K.RAMAKRISHNAN COLLEGE OF ENGINEERING

(AUTONOMOUS)

SAMAYAPURAM, TIRUCHIRAPPALLI-621112

B.E. ELECTRICAL AND ELECTRONICS ENGINEERING

REGULATION – 2020 (FULL TIME)

(CHOICE BASED CREDIT SYSTEM)

PROGRAM EDUCATIONAL OBJECTIVES (PEOs):

- **PEO 1:** Have strong foundation in Electrical and Electronics Engineering to excel in professional career, in higher studies or research.
- **PEO 2:** Analyze, design and develop various interdisciplinary projects and products, to solve industrial needs and social issues.
- **PEO 3:** Have professional ethics and effective communication skills with life-long learning attitudes.

PROGRAM OUTCOMES POs:

Engineering Graduates will be able 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 modelling 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.

PROGRAM SPECIFIC OBJECTIVES (PSOs)

- **PSO1:** Apply the logical, analytical and technical skills to model and build electrical systems and appliances as per societal requirements.
- **PSO2:** Apply the advanced and fundamentals Electrical and allied Engineering knowledge in the design and development of hardware and software tools for non-conventional electrical power generation and distribution

Mapping of POs/PSOs to PEOs

1. Reasonable 2. Significant 3.Strong

S.No	PO'S	PEO1	PEO2	PEO3
1.	Engineering knowledge	3	3	3
2.	Problem analysis	3	2	2
3.	Design/development of solutions	3	2	2
4.	Conduct investigations of complex problems	2	3	1
5.	Modern tool usage	3	2	1
6.	The engineer and society	2	3	3
7.	Environment and sustainability	2	3	3
8.	Ethics	2	2	3
9.	Individual and team work	2	3	2
10.	Communication	2	2	3
11.	Project management and finance	3	3	2
12.	Life-long learning	3	2	3

	PSO'S	PEO1	PEO2	PEO3
1	To understand, analyze and develop computer programs in the areas related to algorithms, system software, multimedia, database, big data analytics, and networking for efficient design of computer-based systems of varying complexity.	3	3	3
2	To employ modern computer languages, environments, and platforms in creating innovative career paths to be an entrepreneur and leadership qualities.	3	2	2

SEMESTER - I								
S.NO	**COURSE CODE**	**TITLE**	**CATEGORY**	**CONTACT PERIODS**	**L**	**T**	**P**	**C**
THEORY								
1.	UHS1151	Technical English - I	HS	3	3	0	0	**3**
2.	UMA1151	Mathematics - I	BS	4	3	1	0	**4**
3.	UPH1151	Engineering Physics - I	BS	3	3	0	0	**3**
4.	UCY1151	Engineering Chemistry	BS	3	3	0	0	**3**
5.	UGE1151	Python Programming and Problem Solving	ES	3	3	0	0	**3**
THEORY CUM PRACTICAL								
6.	UBE1161	Basic Civil and Mechanical Engineering	ES	4	2	0	2	**4**
PRACTICALS								
7.	UBS1161	Physics and Chemistry Laboratory	BS	4	0	0	4	**2**
8.	UGE1161	Python Programming and Problem Solving Laboratory	ES	4	0	0	4	**2**
			TOTAL	**28**	**17**	**1**	**10**	**24**

SEMESTER - II								
S.NO	**COURSE CODE**	**TITLE**	**CATEGORY**	**CONTACT PERIODS**	**L**	**T**	**P**	**C**
THEORY								
1.	UHS1251	Technical English - II	HS	3	3	0	0	**3**
2.	UMA1251	Mathematics - II	BS	4	3	1	0	**4**
3.	UPH1251	Engineering Physics - II	BS	3	3	0	0	**3**
4.	UGE1251	Environmental Science and Engineering	HS	3	3	0	0	**3**
5.	UGE1252	C Programming	ES	3	3	0	0	**3**
6.	UGE1253	Engineering Graphics	ES	5	1	0	4	**3**
7.	UHS1252	Professional skills - I	EEC	2	0	0	2	**1**
THEORY CUM PRACTICAL								
8.	UBE1261	Basic Electrical and Electronics Engineering	ES	4	2	0	2	**3**
PRACTICALS								
9.	UGE1261	C Programming Laboratory	ES	4	0	0	4	**2**
			TOTAL	**31**	**18**	**1**	**12**	**25**

