R R Institute of Technology

Electrical & Electronics Engg.

Part A : Institutional Information

1 Name and Address of the Institution

R R Institute of Technology,
Raja Reddy Layout, Heseraghatta Main Road, Near Chikkabanavara Railway Station, Chikkabanavara Bangalore – 560 090

2 Name and Address of Affiliating University

Visvesvaraya Technological University

3 Year of establishment of the Institution:

2008

4 Type of the Institution:

☐ University	☐ Autonomous
☐ Deemed University	☑ Affiliated
☐ Government Aided	

5 Ownership Status:

☐ Central Government	☑ Trust
☐ State Government	☐ Society
☐ Government Aided	☐ Section 25 Company
☐ Self financing	☐ Any Other(Please Specify)

6 Other Academic Institutions of the Trust/Society/Company etc., if any:

Name of Institutions	Year of Establishment	Programs of Study	Location
National Public School	2014	School	RR Campus, Chikkabanavara, Bengaluru
RR School of Architecture	2014	Bachelor of Architecture	RR Campus, Chikkabanavara, Bengaluru
RR Polytechnic	2010	Diploma in Engineering	RR Campus, Chikkabanavara, Bengaluru
RR Institute of Advanced Studies	2006	Master of Business Administration	RR Campus, Chikkabanavara, Bengaluru
RR Institute of Management Studies	2010	B.Com, BBA (Aviation), BBA (Logistics), BCA (Cloud Computing), B.Com Tourism & Travel Management - Aviatioin (IATA)	RR Campus, Chikkabanavara, Bengaluru
RR college of Education	2004	B.Ed	RR Campus, Chikkabanavara, Bengaluru
RR College of Pharmacy	2005	D.Pharm, B.Pharm, M.Pharm (Pharmaceutics, Pharmacognosy), Pharm. D, Post Baccalaureate courses	RR Campus, Chikkabanavara, Bengaluru
Manjunatha College and School of Nursing	2003	B.Sc & M.Sc in Nursing, PB.B.Sc. Nursing, GNM, Research Centre in Ph.D	RR Campus, Chikkabanavara, Bengaluru
RR Institute of Medical Sciences	2016	B.Sc. in Optometry Technology, Radiotherapy Technology, Perfusion Technology, Radiography and Imaging	RR Campus, Chikkabanavara, Bengaluru
NRR Hospital College and School Nursing	2018	B.Sc. in Optometry Technology, Radiotherapy Technology, Perfusion Technology, Radiography and Imaging Technology, Cardia Care Technology, OTT & Anesthesia Technology	RR Campus, Chikkabanavara, Bengaluru
NRR Hospital	2008	Multi Specialty health services	Hesarghatta Road, Chikkabanavara, Bengaluru
Prakriya Hospital	2019	Multi Specialty health services	Nagasandra, Tumkur Road
National Academy of Learning	2017	Pre-University	RR Campus, Chikkabanavara, Bengaluru

7 Details of all the programs being offered by the institution under consideration:

Name of Program	Program Applied level	Start of year	Year of AICTE approval	Initial Intake	Intake Increase	Current Intake	Accreditation status	From	To	Program for consideration	Program for Duration
B E	UG	2008	2008	60	No	60	Applying first time	--	--	Yes	4
Computer Science Engineering	UG	2008	2008	60	Yes	180	Granted accreditation for 3 years for the period (specify period)	2022	2025	No	4

Sanctioned Intake for Last Five Years for the Computer Science Engineering

Academic Year	Sanctioned Intake
2023-24	180
2022-23	120
2021-22	120
2020-21	60
2019-20	60
2018-19	60

Electrical and Electronics Engineering	UG	2008	2008	60	No	60	Applying first time	--	--	0	4
Electronics and Communication Engineering	UG	2008	2008	60	No	60	Applying first time	--	--	0	4
Information Science Engineering	UG	2008	2008	60	No	60	Granted accreditation for 3 years for the period (specify period)	2022	2025	0	4
Mechanical Engineering	UG	2008	2008	60	Yes	60	Applying first time	--	--	0	4

Sanctioned Intake for Last Five Years for the Mechanical Engineering

Academic Year	Sanctioned Intake
2023-24	60
2022-23	60
2021-22	60
2020-21	120
2019-20	120
2018-19	120

Civil Engineering	UG	2010	2010	60	Yes	60	Granted accreditation for 3 years for the period (specify period)	2022	2025	0	4

Name of Program	Program Applied level	Start of year	Year of AICTE approval	Initial Intake	Intake Increase	Current Intake	Accreditation status	From	To	Program for consideration	Program for Duration

Sanctioned Intake for Last Five Years for the Civil Engineering

Academic Year	Sanctioned Intake
2023-24	60
2022-23	120
2021-22	120
2020-21	120
2019-20	120
2018-19	120

8 Programs to be considered for Accreditation vide this application:

S No	Level	Discipline	Program
1	Under Graduate	Engineering & Technology	Electrical & Electronics Engg.
2	Under Graduate	Engineering & Technology	Electronics & Communication Engg.
3	Under Graduate	Engineering & Technology	Mechanical Engg.

9 Total number of employees in the institution:

A. Regular* Employees (Faculty and Staff):

Items	2023-24		2022-23		2021-22	
	MIN	MAX	MIN	MAX	MIN	MAX
Faculty in Engineering (Male)	38	52	40	56	40	56
Faculty in Engineering (Female)	43	55	39	50	41	49
Faculty in Maths, Science & Humanities (Male)	6	15	5	12	7	12
Faculty in Maths, Science & Humanities (FeMale)	12	22	11	17	8	13
Non-teaching staff (Male)	15	17	8	16	9	15
Non-teaching staff (FeMale)	17	21	16	19	18	22

B. Contractual* Employees (Faculty and Staff):

Items	2023-24		2022-23		2021-22	
	MIN	MAX	MIN	MAX	MIN	MAX
Faculty in Engineering (Male)						
Faculty in Engineering (Female)						
Faculty in Maths, Science & Humanities (Male)						
Faculty in Maths, Science & Humanities (FeMale)						
Non-teaching staff (Male)						
Non-teaching staff (FeMale)						

10 Total number of Engineering Students:

Engineering and Technology- UG	☑ Shift1	☐ Shift2
Engineering and Technology- PG	☐ Shift1	☐ Shift2
Engineering and Technology- Polytechnic	☐ Shift1	☐ Shift2
MBA	☐ Shift1	☐ Shift2
MCA	☐ Shift1	☐ Shift2

Engineering and Technology- UG Shift-1

Items	2023-24	2022-23	2021-22
Total no. of Boys	860	822	779
Total no. of Girls	411	337	245
Total	**1271**	**1159**	**1024**

11 Vision of the Institution:

Vision of RR Institute of Technology (RRIT)

"To be a Premier globally recognized Institute with ensuring academic excellence, Innovation and fostering Research in the field of Engineering."

12 Mission of the Institution:

Mission of RR Institute of Technology (RRIT)

- To consistently strive for Academic Excellence
- To promote collaborative Research & Innovation.
- To create holistic teaching learning environment that build ethically sound manpower who contribute to the stake holders operating at Global environment

13 Contact Information of the Head of the Institution and NBA coordinator, if designated:

Head of the Institution	
Name	Dr.Mahendra K V
Designation	Principal
Mobile No.	7899743333
Email ID	rrit@rrinstitutions.com

☐ **NBA Coordinator, If Designated**

PART B: Criteria Summary

Critera No.	Criteria	Total Marks	Institute Marks
1	VISION, MISSION AND PROGRAM EDUCATIONAL OBJECTIVES	60	51.00
2	PROGRAM CURRICULUM AND TEACHING - LEARNING PROCESSES	120	100.00
3	COURSE OUTCOMES AND PROGRAM OUTCOMES	120	116.00
4	STUDENTS' PERFORMANCE	150	100.59
5	FACULTY INFORMATION AND CONTRIBUTIONS	200	149.35
6	FACILITIES AND TECHNICAL SUPPORT	80	74.00
7	CONTINUOUS IMPROVEMENT	50	40.00
8	FIRST YEAR ACADEMICS	50	36.89
9	STUDENT SUPPORT SYSTEMS	50	44.00
10	GOVERNANCE, INSTITUTIONAL SUPPORT AND FINANCIAL RESOURCES	120	109.00
	Total	**1000**	**821**

Part B

1 VISION, MISSION AND PROGRAM EDUCATIONAL OBJECTIVES (60)

Total Marks 51.00

1.1 State the Vision and Mission of the Department and Institute (5)

Total Marks 4.00

Institute Marks : 4.00

Vision of the institute	Vision of RR Institute of Technology (RRIT) "To be a Premier globally recognized Institute with ensuring academic excellence, Innovation and fostering Research in the field of Engineering."
Mission of the institute	Mission of RR Institute of Technology (RRIT) • To consistently strive for Academic Excellence • To promote collaborative Research & Innovation. • To create holistic teaching learning environment that build ethically sound manpower who contribute to the stake holders operating at Global environment
Vision of the Department	Department Vision: To become a globally recognized department by imparting core values, ethics and promoting excellence for the overall development of our graduates.
Mission of the Department	

Mission No.	Mission Statements
M1	• To create an environment that facilitates and to impart knowledge in Electrical Circuits, Power Systems, Electrical Machines, Power Electronics, Electrical Drives and Non-Conventional Energy Systems
M2	• To provide premier education through dedicated teaching, innovation, and research.
M3	• To solve practical issues by adapting modern techniques and to prepare students to face challenges in the global environment.

1.2 State the Program Educational Objectives (PEOs) (5)

Total Marks 5.00

Institute Marks : 5.00

PEO No.	Program Educational Objectives Statements
PEO1	Have strong knowledge of core Electrical Engineering and Basic sciences to excel in their career.
PEO2	Be able to pursue career in multi-disciplinary areas involving core engineering subjects.
PEO3	Have ability for lifelong learning, use modern tools, and contribute to Research and development in the area of Electrical and Electronics Engineering.
PEO4	Have positive attitude, good communication skills and professional ethics.

1.3 Indicate where the Vision, Mission and PEOs are published and disseminated among stakeholders (10)

Total Marks 8.00

Institute Marks : 8.00

Sl. No.	Published Places
1	Institute website
2	Course file
3	Alumni Survey forms
4	Employer Survey forms
5	Displayed in Staff & HOD's room
6	Displayed on Department Notice Boards in the Corridors
7	Displayed on Notice Boards of Laboratories & Classrooms
8	Institution/Department Information brochures
9	Bluebooks, Records, Observation & Assignment Books
10	Study Materials
11	Seminar Hall

1.4 State the process for defining the Vision and Mission of the Department, and PEOs of the program (25)

Total Marks 21.00

Institute Marks : 21.00

1.Process involved in defining Vision and Mission of the Department

The Vision and Mission statements of the department are defined through a discussion process involving all the internal and external stakeholders of the department through Parents and Alumni Interaction, Exit Interview, considering NBA Program Outcomes and Department Strengths & Statistics.

Step 1: Meeting with Program Coordinator, faculty members, Department Academic Council (DAC) members and all stakeholders to contribute to defining department's Vision and Mission.

Step 2: Defining the initial department Vision and Mission statements to align with Institutional Vision and Mission statements, and feedback from the stakeholders are collected.

Step 3: Defining the Vision statement considering the department's present and future requirements and by incorporating the suggestions from all the stakeholders.

Step 4: Defining the Mission statements to realize the Vision. The meetings are conducted with stakeholders, faculty members and industry experts to analyze the Strengths, Weaknesses, Opportunities and Challenges (SWOC) of the department.

Step 5: The Program Coordinator and DAC will frame the new /Draft/Final Vision and Mission statements by considering the inputs and feedback of stakeholders

Step 6: The final vision & mission statements are submitted to DAB for approval. If approved the same will be disseminated among all stake holders. If any changes are suggested, the same to be incorporated and re-submitted to DAB for approval.

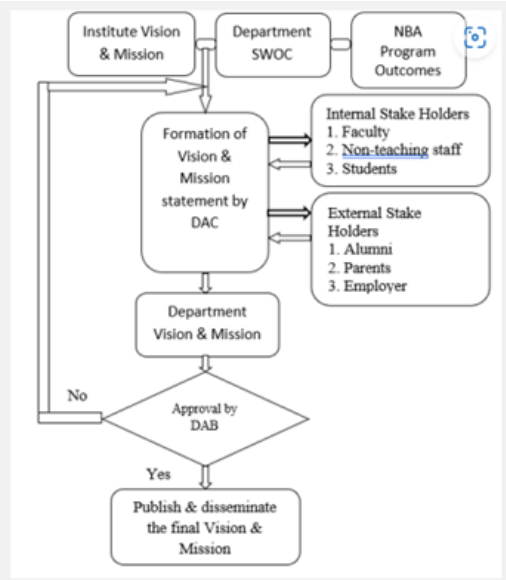


Figure 1.1: Process involved in defining the Department Vision and Mission.

2. Process involved in defining PEOs of the Department

The Program Educational Objectives (PEOs) are established through a consultation process involving the core constituents such as students, alumni, parents, industries and faculty members. The inputs from institute and department Vision & Mission, OBE and NBA Program Outcomes and Professional Bodies are used in framing the PEOs.

Step 1: The PEOs are initially defined by considering the Vision & Mission statements of the Institute & the Department, OBE and NBA Program Outcomes, Feedback from alumni (those who have 2 years of experience after graduation) and industry requirements, expectations of parents/aspirants of the program, the placement record of the graduates from the training and placement cell, higher education and entrepreneurship records.

Step 2: The PEOs are defined by the Program Coordinator in consultation with DAC members and also considering the feedback from the present students, alumni and parents.

Step 3: The PEOs thus defined are submitted to DAB for discussion and approval. Once the DAB approves the PEOs, they will be published. Any inputs or comments or suggestions from DAB will be incorporated to frame the final PEO statements.

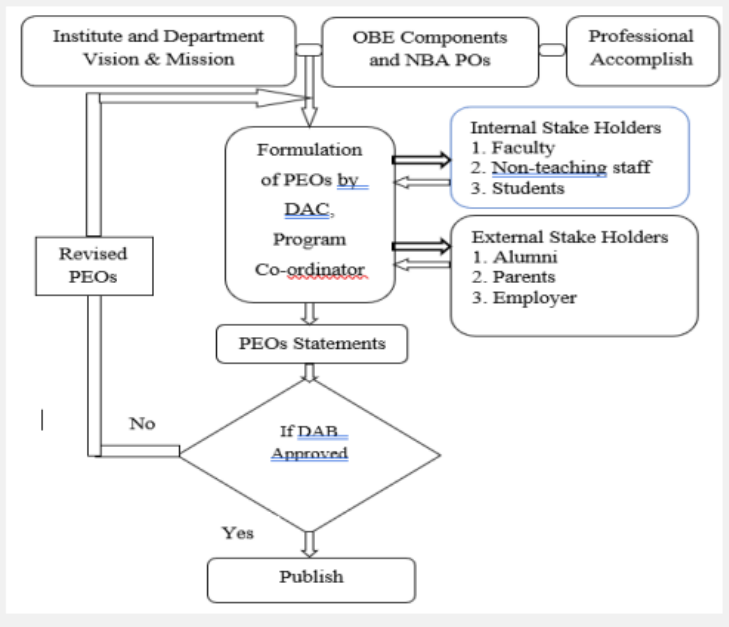


Figure 1.2: Process involved in defining the PEOs of the department.

1.5 Establish consistency of PEOs with Mission of the Department (15) Total Marks 13.00

Institute Marks : 13.00

MAPPING OF PEOs V/s MISSION OF THE DEPARTMENT

1. Slightly (Low)
2. Moderate (Medium)
3. substantial (High)

Table 1.5.1: Mission of the Department – PEOs matrix

PEO STATEMENT	M1: To create an environment that facilitates and to impart knowledge in Electrical Circuits, Power Systems, Electrical Machines, Power Electronics, Electrical Drives and Non-Conventional Energy Systems.	M2: To provide premier education through dedicated teaching, innovation and research.	M3 : To solve practical issues by adapting modern techniques and to prepare students to face challenges in the global environment.
PEO1: Have strong knowledge of core Electrical Engineering and Basic sciences to excel in their career.	3	2	2
PEO2: Be able to pursue career in multi-disciplinary areas involving core engineering subjects.	2	2	3
PEO3: Have ability for lifelong learning, use modern tools, and contribute to Research and development in Electrical and Electronics Engineering.	2	3	1
PEO4: Have positive attitude, good communication skills and professional ethics.	1	1	1

PEO1 is concerned with proficiency of the student to recognize Electrical and Electronics Engineering related trends and provide solutions applying the broad knowledge of Electrical and Electronics, which maps substantially with M1. PEO1 matches moderately with M2, moderately with M3 as it is concerned with the gap between academics and the latest tools, technologies in hardware and software and concerned with student's participation in advancement of recent trends and research to attain novelty.

PEO2 is concerned multi-disciplinary areas involving core engineering subjects and this maps moderately with M1. And moderately with M2 because Mission M2 focuses on gap between academics and research work, which will be fulfilled by conducting various events and projects. This PEO maps substantially with M3 because the students uses modern technic tools to solve multidisciplinary problems to adopt for changing technology in Electrical and Electronics engineering.

PEO3 is concerned with Lifelong learning to acquire professional greatness which maps moderately with M1, and substantially with M2. These missions are concerned with the challenges to adopt for changing technology. This PEO maps slightly with M3 since it is concerned with solving practical issues by using modern technology.

PEO4 is concerned with educating students for the development of overall attitudes, ethics and values that will help their careers in engineering, academics, and government employments maps slightly with M1, M2 and M3. By forming the departmental association, the students are involved in organizing the different activities which are helpful for their career building.

PEO Statements	M1	M2	M3
Have strong knowledge of core Electrical Engineering and Basic sciences to excel in their career.	3	2	2
Be able to pursue career in multi-disciplinary areas involving core engineering subjects.	2	2	3
Have ability for lifelong learning, use modern tools, and contribute to Research and development in the area of Electrical and Electronics Engineering.	2	3	1
Have positive attitude, good communication skills and professional ethics.	1	1	1

2 PROGRAM CURRICULUM AND TEACHING - LEARNING PROCESSES (120) Total Marks 100.00

2.1 Program Curriculum (20) Total Marks 17.00

2.1.1 State the process used to identify extent of compliance of the University curriculum for attaining the Program Outcomes and Program Specific Outcomes as mentioned in Annexurel. Also mention the identified curricular gaps, if any (10)

Institute Marks : 9.00

R. R. Institute of Technology being a tier-II premier institute is affiliated to Visvesvaraya Technological University (VTU) was started in the year 2008 and offers various Programs, Electrical and Electronics Engineering is one of them and started in the year 2008 with the intake of 60 students. We are following the curriculum of VTU. The program curriculum is as provided by VTU which is a alignment of Basic science, humanities, professional, management courses and their distribution as core and electives with the specified scope of learning.

Gap Identification Process:

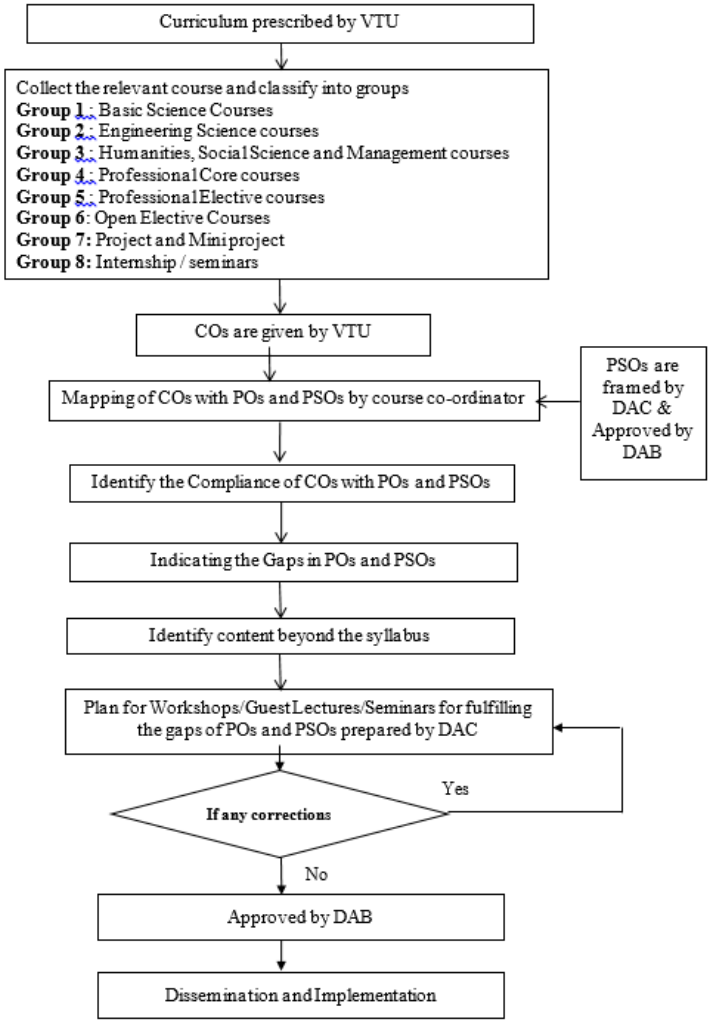


Figure 2.1.1(a) : Flow chart for process to attain PO's and PSO's

The head of the department will allocate the courses to all the course instructors. The respective course instructor should formulate the course outcomes for each course. The course instructor should identify the program outcomes (POs) and program specific outcomes (PSOs) then map course outcomes (COs) with program outcomes (POs) and program specific outcomes (PSOs). Identify the compliance of COs with POs and PSOs. The head of the department will verify the mappings, any corrections should be updated by course instructors. For the finalized mapping, the course instructors will indicate the curricular gap. Identify relevant content beyond syllabi for the attainment of program outcomes (POs) and program specific outcomes (PSOs).

Program Specific Outcomes (PSOs):

PSO 1	Graduates will be able to analyse, design and develop solutions for the problems and to apply the technical Knowledge in Power Systems and Renewable Energy Systems.
PSO 2	Graduates will be able to design Power Electronic Converters and develop solutions for the problems in Analog and Digital Electronic Circuits.
PSO 3	Graduates will be able to solve problems of Power system and Power Electronics using software tools and also to apply ethical principles, management skills and responsibilities.

A.PROGRAM CURRICULUM

1.Basic Science Courses:

The stream includes courses like Engineering Mathematics, Engineering Physics, and Engineering Chemistry, Engineering physics laboratory ,Engineering chemistry laboratory. These courses form the fundamental basis for all engineering disciplines which provides basic knowledge on mathematics, physics, chemistry.

2.Engineering Science Courses:

The stream include courses like Basic Electronics, Basic Electrical Engineering, C-programming for problem solving,Basic Electrical Engineering laboratory, Engineering Graphics, Elements of Mechanical Engineering, Elements of civil engineering and mechanics . These courses provide the fundamental knowledge on all engineering disciplines.

3.Humanities , Social Science and Management courses:

Technical English-1 ,Technical English-2, Aadalitha kannad, Vyavaharika Kannada,Environmental studies and Constitution of India, professional ethics and cyber law. These courses provides the fundamental communication skills, importance of the environment and ethics of the engineering practice.

4.Professional Core Courses:

The stream include courses like Electrical Circuit analysis, Transformers and Generators,Analog Electronic Circuits,Digital System Design,Electrical and Electronic Measurements,Electrical machines laboratory -1, Electronics Laboratory, Power Generation and Economics,Transmission and Distribution,Electric Motors,Electromagnetic Field Theory,Operational Amplifiers and Linear ICs ,Elcetrical Machines Laboratorty -2, Opamps and LICs Laboratory, Management and Entrepreneurship,Micro controller,Power Electronics,Signals and Systems,Electrical Machine Design,High Voltage Engineering,Microcontroller Laboratory, Power Electronics laboratory, Control systems, Power System Analysis – 1,Digital Signal Processing, control system laboratory, DSP laboratory, Power System Analysis – 2, Power System Protection, PSS laboratory,Relay and HV lab, Power system operation and control to provide opportunity for students to develop understanding of the inter relationship between courses, develop and demonstrate higher order skills, and to apply the gained knowledge.

5.Professional Elective Courses:

The stream includes courses like Introduction to nuclear power, Electrical engineering materials, Computer aided electrical drawing , Sensors and transducers, Embedded systems, Object Oriented programming using C++, Electrical Vehicles Technologies,Solar and wind energy, Industrial servo control systems, PLC and SCADA, Solar and wind energy, Micro- and nano-scale sensors and transducers, Integration of distribution generation, Advanced control systems, Reactive power control in electric power systems, industrial drives and applications, utilization of electrical power etc. These electives provides significant knowledge of the students choice.

6.Open Elective Courses:

The subjects are allotted from other departments, students will choose their choices according to their interest to gain the knowledge in the different areas of engineering.

7.Mini Project and Project

This stream provides practical knowledge in the area of the research and to enhance the solution for the complex problems.

