2.1.1 State the process for designing the program curriculum

Dr. Mahalingam College of Engineering & Technology (MCET), is an autonomous institution since 2011, accredited by NAAC with A++ grade and affiliated to Anna University, Chennai. Graduate Attributes (GAs) of NBA, the guidelines and model curriculum of AICTE and Curriculum & Syllabi of Anna University, Chennai, were considered in designing this programme curriculum.

The process for designing the programme curriculum is as follows:

1. Number of courses in each course category are decided in the programme curriculum considering the
    - **AICTE model curriculum,**
    - **Accreditation Board for Engineering and Technology (ABET) and**
    - **Anna University curriculum.**

AICTE model CurriculumVs MCET Curriculum Components

Category	**Credits as per AICTE norms**	**MCET**	
		2016 Regulation	**2019 Regulation**
Basic Science	**25**	27	24
Engineering Science	**24**	22	25.5
Humanities & Social Science	**12**	15	13
Professional Core	**48**	86	58.5
Professional Electives	**18**	18	18
Open Electives	**18**	3	9
Project & internship	**15**	14	18
OCC	**-**	4	2
Total Credits	**160**	**189**	**168**

Accreditation Board for Engineering and Technology (ABET)

S.No	**Criteria**	**MCET**
1	Minimum of 30 semester credit hours (or equivalent) of a combination of college-level mathematics and basic sciences with experimental experience	✔
2	Minimum of 45 semester credit hours (or equivalent) of engineering topics appropriate to the program, consisting of engineering and computer sciences and engineering design, and utilizing modern engineering tools.	✔
3	Incorporates appropriate engineering standards and multiple constraints, and is based on the knowledge and skills acquired in earlier course work.	✔

Source:[**https://www.abet.org/accreditation/accreditation-criteria/criteria-for-accrediting-engineering-programs-2020-2021/#GC5**](https://www.abet.org/accreditation/accreditation-criteria/criteria-for-accrediting-engineering-programs-2020-2021/#GC5)

2. Feedback is obtained from industries, alumni, academic experts and students through

email and in person during their visits. The collected feedback is analyzed and the Program Outcomes (POs) and Program Specific Outcomes (PSOs) are drafted for outcome-based education to evolve the broad technical areas in which the students' knowledge, technical and professional skills have to be imparted and assessed.

3. The courses are identified and the curriculum is formed for the POs and PSOs.
4. Course Outcomes (COs) are then written for each identified course in alignment with the POs and PSOs.The syllabus content is formulated for each course outcome and thus the syllabi for all the courses are developed.
5. The drafted curriculum and syllabi is reviewed in the department and verified to meet the guidelines.
6. The curriculum and the syllabi are then presented to the Board of Studies (BoS) which is typically conducted once or twice in an academic year.
7. Comments/Suggestions by the BoS committee members for improvements are incorporated in the curriculum and syllabi for presenting in the Academic Council Meeting.
8. Comments/Suggestions by Academic Council Meeting are incorporated in the final version of the curriculum and the syllabi and after the approval of Academic Council they are published/disseminated.
9. Target levels for attainment of COs, POs & PSOs and PEOs are fixed / defined in the Programme Assessment Committee meeting.