SEMESTER - III								
S.NO	**COURSE CODE**	**TITLE**	**CATEGORY**	**CONTACT PERIODS**	**L**	**T**	**P**	**C**
THEORY								
1.	UMA1352	Transforms and Partial Differential Equations	BS	4	3	1	0	**4**
2.	UEE1301	Electromagnetic Field Theory	PC	3	3	0	0	**3**
3.	UEE1302	Electrical Machines - I	PC	3	3	0	0	**3**
4.	UEE1303	Electron Devices and Circuits	ES	3	3	0	0	**3**
5.	UEE1304	Circuit Theory	PC	4	3	1	0	**4**
6.	UEE1305	Electrical and Electronics Measurements	PC	3	3	0	0	**3**
7.	UHS1351	Professional Skills - II	EEC	2	0	0	2	**1**
PRACTICALS								
8.	UEE1311	Electron Devices and Circuits Laboratory	ES	4	0	0	4	**2**
9.	UEE1312	Electrical Machines Laboratory - I	PC	4	0	0	4	**2**
10.	UEE1313	Electric Circuits Laboratory	PC	4	0	0	4	**2**
			TOTAL	**34**	**18**	**2**	**14**	**27**

SEMESTER - IV								
S.NO	**COURSE CODE**	**TITLE**	**CATEGORY**	**CONTACT PERIODS**	**L**	**T**	**P**	**C**
THEORY								
1.	UMA1451	Numerical Methods and Optimization Techniques	BS	4	3	1	0	**4**
2.	UEE1401	Electrical Machines - II	PC	3	3	0	0	**3**
3.	UEE1402	Transmission and Distribution	PC	3	3	0	0	**3**
4.	UEE1403	Linear Integrated Circuits	PC	3	3	0	0	**3**
5.	UEE1404	Digital Logic Circuits	PC	3	3	0	0	**3**
6.	UEE1405	Power Plant Technology	ES	3	3	0	0	**3**
7.	UHS1451	Professional Skills - III	EEC	2	0	0	2	**1**
PRACTICALS								
8.	UEE1411	Electrical Machines Laboratory - II	PC	4	0	0	4	**2**
9.	UEE1412	Linear and Digital Integrated Circuits Laboratory	PC	4	0	0	4	**2**
10.	UHS1361	Interpersonal Skills Laboratory	EEC	2	0	0	2	**1**
			TOTAL	**31**	**18**	**1**	**12**	**25**

SEMESTER - V								
S.NO	**COURSE CODE**	**TITLE**	**CATEGORY**	**CONTACT PERIODS**	**L**	**T**	**P**	**C**
THEORY								
1.	UEE1501	Control Systems	PC	4	3	1	0	**4**
2.	UEC1551	Microprocessors, Microcontrollers and Applications	PC	3	3	0	0	**3**
3.	UEE1503	Power Electronics	PC	3	3	0	0	**3**
4.	UEC1552	Principles of Digital Signal Processing	PC	3	3	0	0	**3**
5.	UCS1551	Data Structures and Object Oriented Programming	ES	3	3	0	0	**3**
6.		Professional Elective - I	PE	3	3	0	0	**3**
7.	UHS1551	Professional skills - IV	EEC	2	0	0	2	**1**
PRACTICALS								
8.	UEE1511	Control and Instrumentation Laboratory	PC	4	0	0	4	**2**
9.	UEC1561	Microprocessors, Microcontrollers and Applications Laboratory	PC	4	0	0	4	**2**
10.	UCS1561	Data Structures and Object Oriented Programming Laboratory	ES	4	0	0	4	**2**
			TOTAL	**33**	**18**	**1**	**14**	**26**

SEMESTER - VI								
S.NO	**COURSE CODE**	**TITLE**	**CATEGORY**	**CONTACT PERIODS**	**L**	**T**	**P**	**C**
THEORY								
1.	UEE1601	Power System Analysis	PC	3	3	0	0	**3**
2.	UEE1602	Solid State Drives	PC	3	3	0	0	**3**
3.	UEE1603	Protection and Switchgear	PC	3	3	0	0	**3**
4.		Open Elective - I	OE	3	3	0	0	**3**
5.		Professional Elective - II	PE	3	3	0	0	**3**
6.		Professional Elective - III	PE	3	3	0	0	**3**
PRACTICALS								
7.	UEE1611	Power Electronics and Drives Laboratory	PC	4	0	0	4	**2**
8.	UEE1612	Mini Project	EEC	4	0	0	4	**2**
9.	UHS1561	Professional Communication Laboratory	EEC	4	0	0	4	**2**
			TOTAL	**30**	**18**	**0**	**12**	**24**