8.Internship and Seminar

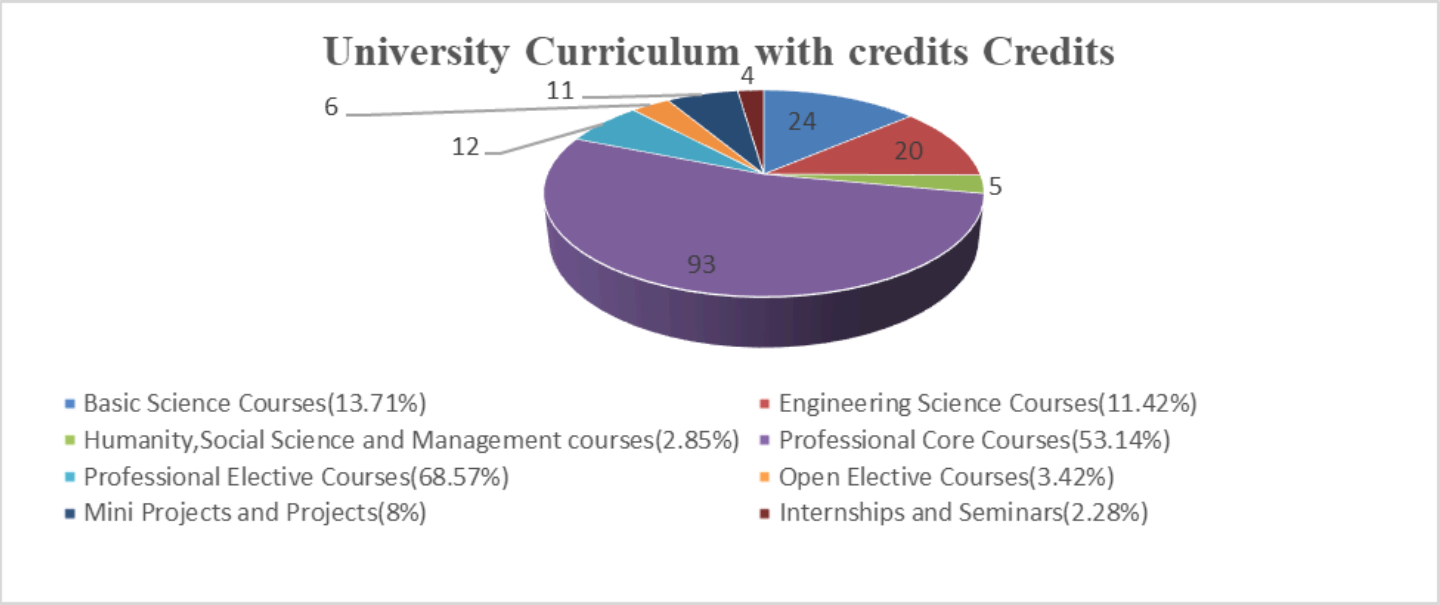
This stream improves the cognitive skills and holistic development of the student.

The composition of VTU curriculum for the program B.E (Bachelor of Engineering) in Electrical & Electronics Engineering (EEE) is shown in Table 2.1.1 (i) and Figure 2.1.1(b) shows the graph of streams and university curriculum content in Percentage.

Table 2.1.1 (i): Various Streams of program curriculum

Sl. No.	Streams	VTU Curriculum Content (Number of Subjects)	Credits	POs	PSOs
1	Basic Science Courses	8	24	1,2,7,8,9,10,12	-
2	Engineering Science Courses	8	20	1,2,3,5	1
3	Humanity,Social Science and Management courses	5	5	8,9,10,12	3
4	Professional Core Courses	32	93	1,2,3,4,5,8,9,10,12	1,2
5	Professional Elective Courses	4	12	1,2,3	1
6	Open Elective Courses	2	6	1,2	-
7	Mini Projects and Projects	3	11	1,2,3,4,5,6,7,8,9,10,11,12	1,3
8	Internships and Seminars	2	4	1,2,3,5,6,7,8,9,10	3
Total		64	175		

Figure 2.1.1 (b): Streams and University Curriculum Content in Percentage



The Table 2.1.1 (ii) shows matrix prepared by the department of Electrical and Electronics Engineering, which gives the mapping of the courses to program outcomes and program specific outcomes.

The Table 2.1.1. (ii) Matrix mapping of courses to program outcomes and program specific outcomes.

Batch : 2018-22

PROGRAM ARTICULATION MATRIX

Sl.No	Course code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	18MAT11	✓	✓	✓	-	-	-	-	-	-	-	-	✓	✓	✓	✓
2	18CHE12	✓	✓	✓	-	-	-	-	-	-	-	-	✓	✓	-	✓
3	18CPS13	✓	✓	✓	-	-	-	-	-	-	-	-	✓	✓	✓	✓
4	18ELN14	✓	✓	✓	-	-	✓	-	-	-	✓	-	-	✓	-	-
5	18ME15	✓	✓	✓	-	-	-	✓	-	-	-	-	✓	✓	✓	-
6	18CHEL16	✓	✓	✓	-	-	-	-	✓	✓	-	-	-	-	-	-
7	18CPL17	✓	✓	-	-	-	-	-	-	✓	✓	-	-	-	-	✓
8	18EGH18	-	-	✓	-	-	✓	-	-	✓	✓	-	✓	-	-	-
9	18MAT21	✓	✓	✓	-	-	-	-	-	-	-	-	✓	✓	✓	✓
10	18PHY22	✓	✓	✓	✓	-	-	-	✓	✓	-	✓		-	-	-
11	18ELE23	✓	✓	✓	-	-	-	-	-	-	-	-	-	-	-	✓
12	18CIV24	✓	✓	✓	-	-	-	-	-	-	-	-	✓	✓	✓	-
13	18EGD25	✓	✓	-	-	✓	✓	-	-	-	✓	-	✓	✓	-	-
14	18PHYL26	✓	✓	✓	-	-	-	-	✓	✓	-	-	-	-	-	-
15	18ELEL27	✓	✓	-	-	-	-	-	-	✓	✓	-	-	-	-	✓

16	18EGH28	-	-	✓	-	-	✓	-	-	✓	✓	-	✓	-	-	-
17	18MAT31	✓	✓	✓	-	-	-	-	-	-	-	-	✓	✓	✓	✓
18	18EE32	✓	✓	-	-	-	-	-	-	-	-	-	-	✓	-	-
19	18EE33	✓	✓	-	-	-	-	-	-	-	-	-	-	✓	-	-
20	18EE34	✓	✓	✓	-	-	-	-	-	-	-	-	-	✓	-	-
21	18EE35	✓	✓	✓	-	-	-	-	-	-	-	-	-	✓	-	-
22	18EE36	✓	✓	-	-	-	-	-	-	-	-	-	-	✓	-	✓
23	18EEL37	✓	✓	-	✓	-	-	-	-	✓	✓	-	-	✓	-	✓
24	18EEL38	✓	✓	✓	-	-	-	-	-	✓	✓	-	-	✓	✓	✓
25	18MAT41	✓	✓	✓	-	-	-	-	-	-	-	-	✓	✓	✓	✓
26	18EE42	✓	✓	-	-	-	✓	✓	-	-	-	-	✓	✓	-	✓
27	18EE43	✓	✓	-	-	-	✓	✓	-	-	-	-	✓	✓	-	v
28	18EE44	✓	✓	-	-	-	-	-	-	-	-	-	-	✓	-	-
29	18EE45	✓	✓	-	-	-	-	-	-	-	-	-	-	✓	-	-
30	18EE46	✓	✓	✓	-	-	-	-	-	-	-	-	-	✓	-	-
31	18EEL47	✓	✓	-	-	-	-	-	-	✓	✓	-	-	✓	-	-
32	18EEL48	✓	✓	✓	-	-	-	-	-	✓	✓	-	-	✓	-	-
33	18EE51	-	-	-	-	-	✓	-	✓	✓	✓	✓	✓	-	-	✓
34	18EE52	✓	✓	-	-	✓	-	-	-	-	-	-	✓	✓	✓	-
35	18EE53	✓	✓	-	-	-	-	-	-	-	-	-	✓	✓	-	✓
36	18EE54	✓	✓	-	-	✓	-	-	-	-	-	-	✓	✓	-	-
37	18EE55	✓	✓	✓	-	-	-	-	-	-	-	-	-	✓	-	✓
38	18EE56	✓	✓	-	-	-	-	-	-	-	-	-	✓	✓	-	✓
39	18EEL57	✓	-	✓	-	✓	-	-	-	✓	✓	-	✓	✓	✓	-
40	18EEL58	✓	-	✓	-	-	-	-	-	✓	✓	-	✓	✓	-	-
41	18CIV59	-	-	-	-	-	-	✓	-	-	-	-	-	-	-	-
42	18EE61	✓	✓	✓	-	-	-	-	-	-	-	-	-	✓	-	-
43	18EE62	✓	✓	-	✓	-	-	-	-	-	-	-	✓	✓	-	-
44	18EE63	✓	✓	✓	-	-	-	-	-	-	-	-	-	✓	-	-
45	18EE643	✓	✓	✓	-	✓	✓	✓	-	-	-	-	✓	✓	✓	-
46	18ME651	✓	✓	✓	-	-	-	-	-	-	-	-	-	✓	-	-
47	18EEL66	✓	✓	✓	-	✓	-	-	-	✓	✓	-	✓	✓	✓	-
48	18EEL67	✓	✓	✓	-	✓	-	-	-	✓	✓	-	✓	-	✓	-
49	18MP68	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	✓	✓
50	18EE71	✓	✓	✓	-	-	-	-	-	-	-	-	✓	✓	-	✓
51	18EE72	✓	✓	-	-	-	✓	✓	-	-	-	-	✓	✓	-	✓
52	18EE731	✓	-	-	-	-	✓	✓	-	-	-	-	✓	✓	-	✓
53	18EE742	✓	✓	✓	✓	-	-	-	-	-	-	-	✓	✓	-	✓
54	18ME753	✓	-	-	-	-	✓	✓	-	-	-	-	✓	✓	-	✓

55	18EEL76	-	✓	✓	✓	✓	-	-	-	✓	✓	-	✓	✓	✓	✓
56	18EEL77	-	-	-	✓	-	-	-	-	✓	✓	-	✓	✓	-	-
57	18EEPL78	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	✓	✓
58	18EE81	✓	✓	✓	✓	-	-	-	-	-	-	-	✓	✓	-	✓
59	18EE82	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-	-	-	-	-
60	18EEP83	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
61	18EES84	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	✓	-
62	18EEI85	-	-	-	✓	-	-	-	✓	✓	✓	✓	✓	✓	✓	✓
No. of courses mapped		55	52	38	13	13	16	13	10	23	22	4	38	50	19	30
% of Articulation		89	84	61	21	21	26	21	16	37	35	6	61	81	31	48

B. CURRICULUM GAPS:

The courses and the course contents prescribed in the curriculum are mapped to the relevant POs and PSOs through the given Graduate Attributes notified in the university curriculum and inputs from respective course coordinators. If the number of courses mapped with POs and PSOs which is less than 20 will be considered as curricular gaps.

Thus, the identified curricular gaps for POs and PSOs are listed below.

PO4:Conduct Investigations of complex problems

PO5:Modern tool usage

PO6: The Engineer and Society

PO7: Environment and Sustainability

PO8:Ethics

PO11:Project management and finance

PSO2:solve problems of Power system and Power Electronics using software tools and also to apply ethical principles, management skills and responsibilities.

The percentage of courses mapping to POs and gaps in PSOs identified is listed below:

The Table 2.1.1. (iii) Courses mapping to POs and gaps in PSOs

Sl No	POs & PSOs	% of Mapping	Shortcomings Identified in Program Curriculum
1	PO1.Engineering Knowledge:	89	Maximum Courses correlated to engineering knowledge
2	PO2. Problem analysis:	84	Strong correlation to mathematical knowledge
3	PO3.Design/development of solutions:	61	Moderate correlation in applying engineering knowledge to design

4	PO4. Conduct investigations of complex problems:	21	Limited research literature review to courses specified
5	PO5. Modern Tool Usage:	22	Limited use of software tools in curriculum
6	PO 6. The Engineer and Society:	26	Limited integrated approach in curriculum towards integrated professional practice
7	PO7. Environment and Sustainability:	21	Limited integrated approach in curriculum towards Environment and sustainability
8	PO8. Ethics	16	Limited approach towards ethics in curriculum practice
9	PO9. Individual and Team Work:	37	approach towards experiential learning is minimum and limited courses for team works
10	PO10. Communication	35	Lack of exposure due to limited hours allocated , poor communication skill
11	PO11. Project Management and Finance:	6	Limitation of duration in executing project and less exposure to finance management skill
12	PO12. Life-long learning:	61	Course components moderately address life skills
13	PSO1	81	Strong correlation for the design and develop solutions in power systems and renewable energy systems
14	PSO2	31	Limitation to design and solution for electronic circuits skill in curriculum
15	PSO3	48	Limitation with usage of modern tools in power systems curriculum

The Table 2.1.1.(iv) lists the course gap identified gap in the syllabus prescribed by university VTU for the attainment of Program Outcomes and Program Specific Outcomes.

Table 2.1.1(iv) Gaps identified in program outcome

Sl No	Course Name	Course Code	Gap Identified in the course
1	ANALOG ELECTRONIC CIRCUITS	18EE33	Practical exposure using Pspice for the concepts related to circuits

2	DIGITAL SYSTEM DESIGN	18EE34	Adding Additional Topics
3	TRANSFORMERS & GENERATORS	18EE33	Focus to arrange INDUSTRIAL VISIT to know about the transformer and generators practically
4	DIGITAL SIGNAL DESIGN	18EE35	Simulation S/W For Design Application
5	ELECTRONICS LABORATORY	18EEL38	Practical Exposure using Pspice for the Concepts related to the electronic circuits and its Execution
6	MICRO CONTROLLER	18EE52	Arranged A Workshop To Train Up In MSP430
7	POWER ELECTRONICS	18EE53	Industrial Visit, Guest Lecture
8	SIGNALS AND SYSTEMS	18EE54	Exposure on modern tools
9	HIGH VOLTAGE ENGINEERING	18EE56	Planned to visit to CPRI to give more exposure on high voltage labs
10	POWER SYSTEM ANALYSIS-2	18EE71	Seminar On Modelling And Simulation of Power System, Hands On Session
11	POWER SYSTEM PROTECTION	18EE72	Industrial Visit To Kptcl (Neelamangala Substation 400/220kv),Design & Implementation of Ss & Protective Equipment’s
12	SOLAR AND WIND ENERGY	18EE731	SDP ON SOLAR ENERGY and its applications
13	UTILISATION OF ELECTRICAL POWER	18EE742	Designing The Lightenings,Fittings,& Utilisation of power of a House
14	MICROCONTROLLER LABORATORY	18EEL57	The Microcontroller ICs used for practice Experiments are Outdated, Need to use advanced ICs.
15	DIGITAL SIGNAL PROCESSING	18EE63	Insufficient scope for implementation

16	ELECTROMAGNETIC FIELD THEORY	18EE45	Problems appeared in VTU Exams are to be solved

2.1.2 State the delivery details of the content beyond the syllabus for the attainment of POs and PSOs (10)

Institute Marks : 8.00

The department of Electrical and Electronics Engineering identified the content of beyond the syllabus for the attainment of Program outcomes and Program specific outcomes are conducted by the any one of the following methods

1. Technical talks by renowned industrialists/academician:

Students are kept updated about the advances in technologies through technical seminars.

2.Workshops:

The department has introduced a novel initiative for students, wherein they are encouraged to participate in hands-on workshops, thereby enhancing their application skills.

3.Seminars/guest lecturers/SDPs:

The content or topics need to learn by the students apart from the curriculum and to meet the industry requirement are delivered by arranging Seminar / Guest lecture/SDP'S by industry experts. Also by allotting seminar topics relevant to the course and not covered in the course are to the students to inculcate the self-study and lifelong learning.

4.Conferences/Certificate courses:

The gap identified in the curriculum is delivered to the students by conducting additional certificate courses by the technical experts.

5.Industrial visits:

Industrial Visits are organized every year to keep the students abreast with applications of Electrical and Electronics Engineering.

6.Internships:

Students are encouraged to take-up short-term internships in industries and recognised R&D centres to understand industry practices.

7. **Mini Projects/Project Exhibitions:**

The POs and PSOs which are not able to attain by the curriculum are delivered to the students as content beyond the syllabus in the form of Project based learning. This helps the students to improve their creative skills, critical thinking, collaborative learning and communication.

8.AICTE Activity point:

Apart from technical knowledge and skills to be successful professional , students to gain soft skills, leadership qualities, team sprit entrepreneurial capabilities and social commitment all students have to carry out activity focusing socio economic facts.

In addition to the above , various training programs such as are offered by the Placement Team of college to the students. Training on soft skills, personality development, training on core, in addition to above the department conducts Additional experiments in the laboratories beyond University syllabus, organizes various Industrial visit for students.

9.Self Learning:

Students are motivated to take up MOOC, NPTEL , Virtual Lab and Skill Dezire lab to learn the content beyond the prescribed syllbaus and take Examination to gain additional credit then specified by University. Also the students register for AICTE PARAKH and take up courses offered and on completion receive certificate.

2022-23

S.No	Gap	Action Taken	Date-Month-Year	Resource Person with Designation	% of students	Relevance to POs, PSOs
1	Environment and sustainability	Seminar on “EMI effects on Smart devices”	11/08/2023	Dr.B Kalyan kumar, Professor and Head of Electrical Section.	80	PO7,PO8,PO12, PSO1
2	Ethics	Seminar on “Energy Conservation & Innovation in House hold applications”	18/07/2023	Dr.Krishna kumar, Associate Professor.	90	PO7,PO8,PO11,PSO1
3	Life - long learning	Seminar on “Soft skills and Higher Education in abroad”	17/06/2023	Ms.Soumya Chenna Reddy, Business Consultant.	78	PO7,PO8,PO12, PSO1
4	Modern Tool Usage	Certification Course on “Python Programming with application projects and solutions”	9/01/2023	Mohammed Azhar Hussain	95	PO5,PO6,PSO1
5	Investigations of Complex problems.	Workshop on Micro-controllers for embedded system	28/01/2023	Prof.Anil kumar K, Assistant Professor. (2)Prof.Mallesha b Y, Assistant Professor. (3)Prof.Pradeesha J,Assistant Professor.	100	PO6,PO7,PO8,PSO2
6	The Engineer and Society	SDP on “Solar energy & it’s applications in the current scenerio”	21/11/2022	Mahesh V Shivaashimpiger, Solar scientist.	92	PO6,PO7,PSO1
7	Techniques	Industrial Visit To Vintek Control Systems	23/11/2022	Mr.Kariyappa, Managing director	95	PO6,PSO1
8	Environment and sustainability	Industrial visit to ‘Arrow Power controls’,CHIKKABANAVAARA ,Bangalore	1711/2022	Mr. Sudhakar Borker, PROPRIETOR	100	PO7,PO8,PO12, PSO1
9	Ethics	Industrial visit to ‘Sri sai ram Power controls’, Bangalore	17/11/2022	Mr.C.Jayaseelan, Managing Director	100	PO7,PO8,PO12, PSO1
10	Techniques	Industrial visit to Purlin automation India Pvt limited,Bangalore	17/11/2022	Mr.Shakthivel, Managing Director	100	PO6,PO7,PSO1
11	The Engineer and Society	Industrial Visit To SB Power Systems	23/11/2022	Mr.Mallikarjuna N.M, Managing director	95	PO6,PO7,PSO1
12	Ethics	Industrial Visit To Sri Venkateshwara Technologies	23/11/2022	Mr.C.Jayaseelan, Managing director	95	PO6,PO7,PSO1
13	The Engineer and Society	Industrial Visit To 400KV/220KV Nelamangala Receiving Station	18/10/2022	Kavitha,Executive Engineer,Nelamangala	80	PO6,PO7,PSO1

2021-22

S.No	Gap	Action Taken	Date-Month-Year	Resource Person with Designation	% of students	Relevance to POs, PSOs
1	Modern tool usage	Seminar on “Industry Awareness Orientation”	21/06/2022	Mr.Anandh T, Founder & CEO, Swifterz Creative Services (LLP)	100	PO6,PO7,PSO1
2	Modern tool usage	Technical talk on “5G & thinking towards 6G & final year project demonstration”	20/06/2022	Prof. C Murali, IETE Distinguished Fellow and Former vice-president	80	PO5,PO9,PO12
3	Modern tool usage	Workshop on “IOT & its Applications”	07/12/2021	Prof. Anil kumar. BE,M.Tech, Assistant Professor	75	PO6,PO7,PSO1
4	The Engineer and Society	Industrial Visit to 3n Electronics	27/04/2022	Mr.P.F.Naikar, CEO,3N Electronics	80	PO6,PO7,PSO1
5	Modern tool usage	Virtual Industrial Visit to MESON, GUJARAT	25/10/2021	Mr.Malay Porwal, CEO	96	PO5,PO9,PO12
6	The Engineer and Society	Industrial Visit to TDPS (Transmission & Distribution Power System)	23/10/2021	Sunanda C V Assistant Professor	100	PO6,PO7,PSO1
7	Modern tool usage	Certificate program on “Introduction to Java and its applications”	13/11/2021	Sangeetha C	100	PO5, PO9,PO10, PSO1
8	The Engineer and Society	Visit to 2nd International Exhibition on Power, Electrical and Lighting to BIEC-Bangalore International Exhibition Center	24/06/2022	Sunanda C V Assistant Professor	85	PO6,PO7,PSO1

2020-21

S.No	Gap	Action Taken	Date-Month-Year	Resource Person with Designation	% of students	Relevance to POs, PSOs
1	Environment and sustainability	Guest lecture on “Easy Docmentation,Execution and Presentation (PPT) using Jupyter Notebook”	17/07/2021	Mr.Arun kumar N, Trainer and Developer.	70	PO7,PO8,PO12, PSO1
2	Environment and sustainability	Guest lecture on“Opportunity in IT Infrastructure Service”	10/07/2021	Mr.Naveen Chander C, Founder-3Q Sutantra, Beguluru	80	PO7,PO12,PSO1
3	Modern tool usage	Guest Lecture (ONLINE) on “Wide area monitoring system for micro grid security”	04/06/2021	Dr.Rohikaa Micky R, Assistant Professor	85	PO5,PO9,PO12
4	Environment and sustainability	Guest Lecture (ONLINE) on “What industry is really expecting from students after employment?”	28/05/2021	Muthukrishnan Hariram, Assistant Professor	85	PO7,PO8,PO12, PSO1
5	Environment and sustainability	Seminar on “V2X:The Future of vehicle Communications”	23/12/2020	Dr.B.N.Manjunath Reddy, Professor	90	PO7,PO8,PO12, PSO1
6	Techniques	Awareness Seminar on “Electrical Safety”	18/11/2020	Dr.Sunitha , Professor and Head	90	PO7,PO8,PO12
7	The Engineer and Society	Seminar on “Modeling and Simulation of Power Systems”	06/11/2020	Dr.Jayapal R, Professor and Principal	95	PO6,PO7,PSO1
8	Environment and sustainability	Online Certificate program on “Electrical services”	23/11/2020	Dr.Sunitha H D, Prof.Gowtham G, Prof Ramachandra C	100	PO7,PO8,PO12,PSO1

2.2 Teaching - Learning Processes (100) Total Marks 83.00

2.2.1 Describe processes followed to improve quality of Teaching & Learning (25)

Institute Marks : 21.00

In line with the university and college calendar of events, department prepares its own calendar of events. The head of the department will allocate the courses to the faculties based on the preferences given by them.

The process followed to improve the quality of teaching and learning is described in Figure 2.2.1a. An effective connected model to improve the quality of teaching and learning is being adopted which includes the following process:

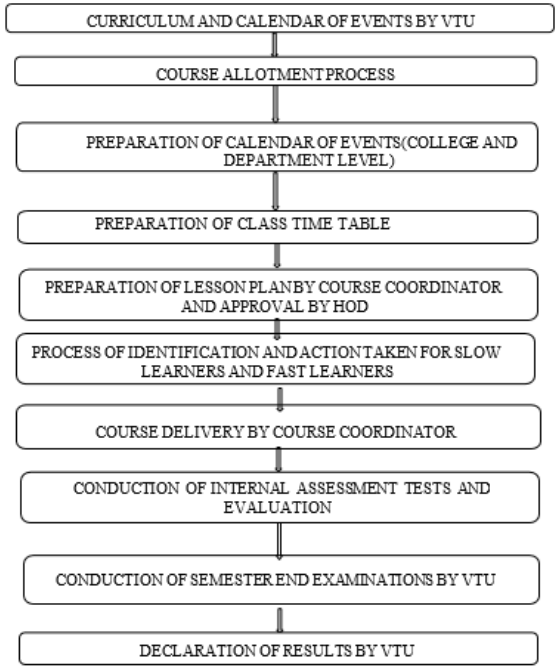


Figure 2.2.1(a): Teaching-Learning Process

A. Adherence to academic calendar (Institute and Department calendar):

Department prepares its own Calendar of events in alignment with University and Institute academic calendar prior to the commencement of the semester. The process for formation and adherence to the academic calendar and Compliance of Department calendar of events shown in Figure 2.2.1b.

The department later includes the activities planned for the semester, like

- Skill development workshops,
- Seminars,
- Student Development Programs,
- Project Representations and report submission
- Awareness Programs and Industrial/Exhibition visits etc.,
- The Calender of Events is circulated among the faculty and students, well in advance before the commencement of the semester and strictly adhered.

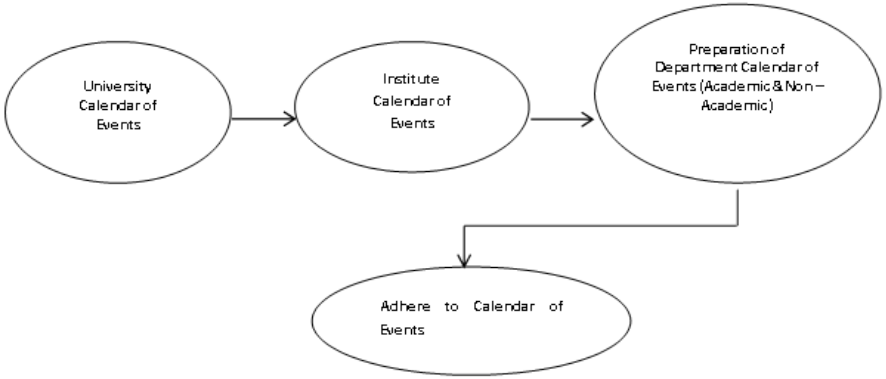


Figure 2.2.1(b): Adherence to Academic Calendar

B.Use of various Instructional Methods & Pedagogical Initiatives

Pedagogies play an important role in bringing of content and it varies with the audience. Course allocation is made based on the choice of the faculty members one month before the commencement of semester. Once the courses are allocated, the faculty members prepare a detailed lesson plan, question bank,assignments questions, etc. for a particular course. Course handout and materials are prepared keeping in mind the lesson plan and course outcomes. Faculty members use various pedagogical methods for effective teaching learning process.

Expert/Guest Lecturer: The department organizes various expert/guest lecture to provide in depth knowledge on different technologies. This provides a platform for students to express their ideas and views. **Collaborative Learning:** Students share knowledge or discuss topics in small group or in peer mode.