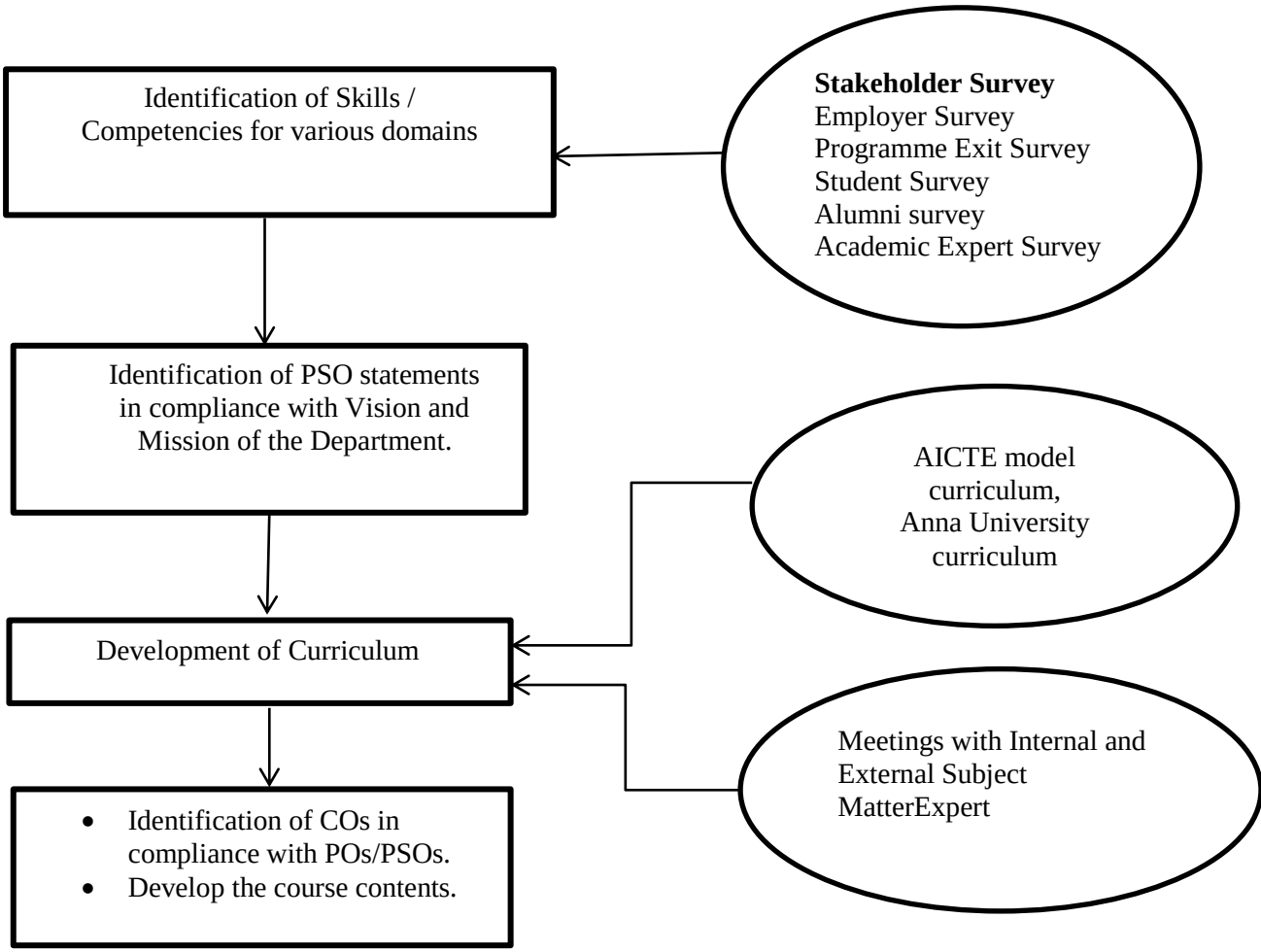


Figure 2.1.1.1 Process for Evaluation of Program Curriculum

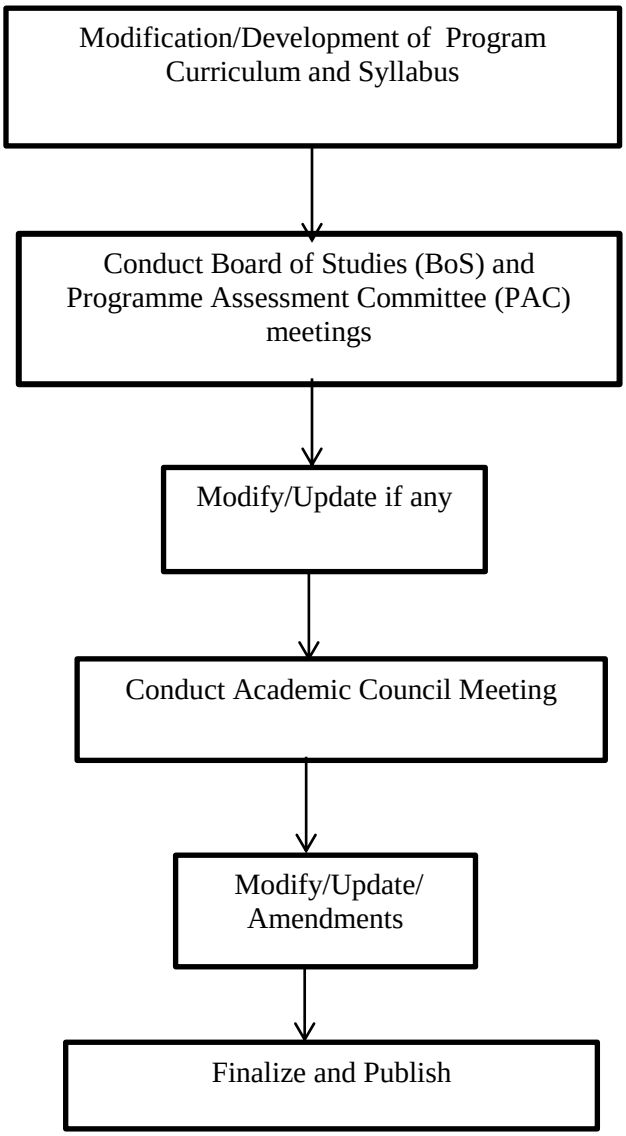


Figure 2.1.1.2 Review of Program Curriculum

Dr. Mahalingam College of Engineering and Technology, Pollachi – 642003.
(An autonomous institution approved by AICTE and affiliated to Anna University)

Department of Electronics & Instrumentation Engineering

Vision

We develop globally competent instrumentation engineers and entrepreneurs with societal, environmental and human values

Mission:

- Supportive Learning Environment: Provide suitable learning environment to the graduates with innovative learning resources and adequate infrastructure.
- Engineering Skills: Enhance electronic, instrumentation and automation skills of the engineering graduates to fulfill the industrial requirements.
- Sustainable and Eco-Friendly: Create awareness among the graduates for sustainable, ecofriendly products and safety standards.
- Ethical and Professional Responsibility: Enrich continuous learning, communicative, collaborative and administrative skills of the engineering graduates to become ethical, social responsible engineers and entrepreneurs

OBE Coordinator

Programme Coordinator

Head of the Department

Head - OBE

Dr. Mahalingam College of Engineering and Technology, Pollachi – 642003.
(An autonomous institution approved by AICTE and affiliated to Anna University)

Programme: B.E. Electronics and Instrumentation Engineering

Programme Educational Objectives (PEOs) - Regulation 2019

B.E. Electronics and Instrumentation Engineering graduates will:

PEO1. Technical Knowledge: Actively apply technical and professional skills in engineering practices towards the progress of the organization in competitive and dynamic environment.

PEO2.Higher studies and Research: Own their professional and personal development by continuous learning and apply the learning at work to create new knowledge

PEO3.Professional and Ethical knowledge: Conduct themselves in a responsible, professional and ethical manner supporting sustainable economic development which enhances the quality of life.