SEMESTER - VII								
S.NO	**COURSE CODE**	**TITLE**	**CATEGORY**	**CONTACT PERIODS**	**L**	**T**	**P**	**C**
THEORY								
1.	UEE1701	Power System Operation and Control	PC	3	3	0	0	**3**
2.	UEE1702	High Voltage Engineering	PC	3	3	0	0	**3**
3.	UEE1703	Renewable Energy Systems	PC	3	3	0	0	**3**
4.	UMG1054	Professional Ethics in Engineering	PC	3	3	0	0	**3**
5.		Open Elective - II	OE	3	3	0	0	**3**
6.		Professional Elective - IV	PE	3	3	0	0	**3**
PRACTICALS								
7.	UEE1711	Power System Simulation Laboratory	PC	4	0	0	4	**2**
8.	UEE1712	Renewable Energy Systems Laboratory	PC	4	0	0	4	**2**
9.	UEE1713	Technical Seminar	EEC	2	0	0	2	**1**
			TOTAL	**28**	**18**	**0**	**10**	**23**

SEMESTER - VIII								
S.NO	**COURSE CODE**	**TITLE**	**CATEGORY**	**CONTACT PERIODS**	**L**	**T**	**P**	**C**
THEORY								
1.		Professional Elective - V	PE	3	3	0	0	**3**
2.		Professional Elective - VI	PE	3	3	0	0	**3**
PRACTICALS								
3.	UEE1811	Project Work	EEC	12	0	0	12	**6**
			TOTAL	**18**	**6**	**0**	**12**	**12**

PROFESSIONAL ELECTIVE								
S.NO	**COURSE CODE**	**TITLE**	**CATEGORY**	**CONTACT PERIODS**	**L**	**T**	**P**	**C**
ELECTIVE – I (SEMESTER – V)								
1	UEE1001	Soft Computing for Electrical Engineering	PE	3	3	0	0	**3**
2	UEE1002	Design of Electrical Apparatus	PE	3	3	0	0	**3**
3	UEE1003	Modern Power Converters	PE	3	3	0	0	**3**
4	UEE1004	Special Electrical Machines	PE	3	3	0	0	**3**
ELECTIVE – II (SEMESTER – VI)								
5	UEE1005	Fundamentals of Electric and Hybrid Vehicles	PE	3	3	0	0	**3**
6	UEC1051	Communication Engineering	PE	3	3	0	0	**3**
7	UCS1503	Artificial Intelligence	PE	3	3	0	0	**3**
8	UEE1006	Embedded Systems	PE	3	3	0	0	**3**
ELECTIVE – III (SEMESTER – VI)								
9	UEE1007	Flexible AC Transmission Systems	PE	3	3	0	0	**3**
10	UEE1008	EHVAC and HVDC Transmission Systems	PE	3	3	0	0	**3**
11	UMA1651	Operation Research Techniques	PE	3	3	0	0	**3**
12	UEE1009	Programmable Logic Controller	PE	3	3	0	0	**3**
ELECTIVE – IV (SEMESTER – VII)								
13	UEE1010	Modern Control System	PE	3	3	0	0	**3**
14	UEE1011	Power Quality	PE	3	3	0	0	**3**
15	UEE1012	Fibre Optics and Laser Instruments	PE	3	3	0	0	**3**
16	UEE1013	Micro Electro Mechanical Systems	PE	3	3	0	0	**3**