Alumni Talk: Apart from academics, the department conducts alumni talks for the students to get the opportunity to interact and discuss with their seniors regarding the current industry trends.

Project Based Learning (PBL): PBL is significantly more effective than traditional instruction to train competent and skilled practitioners and it promotes long-term retention of knowledge and skills. It is an innovative practice that is used to implement Outcome Based Education system. Students are encouraged to carry out mini projects to apply their engineering knowledge from fifth semester onwards till eighth semester. Student has to take up mini project based on their interest with the help of faculty. At the end of each semester, projects are evaluated.

Internship: At the end of semester or in vacation time students is allowed to carry out internship in reputed industries/companies to get practical exposure from industries. It helps the students to bridge the gap between the subject's studies and industrial need.

Table 2.2.1(ii): Few sample of Internship Details

Sl. No	Title of the Internship	Name of the Partnering Institution/ Industry /Research lab	Duration	Students Name	Students Name
1	Electrical C and R panel manufacturing plant and industrial feeder protection using SIEMENS IED – 7SJ80	MCORE TECH ACADEMY pvt.ltd, BANGALORE	22-08-2022 to 29-09-2022	AFSAL A	AFSAL A
2	Electrical C and R panel manufacturing plant and industrial feeder protection using SIEMENS IED – 7SJ80	MCORE TECH ACADEMY pvt.ltd, BANGALORE	22-08-2022 to 29-09-2022	Rupesh kumar sah	Rupesh kumar sah

3	Electrical C and R panel manufacturing plant and industrial feeder protection using SIEMENS IED – 7SJ80	MCORE TECH ACADEMY pvt.ltd, BANGALORE	22-08-2022 to 29-09-2022	Bhoomika R	Bhoomika R

· **Workshops:** Department organizes workshops to facilitate the students in having a hands on training in a specific domain. These workshops enable students in learning and realizing new and latest technologies. The students get a platform to exhibit their ideas and implement them in reality. The Table 2.2.1 (iii) gives few sample workshops organized.

· **Table 2.2.1 (iii): Few Workshops**

Sl. No.	Name of the Workshop	Resource Person Details	Date of Conduction	No of Participants
1	Workshop on Micro-controllers for embedded system	(1)Prof.Anil kumar K, Dept of ISE,RRIT. (2)Prof.Mallesha b Y, Dept of ECE,RRIT. (3)Prof.Pradeesha J, Dept of EEE,RRIT.	28-01-2022 & 29-01-2022	9
2	Workshop on IOT & its Applications	Prof.Anil kumar K, Assistant professor,Dept. Of ECE,AIeMS,Resourse person,Ambient Technologies,Bangalore.	07-12-2021& 08-12-2021	40

C. **Methodologies to support weak students and encourage bright Students**

The weak and bright students are identified based on their performance in university exams and internal assessment of the current semester. The table 2.2.1(iv) shows the guidelines to identify the weak students and Table 2.2.1(v) shows the guidelines to identify the weak students and bright students.

Table 2.2.1(iv): Guidelines to identify weak students

Identifying and assisting weak students	
Identification Criteria	**Assisting**
· The HOD, Course Faculty, Class teacher and Mentors are involved in finalizing the weak students. · The finalization of weak students will be done based on the previous academic performance and 1st IA marks of the current semester.	· Remedial classes are conducted. · Assignment will be provided to improve their results. · Solving previous years VTU question Papers. · Periodic Counseling will be done by class teacher and mentor.

Table 2.2.1(v):: Guidelines to identify bright students

Identifying and assisting bright students	
Identification Criteria	**Assisting**

· The HOD, course faculty, class teacher and mentors are involved in identifying and finalizing the bright students. · The finalization of bright students will be done based on the overall academic performance and other activities.	· Students are motivated to participate in Workshops, Seminars, Conferences and student development programs. · Encouraged to take up competitive examinations. · Motivated to take up the internships and also to do the mini projects. · Encouraged to do the publications. · Top three students will be awarded with certificates and memento at the institute level. · Top three students are published in news letters

D. **Quality of Classroom Teaching**

- **Classroom teaching:** The lecture delivery by the faculty is through a set of educational technology/tools such as
  - Chalk and talk - Lecturing is done using green/blackboard.
  - Power point presentation (PPT).
  - Lecturing using smart board and LCD Projectors
  - Citing real world examples for application based courses.
  - Case studies
  - Access to study material in e-resources
  - Use of Open Source Software.
  - Demo in Lab.
  - Usage of videos.
  - Assignments.
  - Question bank.
  - Quiz

- **Cooperative teaching learning:** Students share knowledge or discuss topics in small group or in peer mode.
- **Preparation of Lesson Plan:** Well-structured lesson plans are prepared / revised for all theory and practical courses on a period to period basis, scrutinized by HoDs and made available to the Students.
- **Academic Review:** Head of Department regularly visit classes to observe the teaching process and convey their suggestions and appreciations to the faculty member.
- **Assignments based problem solving:** Assignments are given to students on problems and they solved by themselves.
- **Laboratory demonstration:** Demonstration of system or parts of real world system using modern tools.
- **Group discussion/ presentation:** Students learn communication skills through group discussion.

E. Conduct of Experiments (Observation in Lab)

· Laboratory handling faculty prepares manual for laboratory that includes:

- Course syllabus
- Programs with all possible inputs and outputs
- Viva –Voice Question Bank
- Laboratory handling faculty explains the process of conduction, scheme and evaluation for experiment and internal test to the students.
- Laboratory handling faculty explains experiment/programs in class and clarifies doubts if any.

o Laboratory handling faculty demonstrate the experiments and also executes all the programs with respect to University Curriculum.

o Students prepare for the program execution/experiment and give a write up in the observation book which is evaluated after the conduction of experiment.

o After the completion of lab session the students should write the program/experiment in the record, the same will be checked by the faculty.

F. Continuous Assessment in the laboratory

Continuous Assessment is divided into two components

o Evaluation in every lab session

o Internal Assessment Test

- Program/experiment conduction is evaluated, viva is conducted, and marks are allotted.
- Students record the results and submit the record. Records are evaluated, and marks are computed.
- HOD will regularly monitor the continuous assessment of students.
- Final assessment marks are computed based on Lab sessions marks and Lab IA.

Implementation of Improving Quality of Laboratory Experiments

The laboratories are evaluated as per the university norms.

Stage	Evaluation Type	
1.	Continuous Evaluation in every lab session	25 marks
2.	Internal Test	15 marks
	Total Marks	40 marks

The laboratories are evaluated in two different Stages:

Stage 1: Continuous Evaluation in every lab session (10 marks)

The Continuous Evaluation is done by the faculty in every lab session for 10 marks based on rubrics defined in table 2.2.1(vi) and the average marks of all sessions will be considered for awarding final internal assessment marks.

Table 2.2.1(vi): Rubrics used for Continuous Evaluation in every lab session

Parameters	High	Marks	Medium	Marks	Low	Marks

	Understood the objective of the experimental setup/algorithm	2	Partially Understood the objective of the experimental setup/ compared the output with computation	1		
Conduct /Perform	Rigged up the circuit/ Executed the Program/Performed the expeiment/Recording the Tabulation / Calculation	4	Partially Rigged up the circuit/ Executed the Program/ Performed the expeiment/	2	Not Understood the objective & not completed the work in the lab session	0 Marks
	Compare the output with computation / The output result with calibrated reading /Executed the program & obtained the output correctly	4	Partially compared the output with calibrated reading /computation / obtained the output.	2		
	Total: 10 Marks		Total: 5 Marks		Total: 0 Marks	
	Clearly Stated Aim/Procedure/theory for the given problem /experiment	4	Partially Stated Aim/Procedure/theory for the given problem /experiment	2		
Record Writing	Clearly Stated algorithm/ design/ Drawing / calculation/ tabulation	4	Partially Stated algorithm/ design/ calculation/ tabulation	2	Non – Submission of record in the lab session	0 Marks
	Clearly Stated the result/conclusions/compared the result with computation/ drawn graph	2	Partially Stated the result/ conclusions /compared the result with computation/ drawn graph	2		
	Total: 10 Marks		Total: 6 Marks		Total: 0 Marks	

Viva Voce or Quiz	Answered 5 questions	Total: 5 Marks	Answered 4 questions	Total: 4 Marks	Answered 3 questions	Total: 3 Marks	Answered 2 questions	Total: 2 marks	Answered 1question	Total: 1 Mark	Student did not answer any question	Total: 0 Marks

Stage 2: Lab Internal test (40 marks)

Lab Internals will be conducted at end of the semester after the completion of all the university specified experiment.

Student should pick a program from the pool and execute that program. The student should answer the Viva-voce asked. The marks are awarded for each lab internals based on rubrics defined in table 2.2.1

(vii) average marks of internal test and continuous evaluation marks will be considered for awarding final internal assessment marks.

Table 2.2.1(vii): Rubrics used for lab Internal Test

<table>
<tr><th>Parameters</th><th>High</th><th>Marks</th><th>Medium</th><th>Marks</th><th>Low</th><th>Marks</th></tr>
<tr><td rowspan="4">Conduct</td><td>Student is able to design//tabulate / write appropriate formula used for calculation / write algorithm /expected result.</td><td>2</td><td>Partially Able to draw circuit but doesn’t design / write a program doesn’t know the algorithm</td><td>1</td><td rowspan="3">No knowledge of the given experimental setup &problem statement</td><td rowspan="3">0</td></tr>
<tr><td>Draw/ Tabulate or write Program / Computation and obtain result</td><td>2</td><td rowspan="2">Partially Know the Program / Experimental setup</td><td rowspan="2">1</td></tr>
<tr><td>Able to debug the circuit or program</td><td>1</td></tr>
<tr><td colspan="2">Total: 5 Marks</td><td colspan="2">Total: 2 marks</td><td colspan="2">Total: 0 Marks</td></tr>
</table>

Execution	Able to Execute the experiment compile the problem without error	3	Partially able to conduct the given experiment	1	Not able to execute	0
	Draw/ Tabulate/ conduct/ execute the program	2				
	Obtain the result as expected	1	Partially Obtain the result as expected	1		
	Total: 5 Marks		Total: 2 Marks		Total: 0 Marks	

Viva Voce or Quiz	Answered 5 questions	Answered 4 questions	Answered 3 questions	Answered 2 questions	Answered 1 question	Did not answer any question
	Total: 5 Marks	Total: 4 Marks	Total: 3 Marks	Total: 2 marks	Total: 1 Mark	Total: 0 Marks

G. **Student feedback on teaching learning process and actions taken**

- Student's feedback is taken from students on the effectiveness of teaching and subject learning from IQAC during the semester.
- The feedback is summarized and sent through principal to HOD to take necessary action.
- The HOD will discuss the feedback with faculties and gives some suggestions.
- This feedback is considered as part of self-appraisal of the faculty member.
- The final report will be sent to IQAC through principal.
- Faculty feedback performance for every course is assessed from the students with various parameters.
- The parameters of Feedback includes:

1. Is faculty punctual to the class?
2. Does teacher come with adequate preparation for the class?
3. Does faculty use blackboard for illustration and solving the problems effectively?
4. Does the faculty solve problems from VTU Question paper in the class?
5. Does the faculty encourage student's interaction in the class?
6. Does faculty answer the question satisfactorily?

7. Does the faculty evaluate the bluebooks on time and give the solutions to the test questions?

8. What is your rating for the faculty?

2.2.2 Quality of internal semester Question papers, Assignments and Evaluation (20)

Institute Marks : 15.00

A.PROCESS FOR INTERNAL SEMESTER QUESTION PAPER SETTING AND EVALUATION AND EFFECTIVE PROCESS IMPLEMENTATION.

1. The department conducts three internal assessment as per the calender of events in each semester.The continuous internal evaluation(CIE) is computed for 40 marks as per the regulations of the university.It includes 30 marks based on the internal assessment conduction and 10 marks is for assignments,seminar and quiz.

2. The question paper for the internal assessment in each course is set by the respective course coordinator by incorporating respective COs and cognitive levels(RBT levels) .

3. The evaluation of the answer books will be carried out by respective course coordinator based on approved scheme and solution.

4. The final internal marks is computed for the average of three internal assessment as per university norms.

The process of setting the internal semester question and evaluation is shown in the flowchart

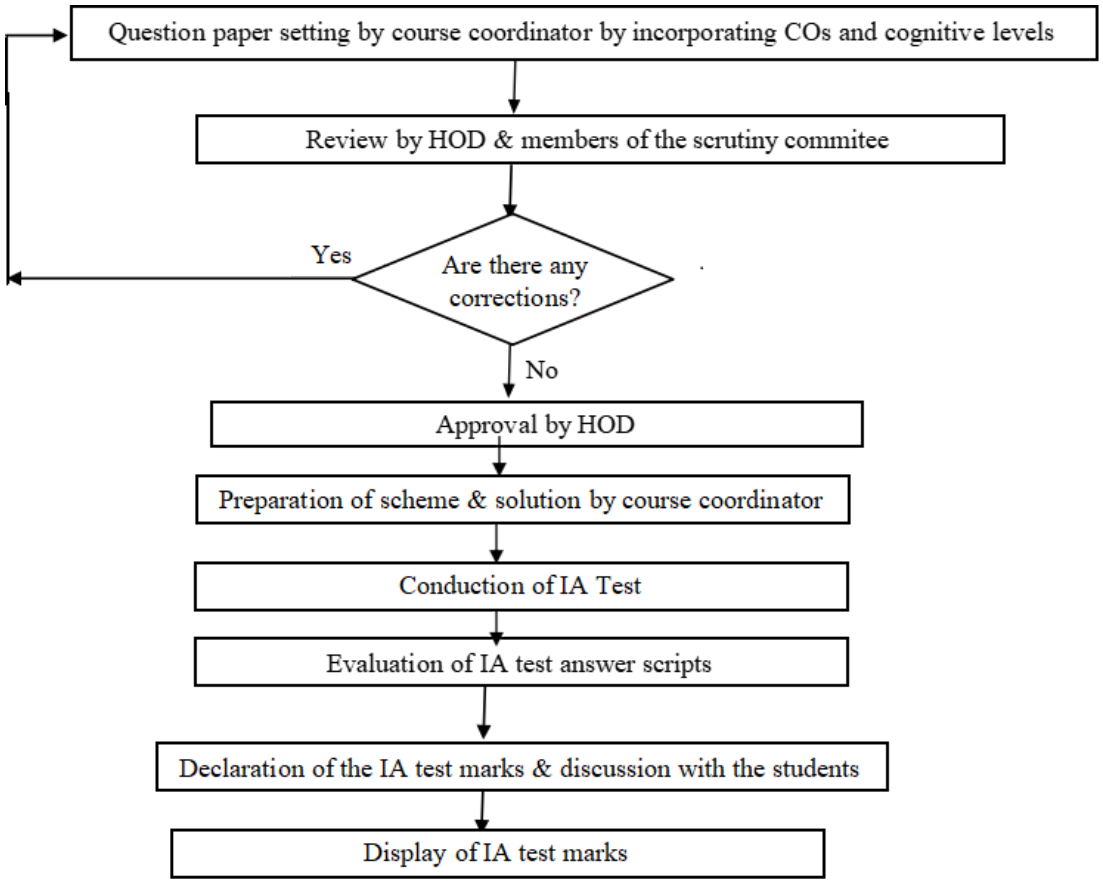


Figure : Flow chart for process of internal semester question paper setting andevaluation

B.PROCESS TO ENSURE QUESTIONS FROM OUTCOMES/LEARNING LEVELS PERSPECTIVE

1. The IA Coordinator will circulate the IA schedule to all faculties with the approval of HOD.
2. In-line with the circular the IA Coordinator will prepare IA time table and brought to the notice of all faculty members and students.
3. All the faculty members are instructed to prepare IA question paper along with scheme and solution. The same will be submitted to the HOD.
4. The submitted IA question papers will be reviewed by scrutiny committee and approved by HOD in order to ensure pertaining of questions to respective COs and cognitive(RBT)levels.
5. If any corrections, will be intimated to the respective course coordinator for re framing the question paper and submitted for approval by HOD.
6. After the approval of IA question paper by IA Committee, IA will be conducted as per given schedule.
7. Faculty members will evaluate blue books as per the approved scheme and solution.
8. IA marks along with scheme of evaluation will be discussed with the students and grievances if any will be addressed by Course faculty.
9. Final IA marks will be displayed to the students.

IA Schedule:

1. University Academic calendar will be circulated by VTU.
2. Principal and HoD will prepare institute academic calendar in-line with University Academic calendar to finalize the IA dates.
3. Appointment of department IA coordinator by respective Head of the department for IA conduction.
4. The following parameters of IA guidelines will be discussed by HOD with IA coordinator which involves:
   - Preparing IA schedule
   - Allotment of rooms and invigilators.
   - Collecting blue books, question papers, scheme and solution as per schedule
   - Required number of photocopies of the question papers has to be taken by IA Coordinators
   - Recording absentee details.
   - Display of IA.
   - VTU IA entry.

Description:

A question paper is the basic tool used in a test or examination. Question paper must be prepared in a way that can measure the change in the level of students' knowledge in a particular subject. The document as proof of attainment of course and program outcomes depends on several factors including course outcomes of the course, program outcomes, and mapping of COs with POs, quality of questions in the internal assessment to achieve the desired outcomes.

Table 2.2.2(i): CIE Marks for different schemes prescribed by VTU

Continuous Internal Evaluation			
Scheme	**Maximum Marks for IA**	**Assignments**	**Total marks**
2018	30	10	40
2021	40	10	50
2022	40	10	50

C.EVIDENCE OF COS COVERAGE IN CLASS TEST / MID-TERM TESTS

- The questions in the question paper are mapped with course outcomes and evaluated by IA scrutiny committee and Head of the department.
- The internal assessment marks are documented for course attainment analysis after the evaluation. The percentage of the course outcome obtained is analysed. If any gap in attainment activities like assignment/quiz are conducted.

D.QUALITY OF ASSIGNMENT AND ITS RELEVANCE TO Cos

- Assignments are integral part of the continuous assessment process to ensure that students apply and analyze the knowledge to raise the level of learning.
- The course faculty will look in to the syllabus content for setting the assignment questions.
- After the completion of every module, assignment questions will be given to students, and student has to write & submit to the course coordinator. The same will be evaluated and recorded by course faculty.

2.2.3 Quality of student projects (25)

Institute Marks : 22.00

A) Identification of projects and allocation methodology to Faculty Members

1. The head of the department designates the project coordinator for one academic year.

2. The project coordinator educates the students to select projects in different domains such as power systems, high Voltage, Power Electronics, Signal Processing, Machines, etc.

3. The department encourages the students to select the project as research, product, societal issues, application based, case study, and environment.

4. Students are informed to form project batches based on their area of interest, and the same will be registered with the project coordinators. Each project batch can have a maximum of two-four students. On registration, a project batch identification number will be generated, which is used as a reference throughout the academic year.

5. The project coordinators in discussion with HOD will allocate the faculty members as guides for the projects based on their domain and expertise.

6. The project batch students are informed to submit the synopsis about their project under the supervision of their respective guides to the project coordinators.

7. A schedule for the synopsis review is been prepared by the project coordinators and the same will be informed to the students for their synopsis presentation.

8. The synopsis review will be carried out by a Project Evaluation Committee and suggest any modifications or corrections in their project synopsis.

9. By incorporating the modifications and corrections, if any, the students will submit the finalized project synopsis duly signed by their concerned guide to project coordinators.

10. Initiatives taken for enhancement in project work

11. The faculty members motivate the students to carry out projects in-house by providing essential resources.

    a. Further the students are encouraged to participate in project exhibitions, present/publish their work in conferences/journals.

12. They are also encouraged to apply for funds under various external funding schemes such as KSCST, VTU-VGST, etc.

Initiatives taken

1.The HOD, project coordinator and faculty motivates the students to carry out projects in house. If some students are keen in undertaking projects at industries are permitted.

2.Project Coordinator and the Project Guide will examine the quality of the project work and ensure that the project is Societal and Environmental related.

3.Institute conducts a Project Exhibition called “Meraki” which recognizes and encourages students in developing innovative projects. In the exhibition the projects are evaluated by experts from external. Best project is selected and awarded based on the quality of the project.

4.The students are encouraged to participate in conferences to present and publish their work.

5.Also the students are motivated to publish in international journals.

B) Types and relevance of the projects and their contribution towards attainment of POs and PSOs

· Current academic projects are mapped to POs and PSOs.

· Each project is evaluated with internal marks and is graded according to their project quality and with their contribution towards attainment of PO’s.

· The below table 2.2.3(ii), 2.2.3(iii), 2.2.3 (iv) gives a list of few student projects of 2022-23,2022-21 and 2020-21, which are contributed towards attainment and table 2.2.3(v) gives domain analysis of projects.

Table 2.2.3(ii): List of few student projects – 2022-2023

Sl. No.	Name and USN of students	Project Title	Environment Related	Ethics	Societal Safety	Supported POs	Supported PSOs

1	Dheeraj K (1RI19EE004) Dhanush s (1RI19EE003) Bhoomika R (1RI19EE002) Thejaswini B (1RI19EE011)	Automated solar based ELECTRIC GRASS CUTTER With multi purpose Robotic vehicle	√	√	√	PO1, PO2 PO3, PO5, PO6 PO7,PO8, PO9,PO10, PO11	PSO1,PSO2,PSO3
2	Rupesh kumar sah (1RI19EE007) Shankar kumar yadav (1RI19EE008) Sneha Joesphin (1RI19EE009) AFSAL A (1RI20EE400)	Low cost Ultra violet room Dis infection device		√	√	PO1, PO2 PO3, PO5, PO6 PO8, PO9,PO10, PO11	PSO1,PSO2,PSO3
3	Raushan Kumar Shrivastava (1RI19EE006) Bhola Chaudhary (1RI19EE001) Firdoush Ansary (1RI20EE402) Imran alam (1RI18EE008)	Analysis of polarizing technique to detect earth faults in SUB-TRANSMISSITION line using intelligent electronic device -7SJ80		√	√	PO1, PO2 PO3, PO5, PO6 PO8, PO9,PO10, PO11	PSO1,PSO2,PSO3
4	Hussein Ali Hussein Mursal (1RI19EE005) Suhaib M M (1RI19EE010) UJJAL SARKAR (1RI19EE012)	IOT Based underground fault detection		√	√	PO1, PO2 PO3,PO4, PO5, PO6 PO8, PO9,PO10, PO11	PSO1

Table 2.2.3 (iii): List of few of student projects – 2021-22

Sl. No.	Name and USN of students	Project Title	Environment Related	Ethics	Societal Safety	Supported POs	Supported PSOs
1	Harshitha V S (1RI16EE006) Sushma M N (1RI16EE019) G Bhanu Priya (1RI17EE004)	A Novel approach to Embedded system design for Electrical power conservation through flexible AC transmission using thyristor switvh capacitor		√	√	PO1, PO2 , PO4 PO5, PO6 PO8, PO9,PO10, PO11	PSO1,PSO2,PSO3
2	Ashish Yadav (1RI18EE003) Shovanand chaudhary (1RI17EE012) Gathnkulu Matlewa (1RI18EE005) Md.Safiullah Musaman (1RI18EE0120)	IOT Based smart industrial panel using phyton for speed control and monitoring of DC motor.		√	√	PO1, PO2 PO3, PO4 PO5, PO6 PO8, PO9,PO10, PO11	PSO1,PSO2,PSO3
3	Bharath kumar K (1RI18EE004) Gagan Kumar (1RI18EE007) Akash Kumar (1RI18EE001) Emdorka syiem (1RI19EE400)	Design and implementation of Fire extinguisher using Acoustic Sound wave and IOT		√	√	PO1, PO2 PO5, PO6 PO8, PO9,PO10, PO11,PO12	PSO1

4	Abdul Zelani (1RI18EE400) Saivik Ghosh (1RI8EE401) Vaibhav S Birdar (1RI19EE402) Amit Kumar Singh (1RI18EE002)	Home Security and Atomation System	√	√	√	PO1, PO2 PO3, PO4 PO5, PO6 , PO8, PO9,PO10, PO11,PO12	PSO1,PSO3

Table 2.2.3(iv): List of few student projects – 2020-21

Sl. No.	Name and USN of students	Project Title	Environment Related	Ethics	Societal Safety	Supported POs	Supported PSOs
1	Prathik Chaudhary (1RI17EE007) Sikindra Kumar Thakur (1RI17EE013) Vikash Kumar Sah (1RI17EE016) Arun Prasad Yadav (1RI17EE001)	Smart Management System for the domestic purpose	√	√	√	PO1, PO2, PO5, PO6 PO7,PO8, PO9,PO10, PO11,PO12	PSO1,PSO2, PSO3
2	Ruchitha S (1RI17EE010) Hemanjali R (1RI17EE006) Bidhya Chhetri (1RI17EE002) Rishing G N (1RI17EE009)	Wireless charging of Eletric Vehicle in Smart Cities		√	√	PO1, PO2, PO4 , PO5, PO6 PPO8, PO9,PO10, PO11	PSO1,PSO2, PSO3

3	Deepthi Thapa (1RI17EE003) Sandeep pandey (1RI17EE011) Misbah Falak M (1RI16EE009) Shifanaz (1RI16EE016) Anil Kumar T (1RI16EE401)	A Wireless sensor Networks for early forest Fire detection and monitoring Conversion of Waste heat into Electrical using thermos Electric Generator		√	√	PO1, PO2 ,PO3, PO4, PO5, PO6 PO7,PO8, PO9,PO10, PO11,	PSO1,PSO2, PSO3

C) **Process of Monitoring and Evaluation:**

(i) Process of Monitoring

- All project team should submit the final synopsis to the guide, the project guides gives suggetions towards the improvement of project.
- The progress of a project is monitored by the guide on weekly basis and they have to report the updates to the respective guide every weekend.
- The project guide and coordinator gives suggestions to students from time to time that they need to incorporate before the submission of final report.
- The project guide, coordinator along with head of the department will evaluate the project work.
- Monitoring of project work will be done for both ODD and Even semesters of final year.