Programme Outcomes (POs) - Regulations 2019

On successful completion of B.E. Electronics and Instrumentation Engineering programme, graduating students/graduates will be able to:

PO.1. Engineering Knowledge: Apply the knowledge of Mathematics, Science and engineering to solve problems in the field of Electronics & Instrumentation Engineering.

PO.2. Problem Analysis: Identify, formulate/model, analyse and solve complex problems in the field of Electronics & Instrumentation Engineering.

PO.3. Design and Development: Design an electronic system/component, or process to meet specific purpose with due consideration for economic, environmental, social, political, ethical, health and safety issues.

PO.4. Conduct Investigations: Design and conduct experiment, analyse and interpret data to provide valid conclusions in the field of Electronics and Instrumentation Engineering.

PO.5. Modern Tool Usage: Apply appropriate techniques and modern software tools for design and analysis of Electronic systems with specified constraints.

PO.6. Engineer and Society: Apply contextual knowledge to provide engineering solutions with societal, professional & environmental responsibilities

OBE Coordinator | Programme Coordinator | Head of the Department

Head - OBE

PO.7. Environment and Sustainability: Provide sustainable solutions within societal and environmental contexts for problems related to Electronics & Instrumentation Engineering.

PO.8. Ethics: Comply with code of conduct and professional ethics in engineering practices

PO.9 Individual and Team work: Perform effectively as a member/leader in multidisciplinary teams.

PO.10. Communication: Communicate effectively to engineering community and society with proper aids and documents.

PO.11. Project Management & Finance: Demonstrate knowledge and understanding of the engineering and management principles to manage projects in multidisciplinary environment.

PO.12. Lifelong Learning: Recognise the need for, and have the ability to engage in independent and lifelong learning.

