SETHU INSTITUTE OF TECHNOLOGY

(An Autonomous Institution)

Pulloor, Kariapatti – 626 115

B.E. ELECTRICAL AND ELECTRONICS ENGINEERING

REGULATIONS 2019

CHOICE BASED CREDIT SYSTEM

CURRICULUM & SYLLABUS

(I SEMESTER to VIII SEMESTER)

CHAIRMAN
BOARD OF STUDIES
Chairperson
Board of Studies
Electrical & Electronics Engineering
Sethu Institute of Technology
Kariapatti - 626 115

CHAIRMAN
ACADEMIC COUNCIL
CHAIRMAN
ACADEMIC COUNCIL
Sethu Institute of Technology
Pulloor, Kariapatti - 625 115

SETHU INSTITUTE OF TECHNOLOGY

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Department Vision

To achieve Excellence in Education and Research in the field of Electrical and Electronics Engineering and provide knowledge based contribution for the development of economy and society.

Department Mission

- Providing comprehensive and value based education in Electrical and Electronics engineering and related fields to meet intellectual, ethical and career challenges
- Providing state-of- the-art infrastructure and resources to promote teaching-learning and research activities
- Enriching the skills to enhance employability and entrepreneurship
- Strengthening the collaboration with academia, industry and research organizations
- Fostering Research and Development activities leading to innovation and technological growth in the overall ambit of electrical and electronics engineering
- Offering services to the society through education, science and technology through education and technology.

Program Educational Objectives (PEOs)

After few years of graduation our Electrical and Electronics Engineering graduates are expected to:	
PEO I (Core Competency)	Exhibit technical competency in Electrical and Electronics Engineering and related fields
PEO II (Life Long Learning)	Engage in life-long learning for professional development and research
PEO III (Professional and Ethical Skills)	Exhibit effective communication skills, team work and lead their profession with ethics

Program Outcomes

PO No.	**PROGRAM OUTCOMES**
PO1	**Engineering knowledge:** Apply the knowledge of mathematics, science, electrical and electronics engineering fundamentals to the solution of complex engineering problems.
PO2	**Problem analysis:** Identify, formulate, review research literature, and analyze complex electrical and electronics engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO3	**Design/Development of solutions:** Design and develop electrical and electronic systems that meet specified needs with appropriate consideration for public health and safety, cultural, societal and environmental considerations.
PO4	**Investigation of complex problems:** Investigate and analyze complex electrical and electronics engineering problems using research-based knowledge and research methods including design of experiments, analysis and interpretation of data and synthesis of information to provide valid conclusions.
PO5	**Modern tool usage:** Select and Apply modern engineering and IT tools for simulation and modeling of electrical and electronic systems.
PO6	**The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities to the professional engineering practice.
PO7	**Environment and sustainability:** Understand the impact of professional engineering solutions in societal and environmental contexts and demonstrate knowledge of and need for sustainable development.
PO8	**Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of engineering practice.

PO9	**Individual and teamwork:** Function effectively as an individual, and as a member or leader in diverse teams and in multi-disciplinary settings.
PO10	**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.
PO11	**Project management and Finance:** Demonstrate knowledge and understanding of 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.
PO12	**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.
PSO No.	**PROGRAM SPECIFIC OUTCOMES**
PSO1	Demonstrate technical competency in the design and analysis of electrical machines.
PSO2	Design and analyze power electronic interfaces for renewable energy systems.