Table 2.2.3 (v): Process of Project Schedule

Schedule	Task	Details
		7th Semester
2nd week	Call for project batch	Students are informed to form their batch.
4th week	Call for Project titles with abstract submission	Students are instructed to submit the title with abstract.
6th week	Guide allotment.	Guide allotment based on the domain and expertise.
8th week	Presentation of Synopsis	Presentations are reviewed by a Project coordinator, Head of the department and senior faculty along with Guide
13th week	Phase1 First Review	Review of requirement by guide and Coordinator
16th week	Phase1 Final Review	Project coordinator, Head of the department and senior faculty along with guide will review the requirements and Design of the project.

8th Semester		
5th week	Phase2 First Review	Review of progress regarding implementation & validation by guide and Coordinator
9th week	Phase2 Final Review	Review of Testing of project with complete presentation & Demonstration by a Project coordinator, Head of the department and senior faculty along with Guide.
12th week	Report submission	Submission of the final report duly signed by the guide, HOD, and Principal.

(ii)Process of Evaluation

a)Internal Evaluation:

The project work and the report will be evaluated by guide, coordinator and head of the department in both ODD and Even semesters of final year. The table 2.2.3(vi) gives the evaluation of project work.

Table 2.2.3(vi): Evaluation of Project Work

Sl. No.	Agenda	Assessment	Review Assessment Marks
7th semester -Phase-1			
1	Phase-1:Synopsis Representation	Rubric-1	20
2	Phase 1: First Review	Rubric-2	40
3	Phase1:Final review	Rubric-3	40
8th semester -Phase-2			
5	Phase-2 : Final Review	Rubric -4	40
		Total Marks	**140**

b) External Evaluation:

- The Final Projects are evaluated by Internal and External examiners as appointed by the university. The external examiner is from other affiliated college.
- The examiners conduct viva-voce examination for the students. The project teams will come forward and defend the carried out project work. Based on the performance in viva-voice examination, final marks are awarded to the students that are sent to university.

D)Process to assess individual and team performance

The Individual and team performance is assessed in the project work based on the following. Evaluation is carried out based on various criteria such as.

a. Problem Formulation

b. Planning

c. Technical skills

d. Communication

· Presentation

· Documentation

e. Team work

· Group participation

· Peer review

· Societal or environmental issues

· Individual Roles and Responsibilities

Evaluation is carried out on individual basis as well as on team performance. At the end of the academic year, students present and demonstrate their work to the external and internal examiners appointed from the university. The assessment will be done based on the below rubrics.

Table 2.2.3(vii): Rubrics1 for Project Phase 1: Synopsis Presentation

Agenda	Max. Marks	Rubric Parameter	Level of Marks				
			Excellent	Very Good	Good	Average	Poor
Synopsis Presentation							
Objective of the Work	5	The scope and objective defined	Scopes and objectives are identified correctly **5 marks**	Scopes and objectives are identified but slight changes **4 marks**	Scope and objectives are identified but required moderate changes. **3marks**	Scope and Objectives are identified, but has major changes **2 marks**	Scope and objectives should be modified **1 mark**
Field of the work Planned to carry out	5	Field type	Selected field for the proposed work is suitable **5 marks**	Selected field for the proposed work is suitable but few changes **4 marks**	Selected field for the proposed work is suitable but require moderate changes **3 marks**	Selected field for the proposed work is suitable but require lot of changes **2 marks**	Selected field for the proposed work is not defined **1 mark**

Knowledge of the Work Proposed	5	Nature of the work related to the topic	Component description related to topic are correct **5marks**	Component description related to topic can be modified **4marks**	Component description related to topic need few changes **3marks**	Component description related to topic are not well defined **2 marks**	Component description related to topic are not well defined **1mark**
Title of the Work Proposed	5	Title of the proposed work	Title is relevant to adequacy and suitability **5marks**	Title is relevant & partially consistent **4 marks**	Title is partially relevant & Consistent **3 marks**	Title is partially relevant & partially consistent **2marks**	Title is partially relevant & inconsistent **1mark**
Total Weightage(Marks)		**20**					

Table 2.2.3(viii): Rubrics2 for Project Phase1 :First Review

Agenda	**Max. Marks**	**Rubric Parameter**	**Level of Marks**				
			Excellent	**Very Good**	**Good**	**Average**	**Poor**
Review-2: First Review							
Literature Survey	10	Relevant research , drawbacks and methodology, research gaps	Relevant research drawbacks and methodology, research gaps are correct **10marks**	Relevant research drawbacks and methodology, research gaps are justified partly **8marks**	Relevant research drawbacks and methodology, research gaps Need to justify **6 marks**	Limited research, drawbacks and methodology are justify properly **4marks**	Limited research, drawbacks and methodology are Not justified **2 marks**

Objective of the Work with Block Diagram or Methodology	10	Block diagram or methodology related to the objective.	Block diagram or methodology aligns closely with the stated objectives, providing a clear roadmap for achieving them **10marks**	Block diagram or methodology aligns are not closely with the stated objectives, need to providing a clear roadmap for achieving them **8marks**	Block diagram or methodology mostly aligns with objectives but may have some minor deviations or inconsistencies **6 marks**	Block diagram or methodology has some alignment issues with objectives, requiring adjustments. **4marks**	Block diagram or methodology does not align with objectives, leading to confusion or inefficiency **2 marks**
Presentation of the work	10	Preparation of Slides, Presentation Consistency	Relevant and consistent **10marks**	Relevant & partially consistent **8marks**	Partially relevant & consistent **6 marks**	Partially relevant & partially consistent **4 marks**	Partially relevant & inconsistent **3marks**
Regularity in Reporting to Guide	5	Frequency of reporting to the guide	Reporting to the guide and stick on to the timeline **5marks**	Reporting to the guide and need to stick to the timeline **4marks**	Reporting to the guide and need much more to stick on the timeline **3marks**	Reporting to the guide and need to stick to the timeline to be followed properly **2marks**	Reporting to the guide and are not stick to the timeline **1mark**
Reference	5	Appropriateness of References	References are highly relevant **5marks**	Most references are relevant and less references are need to modify. **4marks**	Most references are relevant and less references are need to replace. **3marks**	References are somewhat relevant but many are irrelevant **2marks**	Reference are largely irrelevant **1mark**
Total Weightage(Marks)		**40**					

Table 2.2.3(ix): Rubrics3 for Project Phase1: Final Review

Agenda	**Max. Marks**	**Rubric Parameter**	**Level of Marks**				
			Excellent	**Very Good**	**Good**	**Average**	**Poor**
Review-3: Final Review							

Project Definition	10	Clarity and Specificity	The project definition is clear, specific regarding the scope of the project **10marks**	The project definition is mostly clear, specific but need some changes in scope of the project **8marks**	The project definition is somewhat clear, lacks in specific scope of the project **6 marks**	The project definition is somewhat unclear, lacks in specific scope of the project **4marks**	The project definition is unclear, makes difficult in specific scope of the project **2 marks**
Project Requirement(hardware, Software)	10	Hardware and software requirements	Requirements are clearly stated, specific understanding of software and hardware needs **10marks**	Requirements are mostly clear and specific with minor gaps in understanding of software and needs **8marks**	Requirements are somewhat clear and required clarification of usage of hardware and software needs **6 marks**	Requirements are somewhat unclear and required further clarification of understanding software and hardware needs **4marks**	Requirements are unclear and lacks in understanding software and hardware needs **2marks**
Regularity in Reporting to Guide	5	Frequency of reporting to the guide	Reporting to the guide and stick on to the timeline **5marks**	Reporting to the guide and need to stick to the timeline **4marks**	Reporting to the guide and need much more to stick on the timeline **3marks**	Reporting to the guide and need to stick to the timeline to be followed properly **2marks**	Reporting to the guide and are not stick to the timeline **1mark**
Project plan	5	Timeline and milestone	Project timeline is detailed, realistic and includes clear milestones **5marks**	Project timeline is mostly realistic and lack in milestones **4marks**	Project timeline is somewhat unrealistic and lacks clarity milestones **3marks**	Project timeline is unrealistic and difficult to track the milestones **2marks**	Project timeline is unrealistic and difficult to track the deadline **1mark**

Project Report	5	Project Phase –I report(Clarity)	Report is well organized , with clear structure, cohesive presentation of information **5marks**	Report is generally well organized , but may contain some inconsistencies and less in clarity **4marks**	Report is generally well organized , but may contain some inconsistencies and clarity is unclear **3marks**	References are somewhat relevant but many are irrelevant **2marks**	Report is poorly organized or unclear comprehension and readability **1mark**
Viva	5	Handling Question and Answer	Answered all questions with proper justification **5 marks**	Answered 80% questions **4 marks**	Answered 40% questions **3 marks**	Answered 40% Questions **2 marks**	Answered 20% questions **1 mark**
Total Weightage(Marks)		**40**					

Table 2.2.3(x): Rubrics4 for Project Phase2: final Assessment

Agenda	**Max. Marks**	**Rubric Parameter**	**Level of Marks**				
			Excellent	**Very Good**	**Good**	**Average**	**Poor**
Review-3: Final Review							
Project Requirement(hardware, Software)	5	Hardware and software requirements	Requirements are clearly stated, specific understanding of software and hardware needs **5marks**	Requirements are mostly clear and specific with minor gaps in understanding of software and needs **4marks**	Requirements are somewhat clear and required clarification of usage of hardware and software needs **3 marks**	Requirements are somewhat unclear and required further clarification of understanding software and hardware needs **2marks**	Requirements are unclear and lacks in understanding software and hardware needs **1marks**

Implementation	10	Execution of the project plan	Implementation in the project plan is complete **10marks**	Implementation in the project is generally completes with minor deviations promptly addressed **8marks**	Implementation in the project may complete with some changes can be addressed **6marks**	Implementation Partially completes the project with noticeable changes that are addressed or may cause inefficiency **4marks**	Implementation deviates significantly and leads to confusion or inefficiency **2marks**
Results	10	Novelty and Innovation	Results demonstrate novelty and innovation , approaches or solution that contribute to the project **10marks**	Results demonstrated mostly novelty and innovation approaches or solution that most contribute to the project **8marks**	Results demonstrated somewhat novelty and innovation approaches or solution that somewhat contribute to the project **6marks**	Results demonstrated lack in novelty and innovation approaches or solution that are largely conventional **4marks**	Results demonstrated lack in novelty and innovation approaches or solution are not new sights **2marks**
Regularity in Reporting to Guide	5	Frequency of reporting to the guide	Reporting to the guide and stick on to the timeline **5marks**	Reporting to the guide and need to stick to the timeline **4marks**	Reporting to the guide and need much more to stick on the timeline **3marks**	Reporting to the guide and need to stick to the timeline to be followed properly **2marks**	Reporting to the guide and are not stick to the timeline **1mark**
Project Report	5	Project Phase –I report(Clarity)	Report is well organized , with clear structure, cohesive presentation of information **5marks**	Report is generally well organized , but may contain some inconsistencies and less in clarity **4marks**	Report is generally well organized , but may contain some inconsistencies and clarity is unclear **3marks**	References are somewhat relevant but many are irrelevant **2marks**	Report is poorly organized or unclear comprehension and readability **1mark**

Viva	5	Handling Question and Answer	Answered all questions with proper justification **5 marks**	Answered 80% questions **4 marks**	Answered 40% questions **3 marks**	Answered 40% Questions **2 marks**	Answered 20% questions **1 mark**
Total Weightage(Marks)			**40**				

E) **Quality of completed projects/working prototypes**

Final year project exhibition Meraki is conducted for the working prototype and the report are evaluated by the committee and guest. Best Project was identified by conducting a Project exhibition and each project was evaluated. Projects are graded according to the project contribution towards attainment of POs and PSOs.

All projects carried out by the students are categorized on the basis of types of projects such as application based projects, products based, research based and review based. The summary of analysis report of the projects is given in table 2.2.3(xi) is describing the number of projects completed by students of batch categorized as product based and research based.

Table 2.2.3(xi): Analysis Support of Projects

Academic Year	Category of projects		
	Product	Research	Review
2022-23	3	1	0
2021-22	2	2	1
2020-21	0	2	1

The list of best project are shown in the below table 2.2.3(xii)

Table 2.2.3(xii): Best Projects

Sl. No.	Name of the students	Title of the project	Project Guide	POs & PSOs
1.	Dheeraj K(1RI19EE004) Dhanush S(1RI19EE003) Bhoomika R(1RI19EE002) Thejaswini B(1RI19EE011)	Automated solar based ELECTRIC GRASS CUTTER With multipurpose Robotic vehicle	Prof. Sunanda C V, & Prof.Gowtham	PO1, PO2, PO3, PO4, PO5, PO6 PO7,PO8, PO9,PO10, PO11,PSO1, PSO2,PSO3
2	Varun K(1RI17EE015) Bharath K L(1Ri16ee004) PRarthan S B(1RI 16EE012) Tashi W Bhutia(1RI17ee014)	Generation of electrical energy from noise and mechanical stress using piezo electric material	Gowtham G	PO1,PO2,PO3,PO5,PO6,PO7,PO8,PO9,PO10,PO11,PO12,PSO1,PSO2

F). Evidences of papers published /Awards received by projects, etc.

The below table 2.2.3(xiii) shows the evidences of publications, awards and recognitions received by the students.

Table 2.2.3(xiii) Evidences of publications, awards and recognitions received by the students.

Sl No	Students Name	ISBN	Journal Name	Year	Title
2022-2023					
1	Ujjal Sarkar, Afsal A, Suhaib MM	ISBN:978-93-92105-01-2	2nd International Conference on Research trends in Engineering & management, ICRTEM-22	August 2022	“3Arduino Based Driver Drowsiness Detection and Alerting System ”
2	Dheeraj K, Rupesh Kumar Sah, Sneha Joesphin, Dhanush S p	ISBN:978-93-92105-01-2	2nd International Conference on Research trends in Engineering & management, ICRTEM-22	August 2022	“Electric Grass Cutter with IoT Based Battery Monitoring System ”
2021-2022					
1	Bidya chetri, Hemanjali R, Ruichitha S, Rishig N	ISBN:978-93-62-105-005	International Conference on Research Trends In Engineering and Management (ICRTEM-21)	2021	“Wireless charging of Electric vehicle in Smart Cities "
2	ShifnaazA, Misbah falak M,Anil Kumar T	ISBN:978-93-62-105-005	International Conference on Research Trends In Engineering and Management (ICRTEM-21)	2021	“Conversion of waste heat into electricity using TEG”
2020-2021					
1	Sneha s Gowda, Nahetrivelo Mahitasoa Victoria, Ganthimari Supriya	ISSN:2249-6661	International Journal for research in applied science & Engineering Technology IJRASET	July2020	**“**Design and Development of free space optical communication system for transmitting data and voice”

Few Awards & Recognitions

Sl. No.	Project Title	Organization	Award/Recognition	Students	Year
1	Automated solar based electric grass cutter with multi-purpose robotic vehicle	KSCST, Bengaluru	Recognition	Mr. DHEERAJ K Mr. DHANUSH S Ms. BHOOMIKA R Ms. THEJASWINI B	2022-23
2	Project funded by KSCST	KSCST, Bengaluru		Dheeraj	2022

2.2.4 Initiative related to industry interaction (15)

Institute Marks : 13.00

Industry Initiatives

Every Semester the department organizes Seminars, Guest Lecture, Workshops, technical talk faculty development and Student development programs through industry experts. The table 2.2.4(i) gives MOUs with industry along with beneficiaries and table 2.2.4(ii) gives the industry experts interaction with program.

Table 2.2.4(i): MOUs with Industry along with Beneficiaries

Sl. No.	Organization	Year	Address,Contact person, Phone No./Email ID	Purpose	Events Under MOU	No. of Beneficiaries
1	Academic lift	2023 Life Long	Academic lift,Am Walpereloh 1C' Schmalkalden Thuringia, 98574 Germany +4915201420588	Trainings, Workshops,	Student Development Program	35
2	Karnataka German Technical Training Institute (KGTTI)	18/10/2023 To 17/10/2025	KGTTI, An Institute under Society for Karnataka Germnan multi skill Development Centre (KGMSDC), established by Government of Karnataka, under funding from Government of India & Government of Karnataka , Behind KennaMetal, Manjunatha Nagara,Bagulugunge,NH-4 Tumkur Road ,Benguluru 560073.	Trainings	SDP	32
3	Livewire	2018 Three Years	Doddamani, #28, HIG, 2nd floor, N V Arcade, 1st cross, 2nd stage, KHB colony, Havanur Circle, Basaveshwara Nagar, Bengaluru- 560079 Prasanna P Doddamani Ka.blr.basaveshwaranagar@livewireindia.com (mailto:Ka.blr.basaveshwaranagar@livewireindia.com)	Awareness of latest tools and techniques , Maximize placement oppotunities	SDP & Internships	38
4	GOVT. TOOL ROOM AND TRAINING CENTRE-Benguluru	2021 Life Long	GOVT. TOOL ROOM AND TRAINING CENTRE-Benguluru	Internship Program, Project Training, Workshops, Seminars, Faculty Development Programs	Technical Seminar	30
5.	3N ELECTRONICS	2021 Life Long	3N Electronics , #4,KIADB Industrial Area Satyamangala,Tumkuru,Benguluru	Industry training and visit,Research and Development, skill development program, Faculty Development Programs	Placement of trained students	32

6	LGS Trust	2022 Life Long	LGS Trust @ No.126, 1st Floor, Aadri,7th Cross, 2nd Main , Hoysalanagar, Sunkadakatte, Benguluru-560091	Industry training and Visit	Placement of trained students	35
7	MCore Tech Academy Pvt.Ltd(MCoreta)	2022 Three years	No.63,R.No#2,2 nd floor , Byreshwara Industrial estate,Hegnahalli, Near Andrahalli main road, Peenya II stage, Bnagalore - 560091	Tech talk on Industrial Technologies,Workshops, student projects, Internships, Industrial visits, Consultancy	Research and development	35
8	Eegile Automation and Engineering Services	2021 Life Long	A Main road, Hanumantha Nagara, Satyamangala, Tumku Sunkudakatte, Bangalore-560091	Industry training and visit,Research and Development, skill development program, Faculty Development Programs	Placement of trained students	32

Table 2.2.4(ii): Industry Experts Interaction with program

Sl.No	Year	Program Name	Industry Expert	Date	No. of Participants
AY:2022-23					
1	2022-23	Seminar on “Soft skills and Higher Education in abroad”	Ms.Soumya Chenna Reddy, Business Consultant, Communardo Software GmbH,Germany.	17/06/2023	62
2	2022-23	SDP on “Solar energy & it’s applications in the current scenerio”	Mahesh V Shivaashimpiger, Solar scientist ,Founder -Worlds first solar museum, Sun ray academy of renewable energy	21/11/2022 & 22/11/2022	44
AY:2021-22					
1	2021-22	SDP on “Micro-controller applications for Innovative Thinking”	Sri.Manjunath, Technical Adviser,Technosoft Solutions, Sit Extension ,Tumkur.	21/12/2020 & 22/12/2021	44

2	2021-22	FDP on “E-mobility,E-Charge,Battery Management System”	Mr.Sri Ram, Senior Sales Executive, Electro Systems Associates	17/05/2022	85
3	2021-22	Seminar on “Industry Awareness Orientation”	Mr.Anandh T, Founder & CEO, Swifterz Creative Services (LLP)	21/06/2022	15
4	2021-22	Technical talk on “5G & thinking towards 6G & final year project demonstration”	Prof. C Murali, IETE Distinguished Fellow and Former vice-president, IETE New Delhi.	20/06/2022	67
AY:2020-21					
1.	2020-21	Guest lecture on “Easy Docmentation,Execution and Presentation (PPT) using Jupyter Notebook”	Mr.Arun kumar N, Trainer and Developer, Skill Disk, Rajajinagar, Benguluru.	17/07/2021	46
2	2020-21	Guest lecture on “ opportunities in IT infrastructure Service	Mr.Naveen Chandra C Founder,3Q-Sutantra,Bengaluru	10/07/2021	46

Impact analysis of industry institute interaction

i. Acquires skills in communication, management and teamwork

ii. Apply theoretical knowledge in industrial applications

iii. Practice ethical, health safety environment and professional work culture.

iv. A few of the students who underwent internship got placed in related industry.

v. Learn preparing the document and presentation.

2.2.5 Initiative related to industry internship/summer training (15)

Institute Marks : 12.00

a) Industrial Training and Visits for students

The department organizes visits for students to relevant organizations/companies to enable the students to experience the practical implementation of theoretical knowledge in real world. This gives the main sight of the work culture ethics prevailing in Industries. The below table 2.2.5(i) shows the industry visits of the students.

Table 2.2.5(i): Industry Visits

Sl. No.	Place	Date	No of Students
1	Industrial Visit To 400KV/220KV Nelamangala Receiving Station	18th October 2022	14
2	Industrial Visit To Purlin Automation India Pvt Ltd.	17th November 2022	36
3	Industrial Visit To Sri Sairam Power Controls	17th November 2022	36
4	Industrial Visit To Arrow Power Controls	17th November 2022	36
5	Industrial Visit To Vintek Control Systems	23rd November 2022	34
6	Industrial Visit To SB Power Controls	23rd November 2022	34
7	Industrial Visit To Sri Venkateshwara Technologies	23rd November 2022	34
8	Industrial Visit 3n Electronics	27th April 2022	34
9	Visit to 2nd International Exhibition on Power, Electrical and Lighting to BIEC- Bangalore International Exhibition Center	24th June 2022	34
10	Virtual Industrial Visit MESON, GUJARAT	25th october 2021	34
11	Industrial Visit TDPS (Transmission & Distribution Power System)	23rd October 2021	34

b) **Industrial /Internship /Summer Training**

Students had undergone Industry internship/summer training of their areas of interest/ specialization at the end semester for duration of 4 to 6 weeks. In addition to this, the department organizes training programs related to emerging industry trends and job functions. External trainers from reputed industrial organizations bring the latest technological evolutions to the students. Internship details carried at industry are shown in below table 2.2.5(ii).

Table 2.2.5(ii): Internship Details Carried at Industry

Sl. No	Title of the Internship	Name of the partnering institution/ industry /research lab with contact details	Duration (From-To)	Student Name
1	Python programming and application projects	AQUAMEZ PVT.LIMITED, BENGULURU	11/10/2022 to 31/10/2022	Aniketh
2	Training on study of 400/220Kv substation equipments	KPTCL, BENGULURU	12/10/2022 to 30/10/2022	Anusha G R
3	Training on study of 400/220Kv substation equipments	KPTCL, BENGULURU	13/10/2022 to 3 0/10/2022	Bharath Kumar G
4	Python programming and application projects	AQUAMEZ PVT.LIMITED, BENGULURU	11/10/2022 to 31/10/2022	Chandra Prakash Y A
5	Web Design and development	PERVAM CONSULTECH PVT LIMITED, BENGULURU	10/10/2022 to 29/10/2022	Devraj Rana
6	Python programming and application projects	AQUAMEZ PVT.LIMITED, BENGULURU	11/10/2022 to 31/10/2022	Jayanth H M
7	Office Pakage	Dynamic education complex morang pvt limited, BENGULURU	12/10/2022 to 30/10/2022	Manish Shresta
8	Web Design and development	PERVAM CONSULTECH PVT LIMITED, BENGULURU	10/10/2022 to 29/10/2022	Manoj Gowda K J
9	Python programming and application projects	AQUAMEZ PVT.LIMITED, BENGULURU	11/10/2022 to 31/10/2022	Nandana Ganesh

10	Python programming and application projects	AQUAMEZ PVT.LIMITED, BENGULURU	11/10/2022 to 31/10/2022	Natraj
11	Web Design and development	PERVAM CONSULTECH PVT LIMITED, BENGULURU	10/10/2022 to 29/10/2022	Pandey Aman Mahendra Prasad
12	Office Pakage	Aashif Computer Center, Benguluru	11/10/2022 to 31/10/2022	Phuleshwar Yadav
13	Training on study of 400/220Kv substation equipments	KPTCL, BENGULURU	12/10/2022 to 30/10/2022	Prajwal Bhandari N
14	Web Design and development	PERVAM CONSULTECH PVT LIMITED, BENGULURU	15/05/2023 to 03/06/2023	Prajwal C G
15	Electronic Components Inventory Management	NANATOM, BENGULURU	11/10/2022 to 31/10/2022	S Anand
16	Web Design and development	PERVAM CONSULTECH PVT LIMITED, BENGULURU	10/10/2022 to 29/10/2022	Shirsha Pal
17	Web Design and development	PERVAM CONSULTECH PVT LIMITED, BENGULURU	10/10/2022 to 29/10/2022	Sneha P M
18	Electronic Components Inventory Management	NANATOM, BENGULURU	11/10/2022 to 31/10/2022	Tharun K
19	Electronic Components Inventory Management	NANATOM, BENGULURU	11/10/2022 to 31/10/2022	Ullas M S

20	Training on study of 400/220Kv substation equipments	KPTCL, BENGULURU	12/10/2022 to 30/10/2022	Vandana A
21	Training on study of 400/220Kv substation equipments	KPTCL, BENGULURU	12/10/2022 to 30/10/2022	Varshitha B S
22	Training on study of 400/220Kv substation equipments	KPTCL, BENGULURU	12/10/2022 to 30/10/2022	Vasanth Kumar G
23	Electrical C and R panel manufacturing plant and industrial feeder protection using SIEMENS IED – 7SJ80	MCORE TECH ACADEMY pvt.ltd, BANGALORE	22-08-2022 to 29-09-2022	Afsal A
24	Electrical C and R panel manufacturing plant and industrial feeder protection using SIEMENS IED – 7SJ80	MCORE TECH ACADEMY pvt.ltd, BANGALORE	22-08-2022 to 29-09-2022	Rupesh Kumar Sah
25	Electrical C and R panel manufacturing plant and industrial feeder protection using SIEMENS IED – 7SJ80	MCORE TECH ACADEMY pvt.ltd, BANGALORE	22-08-2022 to 29-09-2022	Bhoomika R
26	Electrical C and R panel manufacturing plant and industrial feeder protection using SIEMENS IED – 7SJ80	MCORE TECH ACADEMY pvt.ltd, BANGALORE	22-08-2022 to 29-09-2022	Shankar kumar Yadav
27	IOT Based Alcohol and accident detuction system	Karunadu Technologies Private Limited,BANGALORE	22-08-2022 to 29-09-2022	Firdoush Ansary
28	Electrical C and R panel manufacturing plant and industrial feeder protection using SIEMENS IED – 7SJ80	MCORE TECH ACADEMY pvt.ltd, BANGALORE	22-08-2022 to 29-09-2022	Raushan Kumar Shrivastava
29	IOT Based coal mine safety and monitoring system	Karunadu Technologies Private Limited,BANGALORE	22-08-2022 to 29-09-2022	UJJAL SARKAR

30	Artificial EYE for blind people using ultrasonic vibrator glove	Karunadu Technologies Private Limited,BANGALORE	22-08-2022 to 29-09-2022	Imran alam
31	Electrical C and R panel manufacturing plant and industrial feeder protection using SIEMENS IED – 7SJ80	MCORE TECH ACADEMY pvt.ltd, BANGALORE	22-08-2022 to 29-09-2022	Thejaswini B
32	Retrofitment of IC engine vehicle	Starya Mobility Private Limited,BANGALORE	22-08-2022 to 29-09-2022	Dheeraj K
33	Basic of PLC and mechatronics	Government Tool room and Training centre, Bnagalore	22-08-2022 to 29-09-2022	Dhanush s
34	Electrical C and R panel manufacturing plant and industrial feeder protection using SIEMENS IED – 7SJ80	MCORE TECH ACADEMY pvt.ltd, BANGALORE	22-08-2022 to 29-09-2022	Sneha Joesphin
35	IOT Based air pollution monitoring system	Karunadu Technologies Private Limited,BANGALORE	22-08-2022 to 29-09-2022	Suhaib M M
36	Electrical C and R panel manufacturing plant and industrial feeder protection using SIEMENS IED – 7SJ80	MCORE TECH ACADEMY pvt.ltd, BANGALORE	22-08-2022 to 29-09-2022	Bhola Chaudhary
37	IOT Based Traffic light control system	Karunadu Technologies Private Limited,BANGALORE	22-08-2022 to 29-09-2022	Hussein Ali Hussein Mursal

Impact Analysis of Industrial Training

Internships in the industries endow the students with the following benefits

1. Hands on experience provide better understandings of the basic concepts. Students learn the industrial standards, current trends and practices.
2. Real environment exposure enhances student's learning. Implementation and testing becomes easier.
3. Helps in building inter personal skills and teamwork.
4. Students can see live project site and they gain practical knowledge.
5. The industry standards and workplace culture is exposed to students and they also understand the importance of being responsible and meeting the deadlines. Communication skills of the students are improved.
6. Students are inspired to work hard and get placed.