Programme Specific Outcomes (PSOs) - Regulations 2019

On successful completion of B.E. Electronics and Instrumentation Engineering programme, graduating students/graduates will be able to:

PSO1.Instrument Analysis: Analyze and monitor the characteristics of electronic measuring instruments to ensure performance, safety and quality of the processes

PSO2.Controller Selection: Select the suitable instruments, control schemes and controllers as per the requirements

OBE Coordinator

Programme Coordinator

Head of the Department

Head - OBE

Dr. Mahalingam College of Technology, Pollachi

2019 Regulations - Course Code Generation Procedure for UG Courses(v1)

Regulation
19

Mode of Assessment	
Character Type – Number	
1	Theory
2	Theory with Practical
3	Practical
4	Practical with Theory
5	Theory with SSU
6	Customized

Semester Number	
Character Type – Number	
1 to 8	Semester
0	Floating

Sequence Number
Character Type – Number
01, 02, 03, . . . , 99

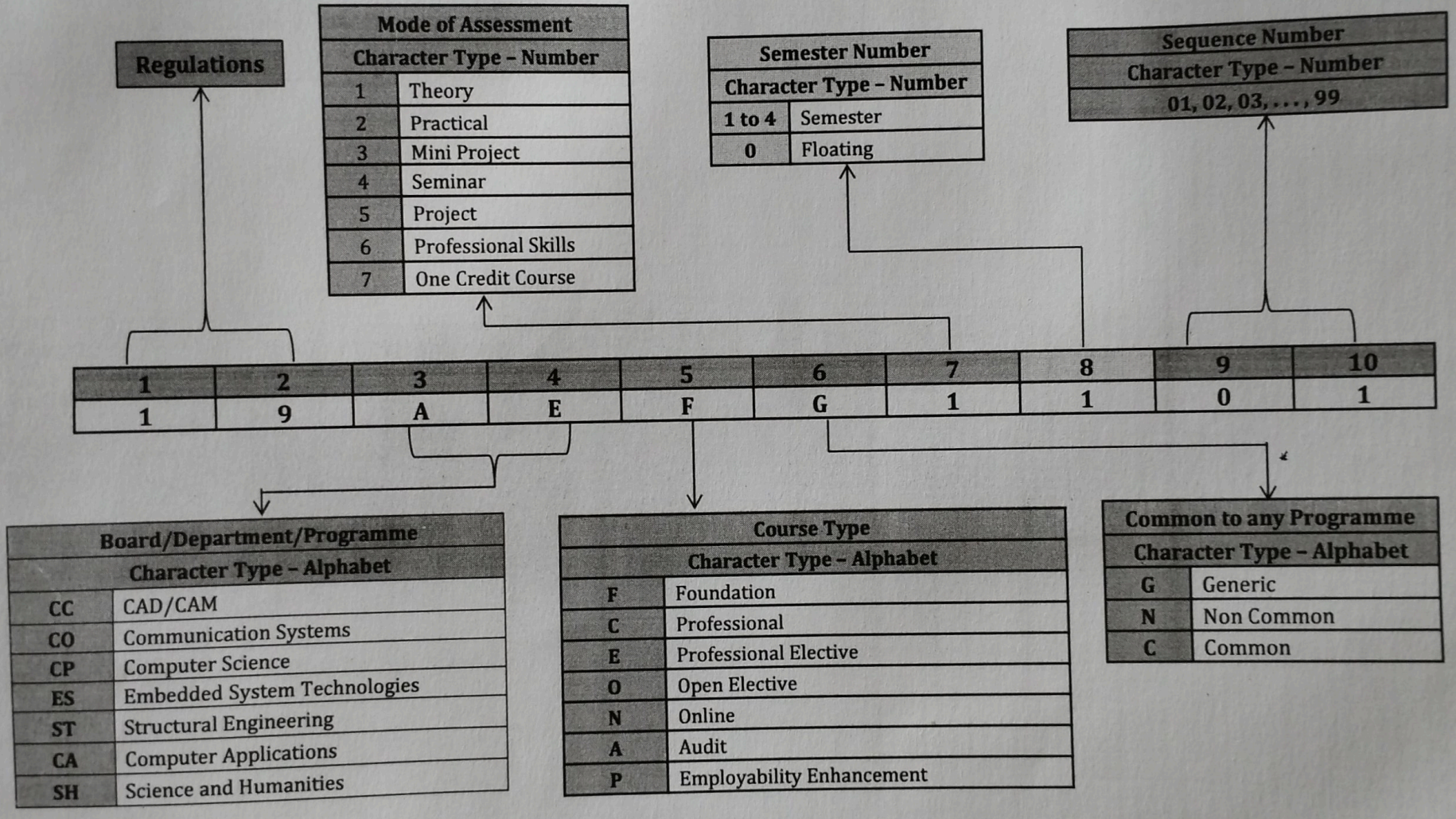
1	2	3	4	5	6	7	8	9	10
1	9	A	U	B	G	1	1	0	1

