	3
		EE1U44E	Solar PV Systems	2-1-0	3	3
		EE1U44Z	HVDC & FACTS	3-0-0	3	3
		EE1U44Y	Modern Control Techniques	2-1-0	3	3
		EE1U44X	High Voltage Engineering	3-0-0	3	3
		EE1U44G	Big Data Analytics	3-0-0	3	3
		EE1U44W	Digital Image Processing	3-0-0	3	3

B.Tech (MINOR)

Semester	BASKET I				BASKET II				BASKET III				BASKET IV			
	Embedded Systems for Industrial Applications				Architectural Lighting and Electrical System Design				Clean and Sustainable Energy				Electric Vehicle Systems			
	Course Code	Course	L-T-P	Credit	Course Code	Course	L-T-P	Credit	Course Code	Course	L-T-P	Credit	Course Code	Course	L-T-P	Credit
S3	EE0M20I	Micro Controllers and Embedded Systems	4-0-0	4	EE0M20J	Basics of Illumination Science and Lighting Design	4-0-0	4	EE0M20K	Sustainable Energy Systems	4-0-0	4	EE0M20L	Electric Machinery	4-0-0	4
S4	EE0M20M	Hardware Interfacing using Arduino -C Platform	4-0-0	4	EE0M20N	Electric Power Supply and Distribution Systems	4-0-0	4	EE0M20P	Renewable Energy in Power Grids	4-0-0	4	EE0M20Q	Power Electronics and Energy Storage Devices	4-0-0	4
S5	EE0M30I	Raspberry Pi - Python Interface for Electrical Engineering	4-0-0	4	EE0M30J	Energy efficiency in Buildings	4-0-0	4	EE0M30K	Solar and Wind Energy Conversion Systems	3-1-0	4	EE0M30L	Hybrid and Electric Vehicles	4-0-0	4
S6	EE0M30M	Cloud Computing for Internet of Things	4-0-0	4	EE0M30N	Electrical System Design and Building services	3-1-0	4	EE0M30P	Smart Grid and Energy Storage Systems	4-0-0	4	EE0M30Q	Introduction to Automotive Electrical & Electronic systems	4-0-0	4
S7	EE0M49A	Mini Project	0-1-6	4	EE0M49A	Mini Project	0-1-6	4	EE0M49A	Mini Project	0-1-6	4	EE0M49A	Mini Project	0-1-6	4
S8	EE0M49B	Mini Project	0-1-6	4	EE0M49B	Mini Project	0-1-6	4	EE0M49B	Mini Project	0-1-6	4	EE0M49B	Mini Project	0-1-6	4

BTech (HONOURS)

Semester	GROUP I				GROUP II				GROUP III			
	Course Code	Course	L-T-P	Credit Credit	Course Code	Course	L-T-P	Credit	Course Code	Course	L-T-P	Credit
S4	EE1H20A	Network Analysis and Synthesis	3-1-0	4	EE1H20A	Network Analysis and Synthesis	3-1-0	4	EE1H20A	Network Analysis and Synthesis	3-1-0	4
S5	EE1H30I	Non-Conventional Energy Resources	4-0-0	4	EE1H30J	Elements of Solar Energy Conversion	4-0-0	4	EE1H30K	Solar Photovoltaics Fundamentals	4-0-0	4
S6	EE1H30L	Analysis of Electrical Machines	3-1-0	4	EE1H30C	Analysis of Power Electronic Circuits	3-1-0	4	EE1H30D	Operation and Control of Power Systems	4-0-0	4
S7	EE1H40A	Operation and Control of Generators	4-0-0	4	EE1H40B	Dynamics of Power Converters	3-1-0	4	EE1H40C	Control and Dynamics of Microgrids	4-0-0	4
S8	EE1H49A	Mini Project	0-1-6	4	EE1H49A	Mini Project	0-1-6	4	EE1H49A	Mini Project	0-1-6	4

Evaluation Framework

Pattern of Grading

College expects a continuous progress in learning for a student. So, the evaluation will be done on a continual basis. A student will be eligible for the award of BTech Degree of the University, under the autonomy, on satisfying the following requirements:

i)   Fulfilled all the curriculum requirements within the stipulated duration of the Programme.

ii) Earned the required minimum credits and earned the requite minimum CGPA as specified in the curriculum for the branch of study.

iii) No disciplinary action pending or contemplated.