C.**Students feedback on initiatives**

After each program , coordinator takes the student feedback on the programs like workshops, seminar, student development program, Awareness programs and industrial visits.Feedback is considered to do further improvement for the same. Parameters considered for the calculation of student feedback are shown in table 2.2.5(iii).

PARAMETERS	SCALES				
Did the Event Meet Your Expectations?	5	4	3	2	1
The quality of instruction was good	5	4	3	2	1
Participation and interaction were encouraged	5	4	3	2	1
Adequate time was provided for questions and discuss	5	4	3	2	1
really enjoyed this event	5	4	3	2	1
The Audio and Video facilities were clearly audible and visible	5	4	3	2	1
Materials distributed are useful	5	4	3	2	1
The programme was well paced with the allotted time	5	4	3	2	1
Overall event was excellent	5	4	3	2	1
Would you recommend this event to others?	5	4	3	2	1

Table 2.2.5(iii) Student Feedback on initiative

3 COURSE OUTCOMES AND PROGRAM OUTCOMES (120)

Total Marks 116.00

Define the Program specific outcomes

3.1 Establish the correlation between the courses and the Program Outcomes (POs) and Program Specific Outcomes (PSOs) (20)

Total Marks 20.00

:

PSO1	Graduates will be able to analyse, design and develop solutions for the problems and to apply the technical Knowledge in Power Systems and Renewable Energy Systems.
PSO2	Graduates will be able to design Power Electronic Converters and develop solutions for the problems in Analog and Digital Electronic Circuits.
PSO3	Graduates will be able to solve problems of Power system and Power Electronics using software tools and also to apply ethical principles, management skills and responsibilities.

3.1.1 Course Outcomes(COs)(SAR should include course outcomes of one course from each semester of study, however, should be prepared for all courses and made available as evidence, if asked) (5)

Institute Marks : 5.00

Note : Number of Outcomes for a Course is expected to be around 6.

Course Name :	C2 02	Course Year :	2019-2020

Course Name	Statements
C2 02.1	Understand the basic concepts, basic laws and methods of analysis of DC and AC networks and reduce the complexity of network using source shifting, source transformation and network reduction using transformations.
C2 02.2	Solve complex electric circuits using network theorems.
C2 02.3	Discuss resonance in series and parallel circuits and also the importance of initial conditions and their evaluation.
C2 02.4	Synthesize typical waveforms using Laplace transformation.
C2 02.5	Solve unbalanced three phase systems and also evaluate the performance of two port networks.

Course Name :	C2 15	Course Year :	2019-2020

Course Name	Statements
C2 15.1	Use different coordinate systems , Coulomb’s Law and Gauss Law for the evaluation of electric fields produced by different charge configurations.
C2 15.2	Calculate the energy and potential due to a system of charges & Explain the behavior of electric field across a boundary conditions.
C2 15.3	Explain the Poisson’s, Laplace equations and behavior of steady magnetic fields.
C2 15.4	Explain the behavior of magnetic fields and magnetic materials.
C2 15.5	Assess time varying fields and propagation of waves in different media.

Course Name :	C3 02	Course Year :	2020-21

Course Name	Statements
C3 02.1	Outline the 8051 architecture, registers, internal memory organization, addressing modes.
C3 02.2	Discuss 8051 addressing modes, instruction set of 8051, accessing data and I/O port programming.
C3 02.3	Develop 8051C programs for time delay, I/O operations, I/O bit manipulation, logic and arithmetic operations, data conversion and timer/counter programming.
C3 02.4	Summarize the basics of serial communication and interrupts, also develop 8051 programs for serial data communication and interrupt programming.
C3 02.5	Program 8051 to work with external devices for ADC, DAC, Stepper motor control, DC motor control, Elevator control.

Course Name :	C3 13	Course Year :	2020-21

Course Name	Statements
C3 13.1	Apply DFT and IDFT to perform linear filtering techniques on given sequences to determine the output.
C3 13.2	Apply fast and efficient algorithms for computing DFT and inverse DFT of a given sequence
C3 13.3	Design and realize infinite impulse response Butterworth and Chebyshev digital filters using impulse invariant and bilinear transformation techniques.
C3 13.4	Develop a digital IIR filter by direct, cascade, parallel, ladder and FIR filter by direct, cascade and linear phase methods of realization
C3 13.5	Design and realize FIR filters by use of window function and frequency sampling method.

Course Name :	C4 02	Course Year :	2021-22

Course Name	Statements
C4 02.1	Discuss performance of protective relays, components of protection scheme and relay terminology over current protection.
C4 02.2	Explain the working of distance relays and the effects of arc resistance, power swings, line length and source impedance on performance of distance relays.
C4 02.3	Discuss pilot protection, construction, operating principles and performance of differential relays and discuss protection of generators, motors, transformer and Bus Zone Protection.
C4 02.4	Explain the construction and operation of different types of circuit breakers.
C4 02.5	Outline features of fuse, causes of overvoltages and its protection, also modern trends in Power System Protection.

Course Name :	C4 11	Course Year :	2021-22

Course Name	Statements
C4 11.1	Describe various levels of controls in power systems, architecture and configuration of SCADA
C4 11.2	Develop and analyze mathematical models of Automatic Load Frequency Control.
C4 11.3	Develop mathematical model of Automatic Generation Control in Interconnected Power system
C4 11.4	Discuss the Control of Voltage , Reactive Power and Voltage collapse.
C4 11.5	Explain security, contingency analysis, state estimation of power systems.

3.1.2 CO-POmatrices of courses selected in 3.1.1(Six matrices to be mentioned; one per semester from 3rd to 8th semester) (5) Institute Marks : 5.00

1 . course name : C202

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C202.1	2	3	-	-	-	-	-	-	-	-	-	-
C202.2	2	3	-	-	-	-	-	-	-	-	-	-
C202.3	2	3	-	-	-	-	-	-	-	-	-	-
C202.4	3	3	-	-	-	-	-	-	-	-	-	-
C202.5	2	2	-	-	-	-	-	-	-	-	-	-
Average	**2.20**	**2.80**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2 . course name : C215

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C215.1	3	2	-	-	-	-	-	-	-	-	-	-
C215.2	3	2	-	-	-	-	-	-	-	-	-	-
C215.3	2	3	-	-	-	-	-	-	-	-	-	-
C215.4	2	3	-	-	-	-	-	-	-	-	-	-
C215.5	2	3	-	-	-	-	-	-	-	-	-	-
Average	**2.40**	**2.60**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3 . course name : C302

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C302.1	2	-	-	-	-	-	-	-	-	-	-	2
C302.2	2	2	-	-	2	-	-	-	-	-	-	2
C302.3	3	2	-	-	2	-	-	-	-	-	-	2
C302.4	3	2	-	-	-	-	-	-	-	-	-	2
C302.5	3	3	-	-	-	-	-	-	-	-	-	2
Average	**2.60**	**2.25**	**0.00**	**0.00**	**2.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**2.00**

4 . course name : C313

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C313.1	2	3	-	-	-	-	-	-	-	-	-	-
C313.2	3	2	2	-	-	-	-	-	-	-	-	-
C313.3	3	2	2	-	-	-	-	-	-	-	-	-
C313.4	3	2	2	-	-	-	-	-	-	-	-	-
C313.5	2	3	-	-	-	-	-	-	-	-	-	-
Average	**2.60**	**2.40**	**2.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

5 . course name : C402

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C402.1	3	-	-	-	-	-	-	-	-	-	-	-
C402.2	2	2	-	-	-	2	-	-	-	-	-	-
C402.3	3	-	-	-	-	2	-	-	-	-	-	-
C402.4	3	-	-	-	-	2	-	-	-	-	-	-
C402.5	2	2	-	-	-	2	2	-	-	-	-	2
Average	**2.60**	**2.00**	**0.00**	**0.00**	**0.00**	**2.00**	**2.00**	**0.00**	**0.00**	**0.00**	**0.00**	**2.00**

6 . course name : C411

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C411.1	2	-	-	-	-	-	-	-	-	-	-	2
C411.2	3	3	2	-	-	-	-	-	-	-	-	2
C411.3	2	2	-	-	-	-	-	-	-	-	-	2
C411.4	2	2	-	2	-	-	-	-	-	-	-	-
C411.5	2	2	-	2	-	-	-	-	-	-	-	-
Average	**2.20**	**2.25**	**2.00**	**2.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**2.00**

1 . Course Name : C202

Course	PSO1	PSO2	PSO3
C202.1	2	-	-
C202.2	2	-	-
C202.3	2	-	-
C202.4	3	-	-
C202.5	2	-	-
Average	**2.20**	**0.00**	**0.00**

2 . Course Name : C215

Course	PSO1	PSO2	PSO3
C215.1	3	-	-
C215.2	3	-	-
C215.3	2	-	-
C215.4	2	-	-
C215.5	2	-	-
Average	**2.40**	**0.00**	**0.00**

3 . Course Name : C302

Course	PSO1	PSO2	PSO3
C302.1	2	-	-
C302.2	2	2	-
C302.3	2	2	-
C302.4	2	-	-
C302.5	2	-	-
Average	**2.00**	**2.00**	**0.00**

4 . Course Name : C313

Course	PSO1	PSO2	PSO3

C313.1	2	-	-
C313.2	3	-	-
C313.3	3	-	-
C313.4	3	-	-
C313.5	2	-	-
Average	**2.60**	**0.00**	**0.00**

5 . Course Name : C402

Course	PSO1	PSO2	PSO3
C402.1	2	-	-
C402.2	2	-	-
C402.3	2	-	-
C402.4	2	-	-
C402.5	2	-	2
Average	**2.00**	**0.00**	**2.00**

6 . Course Name : C411

Course	PSO1	PSO2	PSO3
C411.1	2	-	2
C411.2	3	-	2
C411.3	2	-	2
C411.4	2	-	-
C411.5	2	-	-
Average	**2.20**	**0.00**	**2.00**

3.1.3 - A Program level Course-PO matrix of all courses INCLUDING first year courses (10)

Institute Marks : 10.00

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C101	3	2.2	1.75	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	2.2
C102	3	2.2	1.75	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	2.2

C103	3	2.2	1.75	PO4	2.5	PO6	PO7	PO8	PO9	PO10	PO11	2.2
C104	3	1.5	1.5	PO4	PO5	1.3	PO7	PO8	PO9	1.2	PO11	PO12
C105	3	2	2	PO4	PO5	PO6	2	PO8	PO9	PO10	PO11	2
C106	3	3	3	PO4	PO5	PO6	PO7	2	2	PO10	PO11	PO12
C107	2.25	2.25	2	PO4	PO5	PO6	PO7	PO8	1	1	PO11	PO12
C108	PO1	PO2	1	PO4	PO5	2.5	PO7	PO8	1.6	2.6	PO11	1.4
C111	3	2.2	2.25	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	2
C112	3	2.8	2.6	1	PO5	PO6	PO7	3	3	PO10	1	2
C113	2.2	2	3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C114	3	2.2	2.25	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	2
C115	3	3	PO3	PO4	3	1	PO7	PO8	PO9	3	PO11	2.33
C116	3	3	3	PO4	PO5	PO6	PO7	2	2	PO10	PO11	PO12
C117	2.25	2.25	PO3	PO4	PO5	PO6	PO7	PO8	1	1	PO11	PO12
C118	PO1	PO2	1	PO4	PO5	2.5	PO7	PO8	1.7	2.6	PO11	1.4
C201	2.8	2	2	PO4	PO5	PO6	PO7	PO8	2	2	1.8	1.8
C202	2.2	2.8	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C203	2	3	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C204	2	2.6	3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C205	2.2	2.4	3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C206	2.2	2.4	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C207	3	3	PO3	2	PO5	PO6	PO7	PO8	3	2	PO11	PO12
C208	3	3	3	PO4	PO5	PO6	PO7	PO8	2.8	3	PO11	PO12
C211	3	2.2	2	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	2
C212	2.4	2	PO3	PO4	PO5	2.2	2.25	PO8	PO9	PO10	PO11	2
C213	2	2.8	PO3	PO4	PO5	2	3	PO8	PO9	PO10	PO11	2
C214	2	3	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C215	2.4	2.6	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C216	2.4	2.6	2	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C217	2	3	PO3	PO4	PO5	PO6	PO7	PO8	2	2	PO11	PO12

C218	2	2.75	2.75	PO4	PO5	PO6	PO7	PO8	2	2	PO11	PO12
C301	PO1	PO2	PO3	PO4	PO5	2.5	PO7	2.2	2.6	2.6	2	2.2
C302	2.6	2.25	PO3	PO4	2	PO6	PO7	PO8	PO9	PO10	PO11	2
C303	2	2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	2
C304	2.4	3	PO3	PO4	2	PO6	PO7	PO8	PO9	PO10	PO11	2
C3051	2	3	3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C3065	2.4	2.75	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	2
C307	3	PO2	2.6	PO4	3	PO6	PO7	PO8	2.6	2	PO11	2
C308	3	PO2	2.4	PO4	PO5	PO6	PO7	PO8	2.4	3	PO11	2
C309	PO1	PO2	PO3	PO4	PO5	PO6	3	PO8	PO9	PO10	PO11	PO12
C311	2.6	2.75	2.5	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C312	2.4	3	PO3	3	PO5	PO6	PO7	PO8	PO9	PO10	PO11	2
C313	2.6	2.4	2	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C3143	2.4	3	2	PO4	3	2	2	PO8	PO9	PO10	PO11	2
C315	2.6	2.75	2.5	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C3164	3	2.4	3	PO4	3	PO6	PO7	PO8	3	2	PO11	2
C317	2	3	2	PO4	2.8	PO6	PO7	PO8	2	2	PO11	2
C318	1	1	2	1	2	3	2	2	3	3	PO11	2
C401	2.8	3	2	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	2
C402	2.6	2	PO3	PO4	PO5	2	2	PO8	PO9	PO10	PO11	2
C4031	2.8	PO2	PO3	PO4	PO5	2.6	2.8	PO8	PO9	PO10	PO11	2
C4042	2	3	2.3	3	PO5	PO6	PO7	PO8	PO9	PO10	PO11	3
C4053	3	PO2	PO3	PO4	PO5	2.6	2.8	PO8	PO9	PO10	PO11	2
C406	PO1	3	3	2	3	PO6	PO7	PO8	3	2	PO11	2
C407	PO1	PO2	PO3	2.14	PO5	PO6	PO7	PO8	2	2	PO11	2
C408	3	3	3	3	3	3	3	3	3	3	PO11	2.75
C411	2.2	2.25	2	2	PO5	PO6	PO7	PO8	PO9	PO10	PO11	2
C4124	3	1	1	2	1	2	1	1	PO9	PO10	PO11	PO12
C413	3	3	3	3	3	3	3	3	3	3	3	2.8

C414	3	2	3	3	2	3	3	3	3	3	PO11	3
C415	PO1	PO2	PO3	2	PO5	PO6	PO7	2	2.8	2.5	3	2

3.1.3 - B Program level Course-PSO matrix of all courses INCLUDING first year courses :

Course	PSO1	PSO2	PSO3
C101	2	1	1.6
C102	2	1	1.6
C103	2	1	PSO3
C104	1	PSO2	PSO3
C105	3	2	PSO3
C106	PSO1	PSO2	PSO3
C107	PSO1	PSO2	1
C108	PSO1	PSO2	PSO3
C111	2	2	2.2
C112	PSO1	PSO2	PSO3
C113	PSO1	PSO2	1
C114	2	2	2.2
C115	3	PSO2	PSO3
C116	PSO1	PSO2	PSO3
C117	PSO1	PSO2	1
C118	PSO1	PSO2	PSO3
C201	2	1.8	1.8
C202	2.2	PSO2	PSO3
C203	3	PSO2	PSO3
C204	3	PSO2	PSO3
C205	2.2	PSO2	PSO3
C206	2	PSO2	3
C207	3	PSO2	2
C208	2.8	2	2
C211	2	1.6	1.8

C212	3	PSO2	2.2
C213	2.6	PSO2	2
C214	3	PSO2	PSO3
C215	2.4	PSO2	PSO3
C216	2.2	PSO2	PSO3
C217	2.2	PSO2	PSO3
C218	3	PSO2	PSO3
C301	PSO1	PSO2	2
C302	2	2	PSO3
C303	2	PSO2	2
C304	2	PSO2	PSO3
C3051	2	PSO2	3
C3065	2.8	PSO2	2
C307	2	3	PSO3
C308	3	PSO2	PSO3
C309	PSO1	PSO2	PSO3
C311	2.6	PSO2	PSO3
C312	2.4	PSO2	PSO3
C313	2.6	PSO2	PSO3
C3146	2.4	3	PSO3
C315	2.6	PSO2	PSO3
C3164	3	3	PSO3
C317	PSO1	2.8	PSO3
C318	1	1	2
C401	3	PSO2	2
C402	2	PSO2	2
C4031	2	PSO2	2
C4042	3	PSO2	3
C4053	2	PSO2	2

C406	3	3	2
C407	3	PSO2	PSO3
C408	3	3	3
C411	2.2	PSO2	2
C4124	PSO1	PSO2	PSO3
C413	3	3	3
C414	3	2	PSO3
C415	3	2.33	3

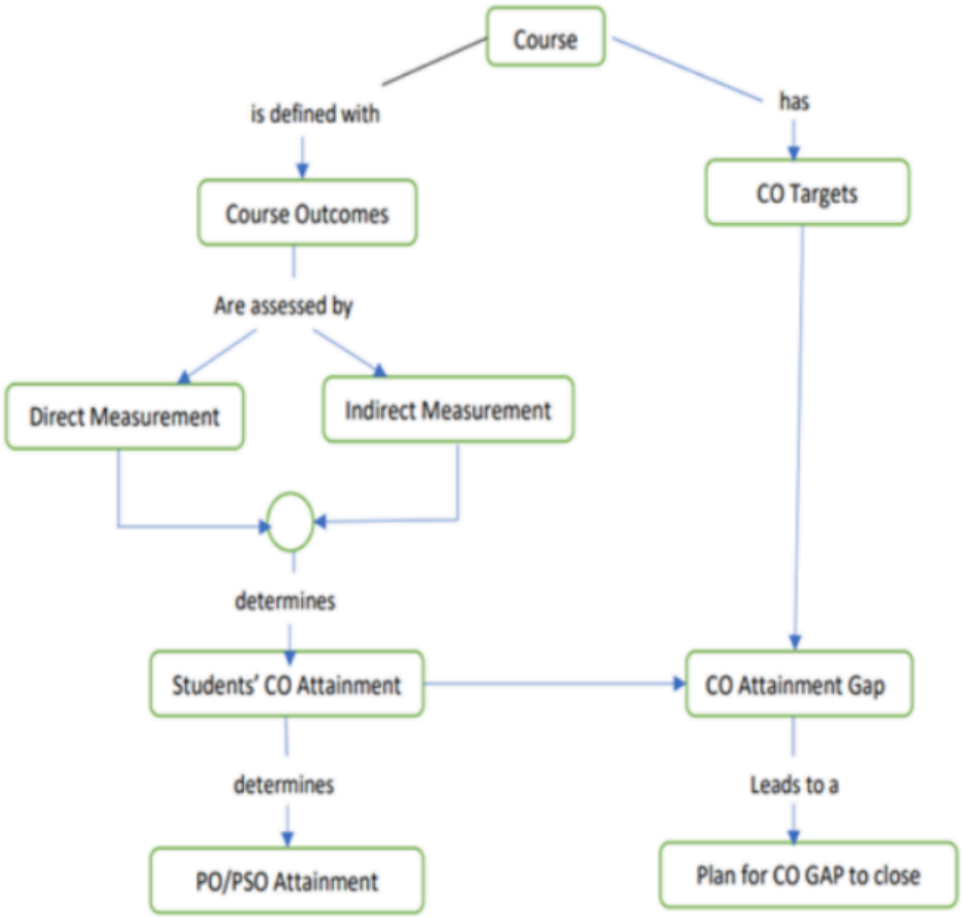
3.2 Attainment of Course Outcomes (50) Total Marks 47.00

3.2.1 Describe the assessment processes used to gather the data upon which the evaluation of Course Outcome is based (10)

Institute Marks : 10.00

The information on CO assessment is explained in detail under the following sections.

Process in CO & PO Assessment:



The University defines the courses with course outcome for each program.

The faculty handling the Course computes outcomes by direct methods using Continuous Internal Evaluation and indirectly through course exit survey at the end of the semester and also define a CO attainment target.

The faculty handling the course computes CO attainment and checks for attainment level in comparison with the set target attainment.

This CO attainment level is compared with set target to check whether the COs target are attained or not. If any CO is not attained, prepares a course gap suggest a plan to attain the CO in future.

If CO target is met then the target may be redefined if needed.

Steps in CO computation:

1 The course outcomes are mapped to the program outcomes with correlations leve1 of 1- Low ,2 –Medium, 3- High Correlation to measure how well the program outcomes are achieved.

2 Course Articulation matrix for individual course are prepared by concerned faculty incharge.

3 Course gap is prepared by faculty by taking input from the faculty who handled the course in previous semester and the content that is in need for industry but not addressed in and prepare an action plan to fill the gap.

4 The Students' performance in courses are evaluated as per the regulation defined by the university. The assessment tools defined are continuous Internal Evaluation(CIE) with 60% weightage and Semester End Examinations (SEE) with 40% weightage are used as assessment tools to measure the attainment of COs.

5 The continuous internal evaluation comprises Internal Assessment, assignment and course enrichment activities which are mapped to COs to assess the learning levels of the students.

6 Student course satisfaction survey – course exit survey are taken by faculty handling the course on completion of the course to assess the learning levels.

7 Computation of CO, PO and PSO is carried by direct and indirect assessment tools. In the overall attainment of CO,PO & PSO, 80% weightages are contributed by attainment calculated from direct assessment and 20% weightage from attainment calculated from indirect assessment.

8 Computation of CO assessment tools.

The methods to assess the Course Outcomes are categorized into Direct measurements and Indirect measurement.

Direct Measurements:

Direct Method is performed based on student activities like internal assessment, assignments, Lab tutorials, External theory exam, External Practical Exam, Seminars, Project work, Internship and seminar viva.

Assessment Tool	Description
Theory course	
Continuous Internal Assessment	The assessment tool which is held thrice a semester one at the end of 6, 10 and 14 weeks of each semester.
	There are 3 sessional examinations conducted for every theory course for which the question papers are prepared by using Blooms taxonomy as per the course articulation matrix.
	To ensure the quality of Internal Assessment the questions papers are scrutinized by committee set by the department. The committee checks the quality of question, weightage and relevance of COs mapped and scheme of evaluation.
	On approval of committee the question papers are printed for IA Conduction.
	The quality of evaluation is verified by committee post evaluation to check the attainment levels.

Self Learning Assessment	Assignment : Assignments can be given as answer from Open book, quizzes, Seminars, Survey based Article evaluations, etc.
	The course coordinator will fix any of the above corresponding to the course outcomes.
	All the Assignment questions/quiz/seminar are mapped to CO and are evaluated for assessment .
	Quiz
	Quizzes will be conducted during regular class hours. Surprise quizzes are conducted in the respective classes and the evaluation is done based on their performances. After the quiz, the answers will be discussed in the respective class itself.
	Seminar
	It should be an individual student seminar. Seminar topics are well
	planned as per the course outcomes of the concerned
	Survey based Article Evaluation
	The topic will be given to student to prepare survey based case studies as discussed by course coordinator
Semester End Examination	Semester End examination is a metric for assessing the attainment of COs for a particular course at the end of the semester. End Semester questions are framed by university consider all COs for assessment
Laboratory courses	
Continuous Internal Assessment	The internal mark for laboratory courses is awarded based on observation, experimentation, interpretation, submission of lab record , viva voce/quiz, and model examination. The laboratory courses are evaluated as per the set rubrics and CO Statement.
Semester End Examination	The external examination for laboratory courses is conducted at end of the semester for 3 hours. It is evaluated based on set parameter framed by the university for the corresponding lab course.
Seminar/Project/Intership	
Continuous Assessment	The Seminar/ Project in the final year shall be based on the evaluation at the end of the 8th semester by a committee consisting of three senior faculty members of the Department, one of whom shall be the project/seminar/internship guide/Co-ordinator.
	The students internship evaluation is based on the evaluation of Industry member where the students have undergone internship and committee consisting of three senior faculty members of the Department.