Board/Department/Programme	
Character Type – Alphabet	
AU	Automobile
CE	Civil
CS	Computer Science
EC	Electronics and Communication
EE	Electrical and Electronics
EI	Electronics and Instrumentation
IT	Information Technology
MC	Mechatronics
ME	Mechanical
CH	Chemistry
EN	English
MA	Mathematics
PH	Physics
PS	Professional Skills
SH	Science and Humanities

Course Type	
Character Type – Alphabet	
B	Basic Science
S	Engineering Science
H	Humanities
C	Professional Core
E	Professional Elective
O	Open Elective
N	Online
I	Industry Offered
V	One Credit
P	Project/Skill Development/ Internship
M	Mandatory Non-Credit

Common to any Programme	
Character Type – Alphabet	
G	Generic
C	Common
N	Non-Common

Dr. Mahalingam College of Technology, Pollachi
2019 Regulations - Course Code Generation Procedure for PG Courses(v1)



Dr. MAHALINGAM
COLLEGE OF ENGINEERING AND TECHNOLOGY
Affiliated to Anna University, Chennai; Approved by AICTE ; Accredited by NAAC with Grade 'A++'
Accredited by NBA - Tier1 (Mech, Auto, Civil, EEE, ECE, E&I and CSE)
Udumalai Road, Pollachi - 642 003 Tel: 04259-236030/40/50 Fax: 04259-236070 www.mcet.in

Programme: B.E Electronics and Instrumentation Engineering
2019 Regulations
Curriculum for Semesters I to VIII

Course Code	Course Title	Duration	Credits	Marks
19SHMG6101	Induction Program	3 Weeks	-	100

Semester I(2020 Batch)

Course Code	Course Title	Hours/Week			Credits	Marks	Common to Programmes
		L	T	P			
19MABC1101	Matrices and Calculus	3	1	0	4	100	AU,CE,EC,EE, EI,ME &MC
19ENHG2101	Communication Skills – I	2	0	2	3	100	All
19CHBC2001	Chemistry for Electrical Sciences	3	0	2	4	100	EC,EE &EI
19EISN2101	Fundamentals of Instrumentation Engineering	3	0	2	4	100	-
19MESC2001	Introduction to Engineering	2	0	2	3	100	AU,EC,EE,EI, ME&MC
19PSHG6001	Wellness for Students*	0	0	2	-	-	All
Total		**13**	**1**	**10**	**18**	**500**	

Semester II (2020 Batch)

Course Code	Course Title	Hours/Week			Credits	Marks	Common to Programmes
		L	T	P			
19ENHG2201	Communication Skills - II	2	0	2	3	100	All
19MABC1201	Ordinary Differential Equations and Complex Variables	3	1	0	4	100	AU,CE,EC,EE, EI,ME&MC
19PHBC2001	Physics for Electrical Sciences	3	0	2	4	100	EC,EE&EI
19EISN1201	Electric Circuit Analysis	3	1	0	4	100	-
19CSSC2001	C Programming	3	0	2	4	100	AU,CE,EC,EE EI,ME&MC
19MESC4001	Engineering Drawing	1	0	3	2.5	100	AU,ME,MC,PR, EC,EI
19PSHG6001	Wellness for Students*	0	0	2	1	100	All
19CHMG6201	Environmental Sciences	1	0	0	-	100	All
Total		**16**	**2**	**11**	**22.5**	**800**	