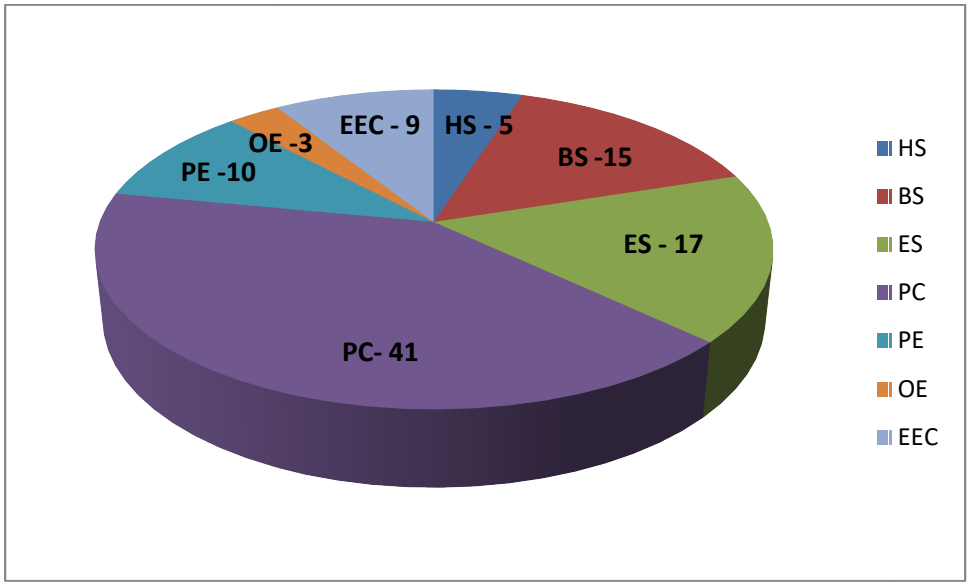
ELECTIVE – V (SEMESTER – VIII)								
17	UEE1014	Electrical Energy Generation, Utilization and Conservation	PE	3	3	0	0	**3**
18	UEE1015	Power System Restructuring	PE	3	3	0	0	**3**
19	UEE1016	Smart Grid	PE	3	3	0	0	**3**
20	UEE1017	Industrial Automation and Control	PE	3	3	0	0	**3**
21	UMG1052	Total Quality Management	PE	3	3	0	0	**3**

ELECTIVE – VI (SEMESTER – VIII)								
22	UEE1018	Digital Control Systems	PE	4	3	1	0	**3**
23	UEE1019	SMPS Techniques	PE	3	3	0	0	**3**
24	UEE1020	Bio Medical Instrumentation	PE	3	3	0	0	**3**
25	UEE1021	Energy Management and Auditing	PE	3	3	0	0	**3**
26	UEE1022	Power Systems Transients	PE	3	3	0	0	**3**

SEMESTER VI - OPEN ELECTIVE - I								
S.NO	**COURSE CODE**	**TITLE**	**CATEGORY**	**CONTACT PERIODS**	**L**	**T**	**P**	**C**
1	OME1651	Robotics and Automation	OE	3	3	0	0	**3**
2	OCS1651	Database Management Systems	OE	3	3	0	0	**3**
3	OCS1652	Big Data Analytics	OE	3	3	0	0	**3**
4	OMG1651	Intellectual Property Rights	OE	3	3	0	0	**3**
5	OMG1652	Principles of Management	OE	3	3	0	0	**3**
6	OGE1651	Disaster Management	OE	3	3	0	0	**3**
7	OGE1652	Human Rights	OE	3	3	0	0	**3**
8	OEC1651	Sensors and Transducers	OE	3	3	0	0	**3**

SEMESTER VII - OPEN ELECTIVE - II								
9	OEC1751	Virtual Instrumentation	OE	3	3	0	0	**3**
10	OEC1752	VLSI Design	OE	3	3	0	0	**3**
11	OCS1751	Internet of Things	OE	3	3	0	0	**3**
12	OCS1752	Computer Networks	OE	3	3	0	0	**3**
13	OME1751	Vibration and Noise Control	OE	3	3	0	0	**3**
14	OME1752	Testing of Materials	OE	3	3	0	0	**3**
15	OGE1751	Fundamentals of Nano Science	OE	3	3	0	0	**3**
16	OMG1751	Entrepreneurship Development	OE	3	3	0	0	**3**

SUBJECT CATEGORIZATION								
SEMESTER	HS	BS	ES	PC	PE	OE	EEC	Total Credits
I	3	12	9	-	-	-	-	24
II	6	7	11	-	-	-	1	25
III	-	4	5	17	-	-	1	27
IV	-	4	3	16	-	-	2	25
V	-	-	5	17	3	-	1	26
VI	-	-	-	11	6	3	4	24
VII	-	-	-	16	3	3	1	23
VIII	-	-	-	-	6	-	6	12
Total Credits	9	27	33	77	18	6	16	186
% Distribution	4.84	14.52	17.74	41.40	9.68	3.22	8.60	100



SUBJECT DISTRIBUTION		
SUBJECT	**SUBJECT COUNT**	**PERCENTAGE %**
Electrical	**22**	**32.34**
Electronics	**8**	**11.76**
Computer	**6**	**8.82**
Mechanical	**3**	**4.43**
Mathematics	**4**	**5.88**
Communication	**2**	**2.94**
Employability Enhancement Course	**9**	**13.25**
Management	**1**	**1.47**
Professional Elective	**6**	**8.82**
Open Elective	**2**	**2.94**
General Engineering	**5**	**7.35**
TOTAL	**68**	**100%**