Viva –voce of Internship/Project	The project/Internship will be evaluated by the external and internal examiners appointed by the Visvesvaraya Technological University. The appointed examiners will observe the presentation and demonstration of the project work followed by Viva-Voce and allocates the marks as per the set evaluation parameter by university.

This method proves to be a strong evidence of student learning as it captures the continuous work of students.

In direct measurement , 40% weightage is given to Semester end examination and 60% weightage is given to continuous internal assessment.

Indirect Measurements:

1 Indirect attainment of COs can be determined from the course exit survey.

2 The percentage of satisfaction level obtained through course end survey is considered as Indirect attainment.

3 The exit survey form should be designed to get feedback from students on all the COs.

Process in Indirect Assessment :

A set of questions will be framed by the course coordinator.

Each question will be mapped to a Course outcome.

At the end of the semester, the faculty handling the course shares the survey question to the students and will be asked to enter their rating for the course they learnt.

The analysis of the course end survey will be carried and 20% of that will be considered for the total course attainment calculation.

Assessment Procedure for CO Attainment

The CO attainment evaluation technique is based on direct and indirect assessment. The direct evaluation is entirely based on the examinations, whereas the indirect assessment is based on the survey/report completed for the specific course. In overall CO attainment computation, the Direct assessment carries 80% weightage and indirect assessment carries 20% weightage.

Level of Correlation/Mapping Factor:

It indicates to what extent a certain component mapped with the other. The correlation between CO - PO describes the level at which a particular PO is addressed through a CO.

3 - indicates Substantial/High mapping (high correlation towards attainment)

2 - indicates Moderate mapping (moderate correlation towards attainment)

1 - indicates Low mapping (low correlation towards attainment)

CO Attainment computation target

Targets are quantized into certain levels, 3 being the most common number of levels.

CO Attainment targets are finalized by the course coordinator before commencing course delivery in a semester.

Here Course attainment are set by considering University Result. As per university regulation for the batch.

1 To pass in Theory/Drawing Examination 35 % scoring in Semester end examination, 40 % Score in Continuous Internal Assessment and sum of the CIE and SEE in total 40% marks are prescribed.

2	To pass in Laboratory/project/Miniproject/Internship/Seminar Examination minimum of 50% marks score in Semester end examination, 40 % Score in Continuous Internal evaluation.
3	Any Who meets the above criteria will get letter of grade from S to E and will be considered as pass.

By considering the evaluation pattern of university the minimum competency target for attainment calculation is set as 40% and levels of attainment is computed as stated below:

Level 3: 60 % Students scoring >= 40% of max marks allocated to CO

Level 2 : 50% Students scoring >= 40% of max marks allocated to CO

Level 1 : 40 % Students scoring >= 40% of max marks allocated to CO

Level 0 : 39 % Students scoring <= 40% of max marks allocated to CO

The expected Proficiency % to attain a CO can be set by faculty handling the course.

3.2.2 Record the attainment of Course Outcome of all courses with respect to set attainment levels (40)

Institute Marks : 37.00

Program shall have set Course Outcome attainment levels for all courses.

CALCULATION OF CO ATTAINMENT

Steps to compute CO attainment is stated below

Step 1: For every course, 4-6 course outcomes (CO) are defined and mapped to Program outcomes (PO) on a mapping strength of 1 to 3. The course Articulation matrix is prepared for all the courses and the average mapping of each PO is calculated and CO attainment targets are finalized by the faculty handling the course.

Step 2: The faculty prepares question paper and maps each question with CO that are scrutinized by scrutiny committee, on approval, IA Questions are printed and circulated for IA test conduction.

Step 3: For every CIE, CO computation is carried in the template shared and as per the procedure stated in step a to j.

Enter maximum marks for each question and its corresponding CO in the relevant columns

Enter question wise mark for each student, Mark zero(0) if the student failed to answer for mandatory questions. Leave blank only for choice questions.

The total marks are computed and stored in sheet specified as IA in the corresponding column

Compute the “Number of students attempted” the questions for each question.

Compute the “Number of students who score >= competence(c) % marks” for each question

Find the Percentage of students who scores >=competence % for each question

%of students who got more than C % of marks = No. of students who got more than C% of marks / No. of students attempted the Question

Compute the average percentage of students who got more than C % of marks for each CO

Compute the CO attainment for each CIE using the criterion as stated in step i.

CO Attainment Level =

3, if (the avg. % of students who got >=C% for each CO) >= 60 %

2, if (the avg. % of students who got >=C% for each CO) >=50%

1, if (the avg. % of students who got >=C% for each CO) >=40%

0, if (the avg. % of students who got >=C% for each CO) < 40%

This defines the minimum competence target and attainment level. The faculty handling the course can set the target based on the input received from the faculty handled the course for previous batch or taking average of mapping strength that are mapped.

Similar way the assignment question, quiz/seminar are mapped to COs and assigned marks and obtained marks entered for computation of CO attainment as per set condition stated in step i.

Step4. Enter the marks earned by the students in Semester End Examinations. Also compute the percentage of students who got more than 40% of marks in Semester End Examinations

Step5. Course Exit Survey will be conducted at the end of the semester and analysis is carried out for each Course. The exit survey feedback include questionnaire for all COs of the course. The course exit survey considered as Indirect CO attainment.

Step 6: Calculate Consolidated CO attainment for each Continuous Internal Evaluation (CIE), assignment, quiz/seminar by taking averaged summation of all evaluation carried.

Step 7: The direct CO attainment is computed by considering 40% of SEE CO attainment and 60 % of Consolidated CIE CO attainment for the batch 2018 batch is computed as

Direct CO Attainment = 60% of CIE + 40% of SEE

Step 8: Final CO Attainment is calculated as:

Final CO Attainment = 80% of Direct Attainment + 20% of Indirect Attainment

Step 9: Final CO Attainment Level is calculated as:

Final attainment level =3, if final Attainment Score >= 60%

= 2 if 50% <= final Attainment Score < 60%

= 1 if 40% <= final Attainment Score < 50%

=0, if (the avg. % of students who got >=C% for each CO) < 40%

Step 10: CO Attainment Level Comparison

The Final CO attainment level is compared with set target attainment level for Each COs

CO Attainment Process:

The attainment process through internal assessments:

The Question paper for internal assessment tests are designed considering the course outcomes of each course.

The Target levels of attainment for internal tests are determined based on below conditions.

Internal Attainment Target:

Target Level	Target conditions
3	60% of students scoring greater than 40%
2	50% of students scoring greater than 40%
1	40% of students scoring greater than 40%

The marks obtained for each CO's of each student in all the 3 internal tests are tabulated.

The percentage of CO attainment of each student is determined and the count of students having more than 60% in each CO is obtained.

The attainment level of 1,2,3 is mapped to the percentage based on the target level.

The attainment process through external theory exams:

The Target levels of attainment for external exam is determined based on below conditions.

External Attainment Target

Target Level	Target conditions
3	60% of students scoring greater than subject external marks average
2	50% of students scoring greater than subject external marks average
1	40% of students scoring greater than subject external marks average

1 The external theory marks of each course for all the students are recorded.

2 The average mark of the external exam of each course is determined.

3 Percentage of number of students above the average is obtained and the attainment level of 1, 2, or 3 is mapped to the percentage based on the target level.

Overall Course Outcome Attainment:

1 Overall CO attainment is calculated by assigning a weightage of 60% to external theory exams and 40% to internal assessment.

2 CO attainment target level is chosen by the expert committee.

3 If the targets are not achieved by a course, the department carries out various gap analysis/remedial techniques like:

a . Remedial Classes for weak students

b. Tutorials

c. Preparation of question banks with previous year university questions.

The table 3.2.2(i) shows the attainment of Course Outcome of all courses with set attainment levels. Table 3.2.2(i) Attainment of Course Outcome of all courses with set attainment levels

CO ATTAINED										
SL. No	Subject Name	Subject Code	Target Set	CO1	CO2	CO3	CO4	C05	C06	C07
	2nd Year									
1.	Engineering Mathematics – III	18MAT31	1.8	2.08	2.4	2.3	2.2	2.2	-	-
2.	Electric Circuit Analysis-C202	18EE32	1.8	3	3	2.4	2.8	2.6	-	-
	Transformers and Generators-C203	18EE33	1.8	0.6	0.7	0.7	0.7	0.7		

3	Analog Electronic Circuits-C204	18EE34	1.8	2.3	1.6	1.6	1.3	1.9	-	-
4	Digital System Design-C205	18EE35	1.8	0.2	3	3	1.8	1.8	-	-
5	Electrical and Electronic Measurements-C206	18EE36	1.8	0.2	3	3	1.8	1.8		
6	Electrical Machines Laboratory -1-C207	18EEL37	2.5	2.9	2.9	3	2.9	3	-	-
7	Electronics Laboratory-C208	18EEL38	2.5	2.9	2.9	2.9	2.9	2.9	-	-
8	Complex analysis, probability and statistical methods-C211	18MAT41	1.8	2.0	2.8	2.4	2.2	2.4	-	-
9	Power Generation and Economics-C212	18EE42	1.8	2.6	2.9	2.7	2.8	2.2	-	-
10	Transmission and Distribution-C213	18EE43	1.8	2.6	2.9	2.7	2.8	2.2	-	-
11	Electric Motors-C214	18EE44	1.8	2.8	2.8	2.8	2.8	2.8	-	-
12	Electromagnetic Field Theory-C215	18EE45	1.8	2.6	2.9	2.7	2.8	2.2	-	-
13	Operational Amplifiers and Linear ICs-C216	18EE46	1.8	2.6	2.9	2.7	2.8	2.2	-	-
14	Electrical Machines Laboratory -2-C217	18EEL47	2.5	2.6	2.9	2.9	2.9	2.9	-	-
15	Op- amp and Linear ICs Laboratory-C218	18EEL48	2.5	2.6	2.9	2.9	2.9	-	-	-
3rd Year										
16	Management and Entrepreneurship-C301	18EE51	1.8	2.6	2.6	1.8	1.9	1.8	-	-
17	Microcontroller-C302	18EE52	1.8	2.7	3	2.3	2.3	2.3	-	-
18	Power Electronics-C303	18EE53	1.8	2.2	2.2	2.0	2.0	1.9	-	-
19	Signals and Systems-C304	18EE54	1.8	2.3	1.9	2.0	2.0	2.0	-	-
20	Electrical Machine Design-C305	18EE55	1.8	2.01	1.9	1.8	2.1	1.5	1	-
21	High Voltage Engineering-C306	18EE56	1.8	2.3	1.9	2	2	2	-	-
22	Microcontroller Laboratory-C307	18EEL57	2.5	2.8	2.8	2.6	2.83	2.8	-	-

23	Power Electronics Laboratory-C308	18EEL58	2.5	2.8	2.8	2.74	2.53	2.8	-	-
24	Environmental Studies-C309	18CIV59	2.5	3	3	3	3	-	-	-
25	Control Systems-C311	18EE61	1.8	2.8	2.8	2.8	1	1	-	-
26	Power System Analysis – 1-C312	18EE62	1.8	2.5	2.6	2.5	2	1	-	-
27	Digital Signal Processing-C313	18EE63	1.8	1.8	1.8	1.8	1.8	1	-	-
28	COMPUTER AIDED ELECTRICAL DRAWING-C3143	18EE643	1.8	1.9	1.9	1.9	1.9	1	-	-
29	Non Conventional Energy Sources - C3151	18ME651	1.8	1.9	1.9	1.9	1.9	1	-	-
30	Control System Laboratory-C316	18EEL66	2.5	2.6	2.6	2.6	2.6	2.6	-	-
32	Digital Signal Processing Laboratory-C317	18EEL67	2.5	2.6	2.6	2.6	2.6	2.6	1	-
33	Mini-project-C318	18MP68	3	3	3	3	3	3	3	-
34	Internship-C319		3	3	3	3	3	3	3	-
4th Year										
35	Power System Analysis – 2-C401	18EE71	1.8	3	3	3	0	0	0	
36	Power System Protection-C402	18EE72	1.8	2.7	2.7	2.5	0	0	0	
37	Solar and Wind Energy-C4031	18EE731	1.8	2.2	2.4	2.3	2.1	2.3	0	
38	Utilization of Electrical Power-C4042	18EE742	1.8	2.5	2.5	2.7	0	0	0	
39	Industrial safety- C4053	18ME753	1.8	2.5	2.5	2.7	0	0	0	
40	Power System Simulation Lab-C406	18EEL76	1.8	3	3	3	2.9	2.9	1.8	
41	High Voltage Laboratory-C407	18EEL77	1.8	3	3	3	2.9	3	1.8	
42	Project Work Phase - 1-C408	18EEP78	1.8	2.8	2.9	2.8		-	-	
43	Power System Operation and Control-C411	18EE81	1.8	2.4	2.4	2.2	1.5	0	-	-
44	Power System Planning-C4124	18EE824	1.8	1.4	1.4	1.2	1.4	0.9	-	-

45	Project Work Phase - 2-C413	18EEP83	3	2.8	2.8	2.8	2.7	2.8	2.7	-
46	Technical Seminar-C414	18EES84	2.5	2.6	2.8	2.7	2.6	2.7	-	-
47	Internship-C415	18EEI85	3	2.7	2.6	2.6	2.8	2.7	3	-

3.3 Attainment of Program Outcomes and Program Specific Outcomes (50) Total Marks 49.00

3.3.1 Describe the assessment tools and processes used for measuring the attainment of each of the Program Outcomes and Program Specific Outcomes (10)

Institute Marks : 9.00

PO Assessment Tools:

1 The methods to assess the Program Outcomes are categorized into Direct Methods and Indirect Methods.

2 Direct Method is performed based on student activities like internal assessment, assignments, Lab tutorials, External theory exam, External Practical Exam, Seminars, Project work and viva

3 This method proves to be a strong evidence of student learning as it captures the continuous work of students.

Direct assessment Process:

1 The CO attainment of all courses contributing to the Program Outcomes is tabulated.

2 PO attainment for each Program Outcome is calculated based on the CO-PO mapping done in the CO-PO matrix(Table 3.1.3.A).

3 The average of the PO attainment of all courses for each Program Outcome provides the attainment using the direct method.

Indirect Method focuses on report based analysis. This method allows the student to share their views on the learning process. The various types of surveys carried out are:

1 Course Exit Survey: A multiple choice test is conducted after the end of every course to determine the understanding level of each student about the course.

2 Faculty feedback on Course: Feedback form is circulated to all faculties handling different subjects in each semester and their opinion on the course is recorded and consolidated report is made.

3 Student's feedback on faculties: Feedback form is circulated to all students of each semester and their views on the faculties handling each course in the respective semester is recorded.

4 Student feedback on course: Feedback form is circulated to few students - above average, average and weak students of each semester and their views on the course are recorded

5 Parent feedback on course: Feedback about teaching, course, and college are taken from parents during PTM.

Indirect Assessment Process:

1 The above mentioned surveys are conducted for all the courses and based on the results, attainment level of 1, 2 or 3 is fixed.

2 The average of these PO attainments provides indirect attainment level.

Overall PO Attainment Level:

Overall PO attainment level is calculated by considering 80% weightage to direct assessment and 20% weightage to indirect assessment.

Target for Program outcomes:

The average values of CO-PO mapping for all courses from the program level course-PO matrix are fixed as the target value for Program Outcomes.

PSO Assessment Tools:

Direct assessment Process:

1 The CO attainment of all courses contributing to the Program Specific Outcomes is tabulated.

2 PSO attainment for each Program Specific Outcome is calculated based on the CO-PSO mapping done in the CO-PSO matrix (Table 3.1.3.B).

3 The average of the PSO attainment of all courses for each Program Specific Outcome provides the attainment using the direct method.

To assess PSO using indirect method different surveys carried are:

1 Program Exit Survey: Feedback about the course is collected every year from all final year students

2 Employers Feedback: Feedback about the passed out students is collected from their respective employers.

3 Alumni survey questionnaire: Alumni meets are conducted every year and feedbacks are taken from students about the course and programme.

Indirect Assessment Process

1 The above mentioned surveys are conducted for all the courses and based on the results, attainment level of 1,2 or 3 is fixed.

2 The average of these PSO attainments provides an indirect attainment level.

Overall PSO Attainment Level

Overall PSO attainment level is calculated by considering 80% weightage to direct assessment and 20% weightage to indirect assessment.

Target for Program Specific Outcomes

The average values of CO-PSO mapping for all courses from the program level course-PSO matrix (Table 3.1.3.B) are fixed as the target value for Program Specific Outcomes.

3.3.2 Provide results of evaluation of PO&PSO (40)

Institute Marks : 40.00

PO Attainment

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C101	2.57	1.89	1.36	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	1.9
C102	1.26	0.96	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	0.66
C103	2.1	1.59	1.03	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	1.4
C104	2.43	0.55	0.66	PO4	PO5	0.7	PO7	PO8	0.1	0	PO11	PO12
C105	2.14	1.43	1.43	PO4	PO5	PO6	1.43	PO8	PO9	PO10	PO11	1.43
C106	3	3	3	PO4	PO5	PO6	PO7	1	1	PO10	PO11	PO12
C107	1.83	1.82	PO3	PO4	PO5	PO6	PO7	PO8	0.81	0.81	PO11	PO12
C108	PO1	PO2	0.54	PO4	PO5	1.35	PO7	PO8	0.9	1.41	PO11	0.75
C111	1.93	1.41	1.31	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	1.29
C112	1.59	1.5	1.35	0.54	PO5	PO6	PO7	1.65	1.65	PO10	0.54	1.05

C113	1.41	1.23	1.1	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C114	2.36	1.72	1.76	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	1.57
C115	2.81	2.81	PO3	PO4	2.81	0.93	PO7	PO8	PO9	2.81	PO11	2.18
C116	1.97	1.97	1.97	PO4	PO5	PO6	PO7	1.31	1.31	PO10	PO11	PO12
C117	2.04	0.89	PO3	PO4	PO5	PO6	PO7	PO8	0.87	0.89	PO11	PO12
C118	PO1	PO2	0.5	PO4	PO5	1.38	PO7	PO8	0.92	1.41	PO11	0.78
C201	2	1.5	1.5	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	1.5
C202	2.2	1.9	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C203	0.9	0.8	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C204	1.1	1.3	1.5	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C205	1.3	1	1	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C206	1.3	1	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C207	3	3	PO3	2	PO5	PO6	PO7	PO8	3	2	PO11	PO12
C208	2.9	2.9	2.9	PO4	PO5	PO6	PO7	PO8	2.7	1.9	PO11	PO12
C211	2.3	1.7	1.5	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	1.5
C212	1.7	2.4	PO3	PO4	PO5	1.9	2.8	PO8	PO9	PO10	PO11	PO12
C213	1.7	2.4	PO3	PO4	PO5	1.9	2.8	PO8	PO9	PO10	PO11	PO12
C214	2	3	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C215	2.1	2.3	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C216	3	3	3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C217	1.8	2.9	PO3	PO4	PO5	PO6	PO7	PO8	1.9	1.9	PO11	PO12
C218	1.9	2.6	2.6	PO4	PO5	PO6	PO7	PO8	1.9	1.9	PO11	PO12
C301	PO1	PO2	PO3	PO4	PO5	0.4	PO7	0.4	PO9	0.4	0.4	0.4
C302	1.8	1.7	PO3	PO4	1.4	PO6	PO7	PO8	PO9	PO10	PO11	1.8
C303	1.9	1.6	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	1
C304	1.0	1	PO3	PO4	1	PO6	PO7	PO8	PO9	PO10	PO11	1
C305	1.5	1.2	1.2	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C3065	1.0	0.9	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	1.9
C307	2.7	PO2	2.4	PO4	2.7	PO6	PO7	PO8	2.4	1.8	PO11	1.8
C308	2.8	PO2	2.2	PO4	PO5	PO6	PO7	PO8	2.2	2.7	PO11	1.8
C309	PO1	PO2	PO3	PO4	PO5	PO6	2.8	PO8	PO9	PO10	PO11	PO12

C311	2.2	1.9	1.8	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C312	2.1	1.8	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	1.68
C313	1.6	1.4	1.3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C3143	1.6	1.4	1.3	PO4	1.3	1.6	1.6	PO8	PO9	PO10	PO11	1.3
C315	1.6	2.0	1.3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C316	2.6	2.4	2.6	PO4	2.6	PO6	PO7	PO8	2.6	1.7	PO11	1.7
C317	1.6	1	1.5	PO4	2.3	PO6	PO7	PO8	1.6	1.6	PO11	1.6
C318	1	1	2	1	2	3	2	2	3	3	PO11	2
C401	2.4	2	1.9	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	2.8
C402	2.1	1.8	PO3	PO4	PO5	2.1	2.1	PO8	PO9	PO10	PO11	1.7
C4031	2.1	PO2	PO3	PO4	PO5	1.9	2	PO8	PO9	PO10	PO11	1.4
C4042	2.1	1.8	1.7	1.8	PO5	PO6	PO7	PO8	PO9	PO10	PO11	1.6
C4053	2.1	PO2	PO3	PO4	PO5	2.1	2.1	PO8	PO9	PO10	PO11	1.7
C406	PO1	2.4	0.9	1.9	2.4	PO6	PO7	PO8	2.4	1.6	PO11	1.3
C407	PO1	PO2	PO3	1.7	PO5	PO6	PO7	PO8	1.6	1.6	PO11	1.6
C408	2.7	2.8	2.7	2.8	2.6	2.7	2.7	2.8	2.6	2.7	PO11	2.8
C411	1.3	1.2	1.1	1.2	PO5	PO6	PO7	PO8	PO9	PO10	PO11	1.1
C4124	1.3	1.1	1.0	1.1	1.0	1.3	1.3	1.3	PO9	PO10	PO11	PO12
C413	2.6	2.7	2.7	2.8	2.6	2.7	2.7	2.8	2.7	2.7	2.8	2.6
C414	2.7	2.8	2.6	2.7	2.7	2.7	2.6	2.7	2.7	2.8	PO11	2.8
C415	PO1	PO2	PO3	2.6	PO5	PO6	PO7	2.6	2.7	2.7	2.8	2.6

PO Attainment Level

Course	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO Attainment	2.03	1.93	1.72	1.95	2.15	1.89	2.26	1.97	1.99	2.07	1.77	1.80
Direct Attainment	1.98	1.81	1.68	1.84	2.11	1.79	2.23	1.86	1.89	1.92	1.64	1.61
InDirect Attainment	2.22	2.4	1.88	2.4	2.31	2.31	2.4	2.4	2.4	2.65	2.3	2.57

PSO Attainment

Course	**PSO1**	**PSO2**	**PSO3**
C101	1.71	1.77	1.34

C102	0.84	0.48	0.69
C103	1.40	1.45	0.93
C104	0.84	PSO2	PSO3
C105	1.17	1.17	PSO3
C106	PSO1	PSO2	PSO3
C107	PSO1	PSO2	0.76
C108	PSO1	PSO2	PSO3
C111	1.26	1.26	1.31
C112	0	0	0
C113	PSO1	PSO2	0
C114	1.57	1.57	1.8
C115	2.8	PSO2	PSO3
C116	0.28	0.65	0.78
C117	PSO1	PSO2	0.87
C118	PSO1	PSO2	PSO3
C201	1.5	0.3	1.3
C202	3	PSO2	PSO3
C203	0.8	PSO2	PSO3
C204	1.5	PSO2	PSO3
C205	0.9	PSO2	PSO3
C206	0.9	PSO2	0
C207	3	PSO2	2
C208	2.7	1.9	1.93
C211	1.5	1	1
C212	2.2	PSO2	3
C213	2.2	PSO2	3
C214	3	PSO2	PSO3
C215	2.1	PSO2	PSO3
C216	2.1	PSO2	PSO3
C217	2.1	PSO2	PSO3
C218	2.8	PSO2	PSO3

C301	PSO1	PSO2	0.4
C302	1.47	1.47	PSO3
C303	1	PSO2	1
C304	1	PSO2	PSO3
C305	1.2	PSO2	1.2
C306	0.9	PSO2	0.9
C307	1.8	2.7	PSO3
C308	2.7	PSO2	PSO3
C309	PSO1	PSO2	PSO3
C311	1.8	PSO2	PSO3
C312	1.6	PSO2	PSO3
C313	1.3	PSO2	PSO3
C3143	1.3	1.3	PSO3
C315	1.81	PSO2	PSO3
C3164	2.6	2.6	PSO3
C317	PSO1	2.2	PSO3
C318	1	1	2
C401	1.8	PSO2	0
C402	1.7	PSO2	0
C4031	1.5	PSO2	1.5
C4042	1.6	PSO2	0
C4053	1.7	PSO2	0
C406	2.4	2.4	1.3
C407	2.4	PSO2	PSO3
C408	2.8	2.9	2.7
C411	1.1	PSO2	1.1
C4124	PSO1	PSO2	PSO3
C413	2.8	2.8	2.8
C414	2.8	2.9	PSO3
C415	2.7	2.8	2.9

PSO Attainment Level

Course	PSO1	PSO2	PSO3
CO Attainment	1.85	1.84	1.58
Direct Attainment	1.78	1.74	1.54
InDirect Attainment	2.14	2.22	1.75

4 STUDENTS' PERFORMANCE (150) Total Marks 100.59

:

Table 4.1

Item (Information to be provided cumulatively for all the shifts with explicit headings, wherever applicable)	2023-24 (CAY)	2022-23 (CAYm1)	2021-22(CAYm2)	2020-21(CAYm3)	2019-20(CAYm4)	2018-19 (CAYm5)	2017-18 (CAYm6)
Sanctioned intake of the program(N)	60	60	60	60	60	60	60
Total number of students admitted in first year minus number of students migrated to other programs/ institutions plus No. of students migrated to this program (N1)	34	46	24	6	12	10	16
Number of students admitted in 2nd year in the same batch via lateral entry (N2)	19	11	4	3	3	3	2
Separate division students, If applicable (N3)	0	0	0	0	0	0	0
Total number of students admitted in the programme(N1 + N2 + N3)	53	57	28	9	15	13	18

Table 4.2

Year of entry	Total No of students admitted in the program (N1 + N2 + N3)	Number of students who have successfully graduated without backlogs in any semester/ year of study (Without Backlog means no compartment or failures in any semester/ year of study)			
		I year	II year	III year	IV year
2023-24 (CAY)	53	0	0	0	0
2022-23 (CAYm1)	57	10	0	0	0
2021-22 (CAYm2)	28	6	5	0	0
2020-21 (CAYm3)	9	3	3	3	0
2019-20 (LYG)	15	7	4	4	4
2018-19 (LYGm1)	13	3	3	1	1
2017-18 (LYGm2)	18	6	4	4	4

Table 4.3

Year of entry	Total No of students admitted in the program (N1 + N2 + N3)	Number of students who have successfully graduated in stipulated period of study) [Total of with Backlog + without Backlog]			
		I year	II year	III year	IV year
2023-24 (CAY)	53	0	0	0	0
2022-23 (CAYm1)	57	26	0	0	0
2021-22 (CAYm2)	28	23	26	0	0
2020-21 (CAYm3)	9	6	9	9	0
2019-20 (LYG)	15	12	14	14	14
2018-19 (LYGm1)	13	10	6	6	6
2017-18 (LYGm2)	18	16	11	10	10

4.1 Enrolment Ratio (20)

Total Marks 12.00

Institute Marks : 12.00

	N (From Table 4.1)	N1 (From Table 4.1)	Enrollment Ratio [(N1/N)*100]
2023-24 (CAY)	60	34	56.67
2022-23 (CAYm1)	60	46	76.67
2021-22 (CAYm2)	60	24	40.00

Average [(ER1 + ER2 + ER3) / 3] : 57.78

Assessment : 12.00

4.2 Success Rate in the stipulated period of the program (40)

Total Marks 14.50

4.2.1 Success rate without backlogs in any semester / year of study (25)

Institute Marks : 4.75

Item	Latest Year of Graduation, LYG (2019-20)	Latest Year of Graduation minus 1, LYGm1 (2018-19)	Latest Year of Graduation minus 2 LYGm2 (2017-18)
X Number of students admitted in the corresponding First year + admitted in 2nd year via lateral entry and seperated division, if applicable	15.00	13.00	18.00
Y Number of students who have graduated without backlogs in the stipulated period	4.00	1.00	4.00
Success Index [SI = Y / X]	0.27	0.08	0.22

Average SI [(SI1 + SI2 + SI3) / 3] : 0.19

Assessment [25 * Average SI] : 4.75

4.2.2 Sucess rate in stipulated period (15)

Institute Marks : 9.75

Item	Latest Year of Graduation, LYG (2019-20)	Latest Year of Graduation minus 1, LYGm1 (2018-19)	Latest Year of Graduation minus 2 LYGm2 (2017-18)
X Number of students admitted in the corresponding First year + admitted in 2nd year via lateral entry and seperated division, if applicable	15.00	13.00	18.00
Y Number of students who have graduated in the stipulated period	14.00	6.00	10.00
Success Index [SI = Y / X]	0.93	0.46	0.56

Average SI[(SI1 + SI2 + SI3) / 3]: 0.65

Assessment [15 * Average SI] : 9.75

Note : If 100% students clear without any backlog then also total marks scored will be 40 as both 4.2.1 & 4.2.2 will be applicable simultaneously.