Students registered for a course have to attend the course regularly and undergo the Continuous Assessment (CA) and appear for the End Semester Examinations. Credits for the course are deemed to be earned only on getting at least a pass grade 'P' or better in the composite evaluation. Pass minimum for a course shall be 40% for the End Semester Examination (ESE) and 50% of CA and ESE put together. Letter grade 'F' will be awarded to the student for a course if either his/her mark for the End Semester Examination (ESE) is below 40 % or the overall mark [Continuous Assessment + End Semester Examination] is below 50 %.

Students who received F grade in an End Semester Examination shall have to appear for the End Semester Examination at the next opportunity and earn the credits. They shall not be permitted to register for the course again.

Grading is based on the overall percentage marks obtained by the student in a course. The grade card shall only give the grades against the courses the student has registered. Semester grade card shall give the grade for each registered course, Semester Grade Point Average (SGPA) for the semester as well as Cumulative Grade Point Average (CGPA). There is no provision for improving the grades.

Grade cards shall be issued by the College to the student for the registered courses, in every semester. On earning the required credits for the degree, the College shall issue the final consolidated grade sheet for the BTech programme including CGPA.

Grade and Grade Points

Grades	Grade Point (GP)	% of Total Marks obtained in the Course
S	10	90% and above
A+	9.0	85% and above but less than 90%
A	8.5	80% and above but less than 85%
B+	8.0	75% and above but less than 80%
B	7.5	70% and above but less than 75%
C +	7.0	65% and above but less than 70%
C	6.5	60% and above but less than 65%
D	6.0	55% and above but less than 60%
P (Pass)	5.5	50% and above but less than 55%
F (Fail)	0	Below 50% (CIE + ESE) or Below 40 % for ESE
FE	0	Failed due to lack of eligibility criteria
I	0	Could not appear for the End Semester Examination but fulfills the eligibility criteria
CGPA 8.0 and above		First class with Distinction
CGPA 6.5 and above		First class
Equivalent percentage mark shall be = 10*G - 3.75, where G is SGPA or CGPA		

Calculation of SGPA/CGPA

Semester Grade Point Average (SGPA) and Cumulative Grade Point Average (CGPA) are calculated as follows.

$$SGPA = \frac{\sum C_i \times GP_i}{\sum C_i}$$

where 'C_i' is the credit assigned for a course and 'GP_i' is the grade point for that course. Summation is done for all courses specified in the curriculum of that semester.

$$CGPA = \frac{\sum C_i \times GP_i}{\sum C_i}$$

where 'C_i' is the credit assigned for a course and 'GP_i' is the grade point for that course. Summation is done for all courses specified in the curriculum up to that semester for which the 'CGPA' is needed.

CGPA for the BTech programme is arrived at by considering all course credits that are needed for the degree and their respective grade points.

A student shall earn 2 credits by actively involving in co–curricular and extra–curricular activities as per the guidelines issued from time to time. On getting minimum 100 activity points the student satisfies the requirement and earns the two credits which shall not be counted for the calculation of CGPA but shall be mandatory for the award of the degree.

Break of Study

A student is permitted to avail break of study for specific purpose:

i)   In case of accident or serious illness needing prolonged hospitalization and rest.

ii)   In case the student has a bright idea and would like to initiate a start-up venture or develop a product.

iii) In case of any personal reasons that need a break in study.

iv)   For internship leading to employment.

For break of study due to illness, student shall submit all necessary medical reports together with the recommendation of the doctor treating him giving definite reasons for break of study and its duration. Before joining back, the student should submit the fitness certificate from the doctor who had treated him.

Students who want to initiate a start-up venture or a product development, have to submit a project report, clearly indicating the purpose, action plan, technical details, funding details and future plans to the College through the Department. College shall evaluate the proposal by constituting an expert team consisting of a technocrat and a bank executive and take an appropriate decision based on the team's recommendation. The break of study for the startup shall be permitted only after the 4th semester for a maximum duration of two semesters. This is however permitted only on successfully completing the courses listed out in all the four semesters.

Students who require a break of study due to personal reasons shall convince the College on the genuine need of it by giving authentic evidence for the same.

Students who require break of study for 'internship leading to employment' shall produce the offer letter obtained from the employer concerned. College shall verify the authenticity of the offer and take appropriate decision, based on the recommendation of the standing committee.

Break of study for an academic year is the preferred option to break of study for a semester.

Students shall have to rejoin on the first working day of the next immediate semester after the break of study.

Students readmitted after break of study shall continue their studies in the existing scheme to which he/she was readmitted. The exemption and addition of courses to be registered, the transitory courses (approved by the Academic Council), if any due to curriculum change, shall be decided by the respective Board of Studies.

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