Employability Courses
Skill Development Courses
Entrepreneurship Development Courses
Any two or all of the above

SETHU INSTITUTE OF TECHNOLOGY

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B.E. Degree Programme
CBCS CURRICULUM
Regulations 2019

Bachelor of Engineering in Electrical and Electronics Engineering

OVERALL COURSE STRUCTURE

Category	Total No. of Courses	Credits	Percentage
Humanities and social Sciences(HS)	7	13.5	7.71
Basic Sciences (BSC)	8	23.5	13.43
Engineering Sciences (ESC)	9	25	14.29
Professional Core (PC)	28	68	38.86
Professional Electives (PE)	6	18	10.29
Open Electives (OE)	4	12	6.86
Project Work (PRO)	5	15	8.57
Mandatory Courses (MC)	5	Non - Credit	
TOTAL	72	175	100

COURSE CREDITS – SEMESTER WISE

Semester	I	II	III	IV	V	VI	VII	VIII	TOTAL
Credits	23	20.5	25	23.5	22.5	25.5	21	14	175

Semester I

Course Code	Category	Course Title	L	T	P	C
Theory Courses						
19UEN101	HS	English for Technical Communication	2	0	0	2
19UMA102	BSC	Engineering Mathematics – I	3	1	0	4
19UPH103	BSC	Engineering Physics	3	0	0	3
19UCY105	BSC	Applied Chemistry *(Common to ECE, EEE, CSE, IT & Biomedical Engineering)*	3	0	0	3
19UCS108	ESC	Problem solving and Python Programming	3	0	0	3
19UME109	ESC	Engineering Graphics	3	1	0	4
Laboratory Courses						
19UGS110	ESC	Problem solving and Python Programming Lab	0	0	3	1.5
19UME111	ESC	Workshop / Engineering Practices Lab	0	0	3	1.5
19UGS113	BSC	Basic Sciences Lab *(Common to all branches)*	0	0	2	1
Mandatory Course						
19UGM131	MC	Induction Programme	45 Periods			NIL
Total Credits						**23**

Semester II

Course Code	Category	Course Title	L	T	P	C
Theory Courses						
19UEN201	HS	Communication Skills for Professionals *(Common to all branches)*	1	0	1	1.5
19UMA205	BSC	Calculus and Transform Techniques	3	1	0	4
19UPH205	BSC	Physics for Information Science	3	0	0	3
19UCY204	HS	Environmental Science	3	0	0	3
19UEE205	ESC	Introduction to Electrical and Electronics Engineering	3	0	0	3
19UME226	ESC	Basic Civil and Mechanical Engineering	3	0	0	3
Laboratory Courses						
19UGS210	BSC	Energy and Environmental Science Laboratory	0	0	3	1.5
19UEE211	ESC	Introduction to Electrical and Electronics Engineering Laboratory	0	0	3	1.5
Total Credits						**20.5**

Semester III

Course Code	Category	Course Title	L	T	P	C
Theory Courses						
19UMA324	BSC	Probability, Statistics, Complex Analysis and Numerical Methods	3	1	0	4
19UEE302	PC	Electrical Circuit Analysis	3	1	0	4
19UEE303	PC	Electrical Machines - I	3	0	0	3
19UEE304	PC	Analog Electronics	3	0	0	3
19UEE305	PC	Electromagnetic Fields	3	1	0	4
19UEE306	PC	Electrical Measurements and Instrumentation	3	0	0	3
Laboratory Courses						
19UEE307	PRO	Seminar	0	0	2	1
19UEE308	PC	Electric circuits Laboratory	0	0	2	1
19UEE309	PC	Electrical Machines Laboratory - I	0	0	2	1
19UEE310	PC	Analog Electronics Laboratory	0	0	2	1
Mandatory Courses						
19UGM332	MC	Biology for Engineering Applications	2	0	0	P/F
	Total Credits					**25**

Semester IV

Course Code	category	Course Title	L	T	P	C
Theory Courses						
19UEE401	PC	Electrical Machines - II	3	0	0	3
19UEE402	PC	Control Systems	3	1	0	4
19UEE403	PC	Principles of Digital Electronics	3	1	0	4
19UEE404	PC	Electric Power Transmission and Distribution	3	1	0	4
19UIT426	ESC	Data Structure using C (Integrated Course)	3	0	3	4.5
Laboratory Courses						
19UEE406	PC	Electrical Machines Laboratory - II	0	0	2	1
19UEE407	PC	Control and Instrumentation Laboratory	0	0	2	1
19UEE408	PC	Digital Electronics Laboratory	0	0	2	1
19UGS431	HS	Reasoning and Quantitative Aptitude	0	0	2	1
Mandatory Courses						
19UGM431	MC	Gender Equality	1	0	0	P/F
	Total Credits					**23.5**