* Annual Pattern

Passed in Board of Studies meeting

BOS Convener

Approved in Academic Council meeting

BOS Chairman

Semester III

Course Code	Course Title	Hours/Week			Credits	Marks	Common to Programmes
		L	T	P			
19MABC1302	Numerical Methods and Linear Algebra	3	1	0	4	100	EC,EE,EI
19EICN1301	Electron Devices and Circuits	3	0	0	3	100	-
19EICN1302	Electrical Machines and Measurements	3	0	0	3	100	-
19EECC2301	Digital Electronics	3	0	2	4	100	EE,EI
19EICN2301	Sensors and Transducers	3	0	2	4	100	-
19EICN3301	Electron Devices and Circuits Laboratory	0	0	3	1.5	100	-
19EICN3302	Electrical Machines and Measurements Laboratory	0	0	3	1.5	100	-
XXXXXXXXX	One Credit Course	0	0	2	1	100	-
Total		**18**	**3**	**12**	**22**	**900**	

Semester IV

Course Code	Course Title	Hours/Week			Credits	Marks	Common to Programmes
		L	T	P			
19MABG1401	Probability and Statistics	3	1	0	4	100	All
19EICN1401	Linear Integrated Circuits	3	0	0	3	100	-
19EICN1402	Signals and Systems	3	1	0	4	100	-
19EICN2401	Industrial Instrumentation	3	0	2	4	100	-
19CSSC2401	Data Structures and Algorithms	2	0	2	3	100	EE
19EICN3401	Signal Conditioning Laboratory	0	0	4	2	100	-
XXXXXXXXX	One Credit Course	0	0	2	1	100	-
19PSHG6002	Universal Human Values-2: Understanding Harmony	2	1	0	3	100	All
19EIPN6401	Mini-Project	0	0	4	2	100	All
Total		**14**	**2**	**14**	**26**	**800**	-

Course Code	Course Title	Duration	Credits	Marks
19EIPN6001	Internship or Skill Development*	2 Weeks	1	100

*Refer to clause: 4.8 in UG academic regulations 2019

Passed in Board of Studies meeting

BOS Convener

Approved in Academic Council meeting

BOS Chairman

Semester V

Course Code	Course Title	Hours/Week			Credits	Marks	Common to Programmes
		L	T	P			
19EICN1501	Control System	3	1	0	4	100	-
19EICN1502	Microprocessor and Microcontroller	3	0	0	3	100	-
19CSSN2502	Object Oriented Programming	3	0	2	4	100	-
XXXXXXXXX	Professional Elective – I	3	0	0	3	100	-
XXXXXXXXX	Professional Elective – II	3	0	0	3	100	-
XXXXXXXXX	Open Elective – I	3	0	0	3	100	-
19EICN3501	Microprocessor and Microcontroller Laboratory	0	0	3	1.5	100	-
19EICN3502	Control System Laboratory	0	0	3	1.5	100	-
19PSHG6501	Employability Skills 1: Teamness and Interpersonal Skills	0	0	2	1	100	
Total		**17**	**0**	**9**	**24**	**800**	-

Semester VI

Course Code	Course Title	Hours/Week			Credits	Marks	Common to Programmes
		L	T	P			
19EICN1601	Process Control	3	0	0	3	100	-
19EICN1602	Embedded System Design	3	0	0	3	100	-
XXXXXXXXX	Professional Elective – III	3	0	0	3	100	-
XXXXXXXXX	Professional Elective – IV	3	0	0	3	100	-
XXXXXXXXX	Open Elective – II	3	0	0	3	100	-
19EICN3601	Process Control Laboratory	0	0	3	1.5	100	-
19EICN3602	Embedded and IoT Laboratory	0	0	3	1.5	100	
19PSHG6601	Employability Skills 2: Campus to Corporate	0	0	2	1	100	-
19EIPN6601	Innovative and Creative Project	0	0	4	2	100	-
Total		**15**	**0**	**12**	**21**	**900**	-

Course Code	Course Title	Duration	Credits	Marks
	Internship or Skill Development*	2 or 4 Weeks	1	100

*Refer to clause: 4.8 in UG academic regulations 2019

Passed in Board of Studies meeting

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Approved in Academic Council meeting

BOS Chairman

Semester VII

Course Code	Course Title	Hours/Week			Credits	Marks	Common to Programmes
		L	T	P			
19EICN1701	Introduction to Machine Learning	3	0	0	3	100	-
19EICN1702	Industrial Automation System	3	0	0	3	100	-
XXXXXXXXX	Professional Elective – V	3	0	0	3	100	-
XXXXXXXXX	Professional Elective – VI	3	0	0	3	100	-
XXXXXXXXX	Open Elective – III	3	0	0	3	100	-
19EICN3701	Industrial Automation Laboratory	0	0	3	1.5	100	
Total		**15**	**0**	**3**	**16.5**	**600**	**-**