4.3 Academic Performance in Third Year (15)

Total Marks 8.00

Institute Marks : 8.00

Academic Performance	CAYm3 (2020-21)	LYG (2019-20)	LYGm1 (2018-19)
Mean of CGPA or mean percentage of all successful students(X)	4.00	6.00	6.00
Total number of successful students(Y)	9.00	14.00	6.00
Totalnumber of students appeared in the examination(Z)	9.00	14.00	6.00
API [X*(Y/Z)]:	4.00	6.00	6.00

Average API [(AP1 + AP2 + AP3)/3] : 5.33

Assessment [1.5 * AverageAPI] : 8.00

4.4 Academic Performance in Second Year (15)

Total Marks 11.56

Institute Marks : 11.56

Academic Performance	CAYm2 (2021-22)	CAYm3 (2020-21)	LYG (2019-20)
Mean of CGPA or mean percentage of all successful students(X)	13.00	5.00	6.00
Total number of successful students (Y)	26.00	9.00	14.00
Total number of students appeared in the examination (Z)	27.00	9.00	15.00
API [X * (Y/Z)]	12.52	5.00	5.60

Average API [(AP1 + AP2 + AP3)/3] : 7.71

Assessment [1.5 * AverageAPI] : 11.56

4.5 Placement, Higher Studies and Entrepreneurship (40)

Total Marks 34.53

Institute Marks : 34.53

Item	LYG (2019-20)	LYGm1 (2018-19)	LYGm2 (2017-18)
Total No of Final Year Students(N)	14.00	6.00	10.00
No of students placed in the companies or government sector(X)	11.00	6.00	8.00
No of students admitted to higher studies with valid qualifying scores(GATE or equivalent State or National Level tests, GRE, GMAT etc.) (Y)	0.00	0.00	0.00
No of students turned entrepreneur in engineering/technology (Z)	0.00	0.00	0.00
x + y + z =	11.00	6.00	8.00
Placement Index [(X+Y+Z)/N] :	0.79	1.00	0.80

Average Placement [(P1 + P2 + P3)/3] : 0.86

Assessment [40 * Average Placement] : 34.53

Program Name :

Assessment Year Name : CAYm1

S.No	Student Name	Enrollment No	Employee Name	Appointment No
1	Bhoomika R	II22	EMERTXE	100
2	Dheeraj K	2212EAB	MCoreta	CKA-BLR-RRIT-EEE-2212-004
3	Bhola Choudary	2212004ASC	MCoreta	101
4	Raushan Kumar	2212001NBH	MCoreta	CKA-BLR-RRIT-EEE-2212-001
5	Rupesh Kumar sah	24032023MKL	Parvam Software Solutions	24/03/2023
6	Dhanush	2212003KJH	MCoreta	CKA-BLR-RRIT-EEE-2212-003
7	Sneha Joseph	2212005BVG	MCoreta	CKA-BLR-RRIT-EEE-2212-005
8	Shankar Kumar Yadav	2023IOP	Tap Academy	2023
9	Hussien Ali Jussein Mursal	24323HGF	Parvam Software Solutions	24/03/2023
10	Thejaswini B	240323SDE	Parvam Software Solutions	24/03/2023
11	Ujjal Sarkar	24032023PLM	Parvam Software Solutions	24/03/2023

Assessment Year Name : CAYm2

S.No	Student Name	Enrollment No	Employee Name	Appointment No
1	Bharath Kumar K	25422PBS	Pentagon –Birla Soft	25/04/2022
2	Abdual Zelani	010522DSPL	Digverve Solutions Pvt.Ltd	01/05/2022
3	Gagan Kumar	20822IEC	Integrated Electric Company Pvt Ltd	02/08/2022
4	Amit Kumar Singh	2822IEC	Integrated Electric Company Pvt Ltd	02/08/2022
5	Vaibhav Biradar	02822IEC	Integrated Electric Company Pvt Ltd	02/08/2022
6	Akash Kumar Singh	20622AVE	Avench	20/06/2022
7	Mohammad Shafiullah	200622AVE	Avench	20/06/2022
8	Emdorka Syiem	1722MT	Mind teck	01/07/2022
9	Ashish Yadav	010722MTK	Mind Teck	01/07/2022
10	Shovannand Chaudhary	172022MKT	Mind Teck	01/07/2022

Assessment Year Name : CAYm3

S.No	Student Name	Enrollment No	Employee Name	Appointment No
1	Ganthimari Supriya	19521PSPL	Pentagon Space Pvt .Ltd	19/05/2021
2	Arun Prasad Yadav	20621AVE	Avench	20/06/2021
3	Ruchita S	850206CTS	Capgemini Technology Services India Limited	5310850/1073206
4	Hemanjali R	24222TCS	TCS	24/02/2022
5	Pratik Chaudhary	2821RIO	RioSH	02/08/2021
6	Sikindra Kumar Thakur	2182RIO	RioSH	02/08/2021
7	Vikas Kunar Shah	10221PA	P&A Industries	10/2/21
8	Rishi G N	2210PA	P&A Industries	10/2/21

4.6 Professional Activities (20) Total Marks 20.00

4.6.1 Professional socities/ chapters and organizing engineering events (5)

Institute Marks : 5.00

The lists of professional societies are listed in the table 4.6.1(i) and 4.6.1(ii) shows the organized engineering events.

Table 4.6.1(i): List of Professional Societies

Sl. No.	Professional Societies	Acronym
1	Institutions of Electronics and Telecommunications Engineers	IETE

4.6.1(ii) Organized Engineering Events

Sl. No	Year	Activity	Resource persons	Date	No. of Participants
1	2022-23	SDP on “Python Programming With Application Project and Solutions	Mohana Shamana Founder & Mentor INDOSKILL Mohammed Azar Hussien Co-Founder & Mentor INDOSKILL	09/01/2023 to 13/01/2023	37
2	2022-23	SDP on “Solar Energy and its applications in current scenario”	Mahesh V Shivaashimpiger, Solar scientist.	21/11/2023 to 22/11/2023	44
3	2022-23	Hands on Workshop on “Microcontrollers for Embedded Systems”	Prof.Anil kumar K, Prof.Mallesha b Y, Prof.Pradeesha J	02/01/2023 to 03/01/2023	10
4	2022-23	Industrial Visit To 400KV/220KV Nelamangala Receiving Station	Executive Engineer	18/10/2022	26
4	2021-22	Technical talk on “5G & thinking towards 6G & final year project demonstration”	Prof. C Murali, IETE Distinguished Fellow and Former vice-president	20/06/2022	67

5	2021-22	Virtual Industrial Visit MESON, GUJARAT	Mr.Malay Porwal, Managing Director MESON	25/10/2021	61
6	2020-21	Online Certificate program on “Electrical services”	Dr.Sunitha H D Prof.Gowtham G Prof..Ramachandra C	23/11/2020- to 04/12/2020	48
7	2020-2021	Online Seminar on “V2X: The Future ofVehicle communication”	Dr.B N Manjunath Reddy Professor, Dept ECE,Global Academy of Technology	23/12/2020	42

4.6.2 Publication of technical magazines, newsletters, etc. (5)

Institute Marks : 5.00

The list of publication of technical magazines and newsletters are shown in table 4.6.2(i).

Table 4.6.2(i): List of publication of Technical Magazines and Newsletters

Sl. No	Year	Name of the News letter	Editorial Board	Chief Editor
1	2023-24	“EEnErgy” Volume7 Issue-1	Prof.Jhansi K	Dr.Shivakumara swamy R
2	2022-23	“EEnErgy” Volume6 Issue-1	Prof.Sowmya G J	Dr.Sunitha H D
3	2021-22	“EEnErgy” Volume5 Issue-2	Prof.Sowmya G J	Dr.Sunitha H D
4	2021-22	“EEnErgy” Volume5 Issue-1	Dr.Mangala Gowri S G	Dr.Sunitha H D
5	2020-21	“EEnErgy” Volume4 Issue-1	Prof.R.Navaneetha Krishna Ms.Deepti Thapa Mr.Pratik Chaudhary Mr.Sikindar Kumar Thakur Mr.Bharath Kumar K L	Prof.K J Somashekara

4.6.3 Participationininter-institute events by students of the program of study (10)

Institute Marks : 10.00

The list of students participation in Inter institute events and awards / recognition received are shown in table 4.6.3(i)

Sl. No.	Students Name	Participated/Presented/Published	Name of the Organization/Institute	Date	Program Title
2022-23					
1	Ujjal Sarkar, Afsal A, Suhaib MM	Published	2nd International Conference on Research trends in Engineering & management, ICRTEM-22	Aug 2022	“3Arduino Based Driver Drowsiness Detection and Alerting System ”
2	Dheeraj K, Rupesh Kumar Sah, Sneha Joesphin, Dhanush S p	Published	2nd International Conference on Research trends in Engineering & management, ICRTEM-22	Aug 2022	“Electric Grass Cutter with IoT Based Battery Monitoring System ”
3	Imran Alam, Raushan Kumar Shrivastava, Firdoush Ansary, Bhola Chaudhary	Published	2nd International Conference on Research trends in Engineering & management, ICRTEM-22	Aug 2022	“4-Channel Touchless Switchboard for the Post Covid World ”
4	Shovanand Chaaudhary, Mohammad Safiullah Musalman, Gath Nkulu Matelwa	Published	2nd International Conference on Research trends in Engineering & management, ICRTEM-22	Aug 2022	“IOT Based Smart Industrial Panel Using Python for Speed Control and Monitoring of DC Motor
2021-22					
1	Bidya chetri, Hemanjali R, Ruichitha S, Rishig N	Published	International Conference on Research Trends In Engineering and Management (ICRTEM-21)	**2021**	“Wireless charging of Electric vehicle in Smart Cities "

2	ShifnaazA, Misbah falak M,Anil Kumar T	Published	International Conference on Research Trends In Engineering and Management (ICRTEM-21)	2021	“Conversion of waste heat into electricity using TEG”
3	Varun K,Bharath K.L,Prarthan S B,Tashi W B	Published	International Conference on Research Trends In Engineering and Management (ICRTEM-21)	2021	“Radar system using Arduino and ultrasonic sensor”
4	Akash kumar singh,Emdorka syiem, Amith kumar singh	Published	International Conference on Research Trends In Engineering and Management (ICRTEM-21)	2021	“3-Phase power failure detection and voltage measurement using Arduino.”
5	Bharath kumar K, Gagan kumar, & vaibhav S biradar	Published	International Conference on Research Trends In Engineering and Management (ICRTEM-21)	2021	“Light fidelity(liFi): Transmission of data through light of future technology
6	Sneha josphine	Published	International Conference on Research Trends In Engineering and Management (ICRTEM-21)	2021	“EEG data processing for Emotion detection using DTCWT & FFNN Architecture design”

7	Prathik chowdary,sikindrakumar Thakur,Vikash kumar sah,Arun prasdad yadav	Published	International Conference on Research Trends In Engineering and Management (ICRTEM-21)	2021	“Smart solar power management system for domestic purpose
8	Sandeep pondey & Deepthi thapa	Published	International Conference on Research Trends In Engineering and Management (ICRTEM-21)	2021	“Iot based flood management and alerting sytem.”
2020-21					
1	Sneha s Gowda, Nahetrivelo Mahitasoa Victoria, Ganthimari Supriya	Published	International Journal for research in applied science & Engineering Technology IJRASET	July2020	**“**Design and Development of free space optical communication system for transmitting data and voice”

Awards and Recognisation

Sl. No.	Student	Recognition	Place	Title	Year
1	Dheeraj K Dhanush s Bhoomika R Thejaswini B	Project funded by KSCST	KSCST, Bengaluru	“Automated solar based ELECTRIC GRASS CUTTER With multi-purpose Robotic vehicle”	2023
2	Dhanush S	Won 3rd place	Pune Nagapur	National level Pro National Championship	18th March 2023
3	Dheeraj	Awarded as Best Paper	Bengaluru	Electric Grass cutter with BMS	2022
4	Dheeraj	Silver Badge in NPTEL	IIT Madras	Electric Vehicles Part-2	Jan-Feb2023

5	Dhanush S	Won 1st place	Bengaluru	State level Karnataka Squat Championship	18th Dec 2022
6	Dhanush S	Won 1st place	Bengaluru	state level Karnataka benchpess Championship	18th Dec 2022
7	Dhanush S	Won 3rd place	Bengaluru	State level Karnataka Deadlift championship	3rd Dec 2022
8	Dheeraj	Completed 2- NPTEL courses	IIT Madras	Electric Vehicles part-1 Renewable Energy	2021
9	Bhanupriya	Won Bronze Medal	Delhi	Asian Sikh Games	29th to31st Dec2021

5 FACULTY INFORMATION AND CONTRIBUTIONS (200)

Total Marks 149.35

Institute Marks :

Name	PAN No.	University Degree	Date of Receiving Degree	Area of Specialization	Research Paper Publications	Ph.D Guidance	Faculty receiving Ph.D during the assessment year	Current Designation	Date (Designated as Prof/Assoc. Prof.).	Initial Date of Joining	Association Type	At present working with the Institution(Yes/No)	In case of NO, Date of Leaving	IS HOD?
Dr.Shivakumara Swamy R	AGNPR3265P	ME/M. Tech and PhD	08/02/2020	Power Electronics components	6	01	0	Professor		29/12/2022	Regular	Yes		Yes
Sunanda C V	AUCPV4669G	M.E/M.Tech	05/04/2013	Electronics	11	0	0	Assistant Professor		22/07/2013	Regular	Yes		No
Anusha D Y	ANLPY7186P	M.E/M.Tech	10/09/2016	Computer Applications in Industrial Drives	01	0	0	Assistant Professor		24/08/2015	Regular	Yes		No
Pradeesha J	AWVPJ3402A	M.E/M.Tech	04/05/2015	Power Systems	06	0	0	Assistant Professor		05/04/2021	Regular	Yes		No
Jhansi K	ATUPJ8713C	M.E/M.Tech	30/11/2012	Control and Instrumentation	3	0	0	Assistant Professor		16/05/2022	Regular	Yes		No
Satish P Hegde	ADEPH1286L	M.E/M.Tech	06/06/2011	Power System Engineering	01	0	0	Assistant Professor		01/08/2023	Regular	Yes		No
Puttur Jahnavi	CBRPP6666F	M.E/M.Tech	30/10/2021	Power Electronics and Drives	0	0	0	Assistant Professor		01/08/2023	Regular	Yes		No
Sowmya G J	BAKPJ7291R	M.E/M.Tech	12/05/2014	Power Electronics	2	0	0	Assistant Professor		21/07/2014	Regular	Yes		No
Shruthi Baglodi J	CRIPS0369F	M.E/M.Tech	05/05/2014	Power Electronics	0	0	0	Assistant Professor		01/08/2022	Regular	Yes		No
Krishna Prasath S	CCVPK3591D	M.E/M.Tech	10/06/2013	Power System Engineering	0	0	0	Assistant Professor		02/08/2021	Regular	Yes		No
GOWTHAM G	AVQPG8439E	M.E/M.Tech	25/06/2015	ELECTRICAL POWER SYSTEMS	6	0	0	Assistant Professor		28/08/2020	Regular	No	28/07/2023	No
NAVANEETHA KRISHNA	AVWPR3051M	M.E/M.Tech	09/04/2012	POWER SYSTEM ENGINEERING	2	0	0	Assistant Professor		01/04/2016	Regular	No	28/07/2023	No
GAUTAMI T R	BHMPG6731Q	M.E/M.Tech	15/06/2015	VLSI DESIGN AND EMBEDDED SYSTEMS	0	0	0	Assistant Professor		26/08/2019	Regular	No	28/07/2023	No
RAMACHANDRA C	BVNPR1057H	M.E/M.Tech	08/02/2020	NANO TECHNOLOGY	4	0	0	Assistant Professor		26/08/2020	Regular	No	26/07/2022	No
JAYASHREE G R	AYCPJ2414M	M.E/M.Tech	09/01/2018	SIGNAL PROCESSING	0	0	0	Assistant Professor		09/10/2020	Regular	No	26/07/2022	No

K J SOMASHEKARA	ACRPS9853N	M.E/M.Tech	01/08/1985	INDUSTRIAL ELECTRONICS	1	0	0	Assistant Professor		18/07/2016	Regular	No	28/07/2022	No
SHYAM SUNDAR N	CAAPS0372R	M.E/M.Tech	25/05/2011	POWER SYSTEM ENGINEERING	1	0	0	Assistant Professor		08/08/2014	Regular	No	26/07/2022	No
Dr. MANGALAGOWRI	BLCPM0718H	ME/M. Tech and PhD	10/02/2020	VLSI DESIGN AND EMBEDDED SYSTEMS	10	0	0	Associate Professor		08/10/2020	Regular	No	26/07/2022	No
VYSHNAV B	BMDPV3104J	M.E/M.Tech	21/06/2017	POWER SYSTEM ENGINEERING	1	0	0	Assistant Professor		22/03/2021	Regular	No	28/07/2023	No
Dr. Venkatesan C	AJJPV3020F	ME/M. Tech and PhD	19/04/2019	Information and communication Engg	3	0	0	Associate Professor		10/07/2017	Regular	No	28/07/2022	No
Dr. SHIVA SHANKAR	AWQPS7640Q	ME/M. Tech and PhD	18/07/2014	WIRELESS COMMUNICATION	6	11	0	Associate Professor		01/12/2021	Regular	No	28/07/2023	No

5.1 Student-Faculty Ratio (20)

Total Marks 18.00

Institute Marks : 18.00

UG

No. of UG Programs in the Department 1

B E						
Year of Study	**CAY**		**CAYm1**		**CAYm2**	
	(2023-24)		**(2022-23)**		**(2021-22)**	
	Sanction Intake	**Actual admitted through lateral entry students**	**Sanction Intake**	**Actual admitted through lateral entry students**	**Sanction Intake**	**Actual admitted through lateral entry students**
2nd Year	60	19	60	11	60	4
3rd Year	60	11	60	4	60	3
4th Year	60	4	60	3	60	3
Sub-Total	**180**	**34**	**180**	**18**	**180**	**10**
Total	**214**		**198**		**190**	

Grand Total	214	198	190

PG

No. of PG Programs in the Department 0

Grand Total			

SFR

No. of UG Programs in the Department 1

No. of PG Programs in the Department 0

Description	**CAY(2023-24)**	**CAYm1 (2022-23)**	**CAYm2 (2021-22)**
Total No. of Students in the Department(S)	214 **Sum total of all (UG+PG) students**	198 **Sum total of all (UG+PG) students**	190 **Sum total of all (UG+PG) students**
No. of Faculty in the Department(F)	10 **F1**	13 **F2**	16 **F3**
Student Faculty Ratio(SFR)	21.40 **SFR1=S1/F1**	15.23 **SFR2=S2/F2**	11.88 **SFR3=S3/F3**
Average SFR	16.17 **SFR=(SFR1+SFR2+SFR3)/3**		
F=Total Number of Faculty Members in the Department (excluding first year faculty)			

Note: All the faculty whether regular or contractual (except Part-Time), will be considered. The contractual faculty (doing away with the terminology of visiting/adjunct faculty, whatsoever) who have taught for 2 consecutive semesters in the corresponding academic year on full time basis shall be considered for the purpose of calculation in the Faculty Student Ratio. However, following will be ensured in case of contractual faculty:

1. Shall have the AICTE prescribed qualifications and experience.
2. Shall be appointed on full time basis and worked for consecutive two semesters during the particular academic year under consideration.
3. Should have gone through an appropriate process of selection and the records of the same shall be made available to the visiting team during NBA visit

5.1.1. Provide the information about the regular and contractual faculty as per the format mentioned below:

	Total number of regular faculty in the department	**Total number of contractual faculty in the department**
CAY(2023-24)	10	0
CAYm1(2022-23)	13	0
CAYm2(2021-22)	16	0

Average SFR for three assessment years : 16.17

Assessment SFR : 18

5.2 Faculty Cadre Proportion (25) Total Marks 25.00

Institute Marks : 25.00

Year	**Professors**		**Associate Professors**		**Assistant Professors**	
	Required F1	**Available**	**Required F2**	**Available**	**Required F3**	**Available**
CAY(2023-24)	1.00	1.00	2.00	0.00	7.00	9.00
CAYm1(2022-23)	1.00	1.00	2.00	1.00	6.00	11.00
CAYm2(2021-22)	1.00	0.00	2.00	3.00	6.00	13.00
Average Numbers	1.00	0.67	2.00	1.33	6.33	11.00

Cadre Ratio Marks [(AF1 / RF1) + [(AF2 / RF2) * 0.6] + [(AF3 / RF3) * 0.4]] * 12.5 : 25.00

5.3 Faculty Qualification (25) Total Marks 17.35

Institute Marks : 17.35

	X	Y	F	FQ = 2.5 x [(10X + 4Y) / F)]
2023-24(CAY)	1	9	10.00	11.50
2022-23(CAYm1)	2	11	9.00	17.78
2021-22(CAYm2)	3	13	9.00	22.78

Average Assessment : 17.35

5.4 Faculty Retention (25)

Total Marks 20.00

Institute Marks : 20.00

Description	2022-23	2023-24
No of Faculty Retained	10	5
Total No of Faculty	9	9
% of Faculty Retained	111	56

Average : 83.00

Assessment Marks : 20.00

5.5 Innovations by the Faculty in Teaching and Learning (20)

Total Marks 12.00

Institute Marks : 12.00

In order to comprehend the curriculum for students, it is imperative to employ innovative teaching and learning methodologies. This facilitates the integration of the curriculum with the industry.

- The faculty members employ contemporary instructional tools such as PowerPoint presentations, videos, , and live demonstrations in the classrooms to enhance comprehension of ideas.
- The Department of Electrical and Electronics Engineering places significant emphasis on integrating cutting-edge methodologies into its teaching practices. At the departmental level, it is highly recommended that all faculties participate in programs such as faculty development workshops and programs to foster creativity.
- The faculty members are directed to modify the instructional materials acquired from attended programs in order to enhance the teaching and learning process. In addition to this, the faculty members actively promote student engagement in a diverse range of inter- and intra-organized activities.
- In order to enhance their knowledge and skills, faculties and students have been encouraged to engage in the presentation and publication of papers in both national and international conferences and publications.