Semester V

Course Code	Category	Course Title	L	T	P	C
Theory Courses						
19UEE501	PC	Power Electronics	3	0	0	3
19UEE502	PC	Internet of Things for Electrical Automation	3	0	0	3
19UEE503	PC	Microprocessor and Microcontroller Programming	3	0	0	3
	PE	Elective - I	3	0	0	3
	PE	Elective - II	3	0	0	3
	OE	Open Elective - I	3	0	0	3
Laboratory Courses						
19UEE507	PRO	Creative Thinking and Innovation	0	0	2	1
19UEE508	PC	Power Electronics Laboratory	0	0	2	1
19UEE509	PC	Microprocessor and Microcontroller Programming Laboratory	0	0	2	1
19UGS532	HS	Soft Skills Laboratory	0	0	3	1.5
Total Credits						**22.5**

Semester VI

Course Code	Category	Course Title	L	T	P	C
Theory Courses						
19UEE601	PC	Electric Drives and Control	3	0	0	3
19UEE602	PC	Power System Analysis	3	1	0	4
19UEC621	ESC	Digital Signal Processing for Electrical Engineers	3	0	0	3
	PE	Elective - III	3	0	0	3
	PE	Elective - IV	3	0	0	3
	OE	Open Elective - II	3	0	0	3
Laboratory Courses						
19UEE607	PRO	Product Development Project	0	0	8	4
19UEE608	PC	Electric Drives and Control Laboratory	0	0	2	1
19UGS633	HS	Interpersonal Skills Laboratory	0	0	3	1.5
Mandatory Courses						
19UGM631	MC	Indian Constitution	1	0	0	P/F
Total Credits						**25.5**

Semester VII

Course Code	Category	Course Title	L	T	P	C
Theory Courses						
19UME701	HS	Project Management and Finance	3	0	0	3
19UEE702	PC	Electric Vehicles	3	0	0	3
19UEE703	PC	Electric Energy Utilization and Conservation	3	0	0	3
19UEE704	PC	Protection and Switch Gear	3	0	0	3
	PE	Elective - V	3	0	0	3
	OE	Open Elective - III	3	0	0	3
Laboratory Courses						
19UEE707	PRO	Summer Internship				1
19UEE708	PC	Power System Simulation Laboratory	0	0	2	1
19UEE709	PC	Renewable Energy Laboratory	0	0	2	1
Mandatory Courses						
19UGM731	MC	Professional Ethics and Human Values	2	0	0	P/F
Total Credits						**21**

Semester VIII

Course Code	Category	Course Title	L	T	P	C
Theory Courses						
	PE	Elective - VI	3	0	0	3
	OE	Open Elective - IV	3	0	0	3
Laboratory Courses						
19UEE803	PRO	Project Work	0	0	16	8
Total Credits						**14**