Semester VIII

Course Code	Course Title	Hours/Week			Credits	Marks	Common to Programmes
		L	T	P			
19EIPN6801	Project	0	0	16	8	200	-
Total		**0**	**0**	**16**	**8**	**200**	**-**

Course Code	Course Title	Duration	Credits	Marks
XXX	Internship or Skill Development*	8 or 16 weeks	4	100

*Refer to clause: 4.8 in UG academic regulations 2019

Semester	I	II	III	IV	V	VI	VII	VIII	Total Credits
Credits	18	22.5	22	27	24	22	16.5	12	**164**

Passed in Board of Studies meeting

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Approved in Academic Council meeting

BOS Chairman

Professional Electives

Course Code	Course Title	Hours/Week			Credits	Marks	Common to Programmes
		L	T	P			
Electronics Engineering							
19EIEN1001	Industrial Data Communication Networks	3	0	0	3	100	-
19EIEN1002	Digital Signal Processing	3	0	0	3	100	-
19EIEN1003	VLSI Design	3	0	0	3	100	-
19EIEN1004	Automotive Electronics	3	0	0	3	100	-
19EIEN1005	Image and Video Processing	3	0	0	3	100	-
Sensors and Instrumentation Engineering							
19EIEN1006	Modern Electronic Instrumentation	3	0	0	3	100	-
19EIEN1007	Fiber Optics and Laser Instrumentation	3	0	0	3	100	-
19EIEN1008	Smart and Wireless Instrumentation	3	0	0	3	100	-
19EIEN1009	Bio Medical Instrumentation	3	0	0	3	100	-
19EIEN1010	Analytical Instrumentation	3	0	0	3	100	-
19EIEN1011	Automobile and Aircraft Instrumentation	3	0	0	3	100	-
19EIEN1012	Agricultural Instrumentation	3	0	0	3	100	-
19EIEN1013	Instrumentation System Design	3	0	0	3	100	-
Control and Automation							
19EIEN1014	Thermal and Fluid Mechanics	3	0	0	3	100	-
19EIEN1015	Power Electronics and Drives	3	0	0	3	100	-
19EIEN1016	Non-Linear Control System	3	0	0	3	100	-
19EIEN1017	Digital Control Engineering	3	0	0	3	100	-
19EIEN1018	Fluid Power System	3	0	0	3	100	-
19EIEC1001	Robotics and Automation	3	0	0	3	100	EE,EI
19EIEN1020	Power Plant Instrumentation	3	0	0	3	100	-
19EIEN1021	Instrumentation in Process Industries	3	0	0	3	100	-
19EIEN1022	Industrial safety and standards	3	0	0	3	100	-
19EIEN1023	Industrial Internet of Things	3	0	0	3	100	-

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BOS Chairman

Software Engineering							
19CSEC1001	Programming using JAVA	3	0	0	3	100	-
19CSEC1002	Data Mining And Analytics	3	0	0	3	100	-
19CSEC1003	Software Testing	3	0	0	3	100	-
19CSEC1004	Database Management System Concepts	3	0	0	3	100	-
19CSEN1001	Introduction to Python Programming	3	0	0	3	100	-
Management							
19EEEC1004	Disaster Management	3	0	0	3	100	EE,EI,EC
19MEEC1014	Engineering Economics and Cost Analysis	3	0	0	3	100	-
19MEEC1015	Principles of Management	3	0	0	3	100	-
19EIEN1024	Introduction to Total Quality Management	3	0	0	3	100	-

Open Electives

Course Code	Course Title	Hours/Week			Credits	Marks
		L	T	P		
19EIOC1001	Industrial Measurement Systems	3	0	0	3	100
19EIOC1002	Electronics System Design	3	0	0	3	100
19EIOC1003	Industrial Internet of Things	3	0	0	3	100
19EIOC1004	Smart Sensor Technology	3	0	0	3	100
19EIOC1005	Factory Automation	3	0	0	3	100
19EIOC1006	Internet of Medical Things	3	0	0	3	100
19EIOC1007	Virtual Instrumentation	3	0	0	3	100

Passed in Board of Studies meeting

BOS Convener

Approved in Academic Council meeting

BOS Chairman