LIST OF PROFESSIONAL ELECTIVES

S.No.	Course Code	Course Title	L	T	P	C
1.	19UEE901	Network Analysis and Synthesis	3	0	0	3
2.	19UEE902	High Voltage Engineering	3	0	0	3
3.	19UEE903	Design of Electrical Machines	3	0	0	3
4.	19UEE904	Special Electrical Machines	3	0	0	3
5.	19UEE905	Power Quality	3	0	0	3
6.	19UEE906	Fundamentals of FACTS	3	0	0	3
7.	19UEE907	HVDC Transmission	3	0	0	3
8.	19UEE908	EHV AC and DC Transmission	3	0	0	3
9.	19UEE909	Energy Audit	3	0	0	3
10.	19UEE910	Electrical Equipment's Erection and Commissioning	3	0	0	3
11.	19UEE911	Electrical Safety	3	0	0	3
12.	19UEE912	Robotics and Automation	3	0	0	3
13.	19UEE913	Solar and Wind Energy Systems	3	0	0	3
14.	19UEE914	Power System Restructuring	3	0	0	3
15.	19UEE915	Application of Power Electronics to Power Systems	3	0	0	3
16.	19UEE916	Modern optimization techniques for Electric Power Systems	3	0	0	3
17.	19UEE917	Non-Linear Control Systems	3	0	0	3
18.	19UEE918	Digital Control Systems	3	0	0	3
19.	19UEE919	Design with PIC Microcontrollers	3	0	0	3
20.	19UEE920	Machine Learning	3	0	0	3
21.	19UEE921	Fuzzy systems and Genetic Algorithms	3	0	0	3
22.	19UEE922	Sensing Techniques and Sensor Systems	3	0	0	3
23.	19UEE923	Introduction to Micro Electro Mechanical Systems	3	0	0	3
24.	19UEE924	Computer Aided Design of Electrical Apparatus	3	0	0	3
25.	19UEE925	Intelligent Motor Controllers	3	0	0	3
26.	19UEE926	Energy Efficient Motors	3	0	0	3
27.	19UEE927	Advanced Microprocessor and Microcontroller	3	0	0	3
28.	19UEE928	Consumer Electronics (Integrated Course)	2	0	2	3
29.	19UEE929	PCB Design (Integrated Course)	2	0	2	3
30.	19UEE930	PLC and SCADA Applications (Integrated Course)	2	0	2	3
31.	19UEE931	Analog and Mixed Mode VLSI Design	3	0	0	3
32.	19UEE932	Smart Grid	3	0	0	3
33.	19UEE933	Power System Operation and Control	3	0	0	3
34.	19UEC959	Principles of Communication	3	0	0	3
35.	19UEC960	Fiber Optic Communication	3	0	0	3
36.	19UPH955	Fundamentals of Nano Science	3	0	0	3

LIST OF OPEN ELECTIVES

S.No.	Course Code	Course Title	L	T	P	C
1	19UEE971	Non-Conventional Energy Resources and Applications	3	0	0	3
2	19UEE972	Electric and Hybrid Vehicles	3	0	0	3
3	19UEE973	Solar Power Plants	3	0	0	3
4	19UEE974	MEMS	3	0	0	3
5	19UEE975	Principles of Robotics	3	0	0	3
6	19UEE976	Applied Soft Computing	3	0	0	3

LIST OF MANDATORY COURSES

S.No.	Course Code	Course Title	L	T	P	C
1	19UGM131	Induction Programme	45 hours			P/F
2	19UGM332	Biology for Engineering Applications	2	0	0	P/F
3	19UGM431	Gender Equality	1	0	0	P/F
4	19UGM631	Indian Constitution	1	0	0	P/F
5	19UGM731	Professional Ethics and Human Values	2	0	0	P/F

LIST OF INTERDISCIPLINARY COURSES

Sl. No.	Course Code	Course Title	L	T	P	C
1	19UGM954	Smart Buildings (Common to EEE & Civil)	3	0	0	3
2	19UGM955	Electric Vehicles (Common to EEE & Mech.)	3	0	0	3
3	19UGM956	Electrical Hazards & Safety In Hospitals (Common to EEE & BME)	3	0	0	3

LIST OF INDUSTRY DESIGNED COURSES

Sl. No.	Course Code	Course Title	L	T	P	C
1	19UEE861	Wind farm Development and Operation	1	0	0	1
2	19UEE862	Design of Towers and Blades Structures	1	0	0	1
3	19UEE863	Wind Turbine Blades Fabrication Technology	1	0	0	1
4	19UEE864	Solar Photovoltaic Technology	1	0	0	1
5	19UEE865	Industrial safety measures	1	0	0	1
6	19UEE866	ECO Paint Application Technology for Automobile Industry	1	0	0	1
7	19UEE867	Energy Storage Systems	1	0	0	1
8	19UEE868	Controlling and Monitoring of Electrical Equipments using Mobile Applications	1	0	0	1
9	19UEE869	Electrical Rewinding Laboratory	0	0	2	1