Teaching methods adopted to improve student learning Teaching with technology

1.Multimedia Learning Process:

The faculties are using multimedia elements LCD projectors in the Classroom. It will help the faculties to represent the content in a more meaningful way using different media elements.

2.PPT & Videos

Each subject, the slides are created with animations. For certain topics videos is shown and then the teaching is continued to provide a realistic overview and better understanding. National Program on Technology Enhanced Learning (NPTEL) is also been used. Through videos, students will get better exposure through visualization.

3.Quiz

The Quiz is used as an assessment tool to improve the instructional methods and student feedback through the teaching and learning process. They learn to work in a team

4.Modern Tool Usage

Modern tools like Pspice, Matlab, Keil software, AutoCAD etc are used in conducting the experiments.

5.Project and mini projects:

By doing projects and mini-projects the students will be able to apply the theoretical knowledge taught in the class practically.

6.Guest Lectures

Lectures are arranged on the topics of the subject and other subject related to current technologies.

7. Use of Online tools

Online tools are used like Google Classroom, Zoom, MSteams etc., these online tools will make Students understand the subject. Also, real-world engineering problems are given and students are asked to find a solution.

Details of innovative teaching methods adopted for few subjects are listed in the below table 5.5 (i)

Table 5.5(i): Innovative teaching methods adopted for few subjects

Sl. No.	SEM	Subject Name & Subject Code	Name of the faculty	Innovation method
1	VII	Utilization of Electric Power	Jhansi K	PPT, Google meet online class, Google classroom
2	I	Basics of Electrical Engineering	Anusha D Y	PPT, Online Quiz

3	VI	Electric Vehicle Technologies	Anusha D Y	PPT, Google class room
4	V	Control Systems	Sunanda C V	PPT, MS-Teams
5	VII	Digital Signal Processing	Jhansi K	PPT, Google meet online class, Google classroom
6	V	Management and Entrepreneurship	Gowtham G	MS –Teams , PPT

5.6 Faculty as participants in Faculty development/training activities/STTPs (15)

Total Marks 15.00

Institute Marks : 15.00

Name of the faculty	Max 5 Per Faculty		
	2022-23 (CAYm1)	2021-22 (CAYm2)	2020-21 (CAYm3)
Dr.SHIVKUMARA SWAMY R	5.00	0.00	0.00
SUNANDA C V	5.00	5.00	5.00
ANUSHA D Y	5.00	3.00	3.00
PRADEESHA J	5.00	3.00	0.00
JHANSI K	5.00	0.00	0.00
SOWMYA G J	0.00	3.00	3.00
SHRUTHI BALODI	5.00	0.00	0.00
KRISHNAPRASANTH S	5.00	3.00	0.00
Dr. SHIVA SHANKAR	3.00	0.00	0.00
GOWTHAM G	5.00	5.00	0.00
NAVNEETH KRISHANA	0.00	5.00	3.00
GOUTAMI TR	0.00	5.00	3.00
VYSHNAV B	3.00	3.00	0.00
Dr. MANGALAGOWRI	0.00	3.00	0.00
RAMACHANDRA C	0.00	0.00	3.00
Sum	46.00	38.00	20.00
RF = Number of Faculty required to comply with 20:1 Student Faculty Ratioas per 5.1	10.70	9.90	9.50
Assessment [3*(Sum / 0.5RF)]	25.79	23.03	12.63

Average assessment over 3 years: 20.48

5.7 Research and Development (30) Total Marks 14.00

5.7.1 Academic Research (10)

Institute Marks : 7.00

5.7.1Academic Research (10)

Academic Year	(CAYm1) 2023-2024	(CAYm2) 2022-23	(CAYm3) 2021-22	(CAYm4) 2020-21
No. of Publications	04	9	24	11

Faculty Publication Details:

The list of publication are shown in table 5.7.1(i)

Table 5.7.1(i): Number of publications by faculty

Sl. No	Name of Faculty	CAYm3 2020-21	CAYm2 2021-22	CAYm1 2022-23
1	Dr. SHIVKUMARA SWAMY R	4	2	1
2	SUNANDA C V	7	3	1
3	ANUSHA D Y	1	-	-
4	PRADEESHA J	-	3	3
5	JHANSI K	-	2	1
6	GOWTHAM G	-	3	3
7	MADHAVI DASARI	-	2	1
8	SOUMYA G J	-	2	-
9	MANGALA GOWRI	1	9	-
10	RAMACHANDRA C	-	4	-
11	NAVNEETH KRISHNA	2	-	-
12	SOMSHEKHAR K J	1	-	-
13	RENUKAMBA J	1	-	-
14	SHAMSUNDAR	1	-	-
15	VENKATESH	3	-	-

Academic Research Details:

The details of academic research are shown in table 5.7.1(ii)

Paper Publications details of the year - 2023

Sl.no	Faculty Name	Title	Name of the Journal /Conference /publisher	ISSN / ISBN	Year
1	Dr.Shivakumarswamy	A Study of Dematalisation in Metalized Polypropylene film Using Artificial De-Metallization technique.	GIS Science Journal	ISSN: 1869-9391	2023
2	Prof Sunanda .C.V	A Study of Dematalisation in Metalized Polypropylene film Using Artificial De-Metallization technique	GIS Science Journal	ISSN: 1869-9391	2023
3	Prof Jhansi K	Power Quality Increment in power distribution system with the placement of DG using TLBO Optimization technique	ICIICS	ISBN:979-8-3503-1546-2	2023
4	Prof. Madhavi Dasari	Analysis and Comparison of UPQC Based on Neurofuzzy Based SVPWM Controller.	AES Journal	AES -30-01-2023-037	2023

Paper Publications details of the year - 2022

Sl.no	Faculty Name	Title	Name of the Journal /Conference /publisher	ISSN / ISBN	Year
1	Dr.Shivakumarswamy	Design and Development of Agrobot Rig	IJIRT	ISSN: 2349-6002 VOL 9	2022
2	Prof. Pradeesha.J	Low power FPGAs Fine Grain Voltage Control	IJAE	ISSN: 0886-9367	2022
3	Prof. Gowtham G	Low power FPGAs Fine Grain Voltage Control	IJAE	ISSN: 0886-9367	2022
4	Prof.Sunanda.C.V	Low power FPGAs Fine Grain Voltage Control	IJAE	ISSN: 0886-9367	2022
5	Prof. Pradeesha.J	Battery or Supply Capacitor Hess Used In Electric Vehicles By Sliding Mode Based Control	IJAE	ISSN: 0886-936747	2022
6	Prof. Gowtham G	Battery or Supply Capacitor Hess Used In Electric Vehicles By Sliding Mode based Control	IJAE	ISSN: 0886-936747	2022
7	Prof.Sunanda.C.V	Battery or Supply Capacitor Hess Used In Electric Vehicles By Sliding Mode based Control	IJAE	ISSN: 0886-936747	2022
8	Prof. Madhavi Dasari	Aurdino Based Drowsiness Detection and Alerting	ICRTEM	ISBN:978-96-92105-01-02	2022
9	Prof. Madhavi Dasari	Home Security System and Automation System	ICRTEM	ISBN:978-93-92105-01-02	2022
10	Prof.Soumya .G.J	Electric Grass Cutter With IOT Based Battery Monitoring System	ICRTEM	ISBN:978-93-92105-01-02	2022
11	Prof.Soumya .G.J	IOT Based Smart Industrial Panel Using Python for Speed Control Monitoring of DC Motor	ICRTEM	ISBN:978-93-92105-01-02	2022

12	Prof.Sunanda.C.V	Hybrid Renewable Power System Design Using Solar, Piezo Electric And Wind Energy	IJAE	ISSN: 0886-9367	2022
13	Prof. Pradeesha.J	Hybrid Renewable Power System Design Using Solar, Piezo Electric And Wind Energy	IJAE	ISSN: 0886-9367	2022
14	Prof. Gowtham G	Hybrid Renewable Power System Design Using Solar, Piezo Electric And Wind Energy	IJAE	ISSN: 0886-9367	2022
15	Prof. Jhansi K	Hybrid Anti Islanding Protection Scheme for VSM Based DG Inverter	UGC Journal	ISSN: 2236-6124	2022
16	Prof. Jhansi K	Development of Fire Detection Surveillance using Machine Learning and IOT	Mysurucon	ISBN: 978-1-6654-9791-6	2022

Paper Publications details of the year - 2021

Sl.no	Faculty Name	Title	Name of the Journal /Conference /publisher	ISSN / ISBN	Year
1	Dr.Shivakumarswamy	Non Invasive Device to Measure and Monitor LungCapacity		ISSN :	2021
2	Prof.Mangalagowri	Earthquake Magnitude Prediction using Artificial Neural Network model	IJAS	ISSN: 2008-8019	2021
3	Prof.Sunanda.C.V	Wireless Charging of Electric Vehicle in Smart Cities	ICRTEM	ISBN:978-93-62-105-005	2021
4	Prof.Sunanda.C.V	RADAR System using Aurdino and Ultrasonic Sensor	ICRTEM	ISBN:978-93-62-105-005	2021
5	Prof . Ramachandra C	3-Phase Power Failure Detection And Voltage Measurement Using Aurdino	ICRTEM	ISBN:978-93-62-105-005	2021
6	Dr.Mangala Gowri S G	Light-Fidelity (Li-Fi):Transmission of data Through Light of Future Technology	ICRTEM	ISBN:978-93-62-105-005	2021
7	Dr.Mangala Gowri S G	EEG Data Processing For Emotion Detection Using DTCWT and FFNN Architecture Design	ICRTEM	ISBN:978-93-62-105-005	2021
8	Dr.Mangala Gowri S G	Smart Solar Power Management System for Domestic Purpose	ICRTEM	ISBN:978-93-62-105-005	2021
9	Prof,Ramachandra C	IOT Based Flood Management and Alerting System	ICRTEM	ISBN:978-93-62-105-005	2021
10	Prof. Gowtham G	Conversion of waste Heat into Electricity Using TEG	ICRTEM	ISBN:978-93-62-105-005	2021
11	Prof. Pradeesha J	Performance Analysis of Distributed System by the Placement of DG Considering Load Growth	ICRTEM	ISBN:978-93-62-105-005	2021
12	Prof. Pradeesha J	Improved Output From Buck-Boost Converter for Commercial Load	ICRTEM	ISBN:978-93-62-105-005	2021
13	Prof. Pradeesha J	A new Cascade Two Level Inverter Based Multilevel STATCOM for High Power Application	ICRTEM	ISBN:978-93-62-105-005	2021

14	Prof.Sunanda.C.V	Design of Hybrid Electric Vehicle with Solar Energy And Wireless Charging	ICRTEM	ISBN:978-93-62-105-005	2021
15	Dr.Mangala Gowri S G	Feature Classification Of EEG Signals Using Neural Networks		ISSN: 0975-4520	2021
16	Dr.Mangala Gowri S G	Dual Tree Wavelet Transformation Using Wavelet Fiters	Journal of Fundamental&Comparitive reserch	ISSN: 2277-7076	2021
17	Dr.Mangala Gowri S G	Predicting Diabetes Mellitus Using Artificial Neural Network	UtaklHistorical Network	ISSN:0976-2132	2021
18	Dr.Mangala Gowri S G	Predicting Diabetes Mellitus Using K-Fold Cross validation	Kalyan Bharati	ISSN:0976-0822	2021
19	Prof.Sunanda.C.V	Predicting Diabetes Mellitus Using K-Fold Cross validation	Kalyan Bharati	ISSN:0976-0822	2021
20	Dr.Mangala Gowri S G	RFID Based Smart car Parking System Using IOT	Wesleyan		2021
21	Prof.Sunanda.C.V	Monitoring And Controlling Of Unmanned Aerial Vechicle By Electrical Actuators	Journal of Interdisciplainary Cycle Research	ISSN:0022-1945	2021
22	Prof,Ramachandra C	Monitoring And Controlling Of Unmanned Aerial Vechicle By Electrical Actuators	Journal of Interdisciplainary Cycle Research	ISSN:0022-1945	2021
23	Prof. Gowtham G	Monitoring And Controlling Of Unmanned Aerial Vechicle By Electrical Actuators	Journal of Interdisciplainary Cycle Research	ISSN:0022-1945	2021
24	Prof.Sunanda.C.V	Low Frequency Sub-Band Image Compression Using JSS Algorithm	Journal of Interdisciplainary Cycle Research	ISSN:0022-1945	2021
25	Prof,Ramachandra C	Low Frequency Sub-Band Image Compression Using JSS Algorithm	Journal of Interdisciplainary Cycle Research	ISSN:0022-1945	2021
26	Prof. Gowtham G	Low Frequency Sub-Band Image Compression Using JSS Algorithm	Journal of Interdisciplainary Cycle Research	ISSN:0022-1945	2021
27	Prof.Sunanda.C.V	Hybrid Renewable Power System Design Using Solar ,Piezo Elecctric And Wind Energy	Journal of Interdisciplainary Cycle Research	ISSN:0022-1945	2021
28	Prof,Ramachandra C	Hybrid Renewable Power System Design Using Solar ,Piezo Elecctric And Wind Energy	Journal of Interdisciplainary Cycle Research	ISSN:0022-1945	2021
29	Prof. Gowtham G	Hybrid Renewable Power System Design Using Solar ,Piezo Elecctric And Wind Energy	Journal of Interdisciplainary Cycle Research	ISSN:0022-1945	2021
30	Dr. Shivakumara Swamy.R	Design and Development of Agro Robot Rig	IJIRT	ISSN:2349-6002	2021

Ph.D Guided/ Ph.D Awarded Details:

The below table 5.7.1(iii) shows the details of Ph.D awarded and table 5.7.1(iv) shows the details of Ph.D guiding

Table 5.7.1(iii): Ph.D Awarded Details

SL. No.	Name of Faculty	Details of Faculty	University	Name of the guide	Year of Completion
1	Dr.Madhavi Dasari	Proffesor,EEE, RRIT Bangalore	VTU Belgaum	Dr.Bharat V S	2023

Table 5.7.1(iv): Ph.D. Guiding Details

SL. No.	Name of Guide	Research Scholar	University	Domain & Title
1	Dr.Shivkumarswamy	Mr.Shivakumar K S	VTU Belgaum	Power Systems

5.7.2 Sponsored Research (5) Institute Marks : 0.00

2022-23 (CAYm1)

Project Title	Duration	Funding Agency	Amount
Automated Solar Based Electric grass Cutter with Multipurpose robotic Vehicle	6 Months	Karnataka State Council for science & Technology-46th series-SPP	6000.00
Low Cost Ultravoilet room Disinfection Device.	6 Months	REALM	15000.00
Analysis of Polarising Technique to detect earth Faults in Sub transmission line Using Intelligent Electronic Device 7JS80	6 Months	REALM	15000.00
IOT Based Underground Fault Detection	6 Months	REALM	15000.00
			Total Amount(X): 51000.00

2021-22 (CAYm2)

Project Title	Duration	Funding Agency	Amount
Genereation of Electrical Energy from Noise and Mechanical Stress Using Piezio Electric Material	6 Months	REALM	15000.00
Home Security and Automation System	6 Months	REALM	15000.00
Design and Implementation of Fire Extinguisher Using Acoustic Sound Wave and IOT	6 Months	REALM	15000.00
IOT Based Smart Industrial Panel Using Python for Speed Control and Monitoring of DC Motor	6 Months	REALM	20000.00
			Total Amount(Y): 65000.00

2020-21 (CAYm3)

Project Title	Duration	Funding Agency	Amount

Cumulative Amount(X + Y + Z) =

5.7.3 Development Activities (10)

Institute Marks : 7.00

A. **Product Development**

Students & faculties are encouraged to do in-house projects that lead to product development. The list of products developed by the students and faculties are given in below table 5.7.3(i).

Table 5.7.3(i) Product Development Details

Sl. No.	Product Title	Product Description	Students Name/ Faculty Name	Product/Patent No
1	Optimal Power Allocation For Residential Network In Islanded Microgrid Using Capacity Market Demand Response Approch	Algorithm of Residential Distribution Network Modled in MATLAB /SIMULINK	Prof.Anusha D Y	Indian Patent Filed & Published Patent No-202341018330A
2	An Efficient Content Based Remot Sensing Image Retrival Using Artificial Neural Network management of E-financial governance		Prof.Pradeesha J	Indian Patent Filed & Published Patent No-202221011722

Table 5.7.3(ii) Details of Product Developed by Students

Sl. No.	Product Title	Student names
1	Automated Solar Based Electric grass Cutter with Multipurpose robotic Vehicle	Dheeraj k, Dhanush S, Bhoomika R , Tejaswini B.
2	Low Cost Ultraviolet room Disinfection Device.	Rupesh kumar Sah , Shankar kumar Yadav , Sneha Josaphine , Afsal A.
3	IOT Based Underground Fault Detection	Hussain Ali Hussain Mursal, Suhaib H M , Ujjal Sarkar.
4	Home Security and Automation System	Abdul Zelani, Ashish Yadav, Vaibhav S Biradar.

A.**Research Laboratories**

Nill

B.Instructional Materials

The Table 5.7.3(v) shows the Instructional Materials used in the department.

Table 5.7.3(v): Instructional Materials

Sl. No.	Details
1	Lab Manuals
2	Assignments
3	Ppts
4	Mini/Projects

5	Lab Description Charts

- The class notes and resource materials are kept into database/Google Classroom. The students can register and students can access.
- Digital Library is provided in the central library where students can access all kinds of e-journals.
- http://ieeexplore.ieee.org (http://ieeexplore.ieee.org/)
- http://asmedl.org (http://asmedl.org/)
- http://accessengineeringlibrary.com (http://accessengineeringlibrary.com/)
- The main Library, aims to offer focused provision for the subjects in which the college admits mature undergraduates.
- The collection comprises textbooks, general reference material and small selections of serials and CD ROMs.
- Video course online
- NPTEL http://nptel.iitm.ac.in/ (http://nptel.iitm.ac.in/)
- **EduSat** https://www.itschool.gov.in/edusat.php (https://www.itschool.gov.in/edusat.php)

D.Working models/charts/monograms:

·Solar based Electric grass cutter.

·Low Cost Ultravoilet room Disinfection Device

·Home Security and Automation System

Working model of Solar based Electric grass cutter

5.7.4 Consultancy(from Industry) (5) Institute Marks :

2022-23 (CAYm1)

Project Title	Duration	Funding Agency	Amount

2021-22 (CAYm2)

Project Title	Duration	Funding Agency	Amount

2020-21 (CAYm3)

Project Title	Duration	Funding Agency	Amount

Cumulative Amount(X + Y + Z) =

5.8 Faculty Performance Appraisal and Development System (FPADS) (30) Total Marks 28.00

Institute Marks : 28.00

Faculty Performance Appraisal is evaluated by collecting the self- appraisal forms, from each faculty in which they need to give the details of academic progress, research progress and other contributions for their self-renewal to cope up with changes in technology. Based on self- appraisal evaluation, the faculty will be recommended for the awards and annual increments.

The following parameters are used to evaluate the faculty performance appraisal which are shown in below table 5.8(i).

Table 5.8(i) Parameters used for faculty performance appraisal.

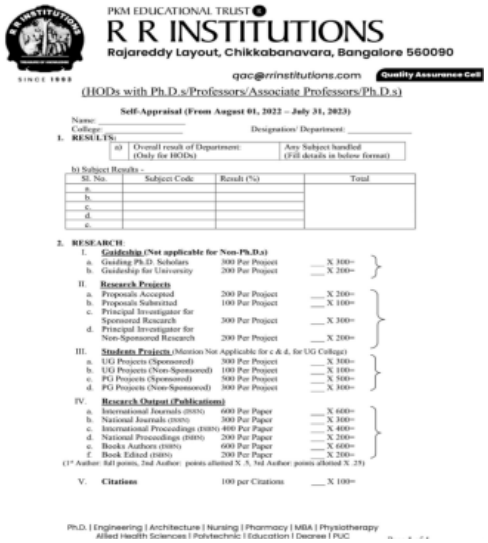
Sl. No	Parameters	Evidences
1.	RESULTS: a. Subject Results	Consider Subjects (Theory & Practical) of which results. are announced in the duration mentioned for appraisal
	b. Mentorship Results	Result sheet of each Student under respective Proctor System
2.	Guiding Students Projects/Research Students (Mention Not Applicable for c & d, for UG College) UG Projects (Sponsored) UG Project (Non-Sponsored) PG Projects (Sponsored) PG Projects(Non-Sponsored)	Sponsored Project Acceptance Letter by funding Agency Project Competition Letter Non-sponsored: First copy of Project, with Title, Student name and Faculty name Group Project will be single count
3.	Number of Students guided for presentation of Papers / Posters/ Internship (not covered in Point.3)	Certificate on presentation by organizing committee Certificates of events organised by R R Institutions will not be considered Certificates of Internship
4.	Student Evaluation (Total of all subjects and Average X Ten Times)	Feedback sent by QAC recently to be considered Students Appraisal (feedback) scores Total of all subjects X 10 Number of subjects

5.	Number of Research activity (Papers Published) Note: (1st Author: full points, 2nd Author: points allotted X .5, 3rd Author: points allotted X .25)- International Journals (ISSN) National Journals (ISSN) International Proceedings (ISBN) National Proceedings (ISBN) Books Authors (ISBN) Book Edited (ISBN)	Journal: First Sheet of the paper displaying Title, Author Name, Journal Name and ISSN compulsory Proceedings: Index sheet mentioning Title and Author Name Front & back cover page of proceeding showing ISBN number Book: Front and back cover displaying Title, Author's name and RR Institution affiliation and ISBN number

	6.	MOU signed / Centre Of Excellence Established	MOU signed copies / Certificate of COE from companies
	7.	Invited/Expert Lecture: At Industry Colleges (outside RR Institutions) At RR Institutions (not in the respective college)	Appreciation Letter / Certificate from Host Organization
	8.	Membership of Professional Societies: Any Life member New Membership taken during the year	Memberships taken in Academic Year 2018-19 will be considered Proof of Registration of membership with date
	9.	University Assignments: Member of Academic Council Members of BOS / BOE External Examiner / External DCS Question Paper setting	Letter from University for allotted work
	10.	Co-Ordinator for organizing Conference/Seminar/ Work Shop/QIP/FDP Etc	Invitation copies displaying as convenor Certificates given by QAC for organizing events Multiple Coordinators for single event will not be considered
			Only main Coordinator will be considered
	11.	Attending Conference/Seminar/ Work Shop/QIP/FDP Etc	Certificates of the events with faculty and college name
	12.	Awards: State level/ Regional Level National Level International Level	Certificates of Awards
	13.	Additional Responsibilities (Given by Principal/Management)	Letter from College registered allotted work Events organizing will not be considered here
	14.	Committee Incharges	Members of committee Committee should be functional / conducting meetings / events etc.

		Any other Contribution for Image building	Proofs for the same
	15.	of College (not mentioned in any above)	Considered which is not added in questions 1-14

Format of appraisal form HOD with Ph.D/ Professors /Associate Professors /Ph.D is shown in figure 5.8(a)



PKM EDUCATIONAL TRUST

R R INSTITUTIONS

Rajareddy Layout, Chikkabanavara, Bangalore 560090

qac@rrinstitutions.com Quality Assurance Cell

(HODs with Ph.D.s/Professors/Associate Professors/Ph.D.s)

Self-Appraisal (From August 01, 2022 – July 31, 2023)

Name:
College: Designation/ Department:

1. RESULTS:

a) Overall result of Department: (Only for HODs)	Any Subject handled (Fill details in below format)

b) Subject Results -

Sl. No.	Subject Code	Result (%)	Total
a.			
b.			
c.			
d.			
e.			

2. RESEARCH

I. **Guideship (Not applicable for Non-Ph.D.s)**

a.	Guiding Ph.D. Scholars	300 Per Project	___ X 300=
b.	Guideship for University	200 Per Project	___ X 200=

II. **Research Projects**

a.	Proposals Accepted	200 Per Project	___ X 200=
b.	Proposals Submitted	100 Per Project	___ X 100=
c.	Principal Investigator for Sponsored Research	300 Per Project	___ X 300=
d.	Principal Investigator for Non-Sponsored Research	200 Per Project	___ X 200=

III. **Students Projects** (Mention Not Applicable for c & d, for UG College)

a.	UG Projects (Sponsored)	300 Per Project	___ X 300=
b.	UG Projects (Non-Sponsored)	100 Per Project	___ X 100=
c.	PG Projects (Sponsored)	500 Per Project	___ X 500=
d.	PG Projects (Non-Sponsored)	300 Per Project	___ X 300=

IV. **Research Output (Publications)**

a.	International Journals (ISSN)	600 Per Paper	___ X 600=
b.	National Journals (ISSN)	300 Per Paper	___ X 300=
c.	International Proceedings (ISBN)	400 Per Paper	___ X 400=
d.	National Proceedings (ISBN)	200 Per Paper	___ X 200=
e.	Books Authors (ISBN)	600 Per Paper	___ X 600=
f.	Book Edited (ISBN)	200 Per Paper	___ X 200=

(1st Author: full points, 2nd Author: points allotted X .5, 3rd Author: points allotted X .25)

V. **Citations** 100 per Citations ___ X 100=

Ph.D. | Engineering | Architecture | Nursing | Pharmacy | MBA | Physiotherapy
Allied Health Sciences | Polytechnic | Education | Degree | PUC

PKM EDUCATIONAL TRUST

R R INSTITUTIONS

Rajareddy Layout, Chikkabanavara, Bangalore 560090

qac@rrinstitutions.com

(Teachers/HODs without Ph.D.'s)

Self-Appraisal (From August 01, 2022 – July 31, 2023)

Name:
College: Designation/ Department:

1. RESULTS:

a) Overall result of Department: (Only for HODs)	Any Subject handled (Fill details in below format)

b) Subject Results -

Sl. No.	Subject Code	Result (%)	Total
a.			
b.			
c.			
d.			
e.			

2. RESEARCH

I. **Research Projects**

a.	Proposals Accepted	200 Per Project	___ X 200=
b.	Proposals Submitted	100 Per Project	___ X 100=

II. **Students Projects** (Mention Not Applicable for c & d, for UG College)

a.	UG Projects (Sponsored)	300 Per Project	___ X 300=
b.	UG Projects (Non-Sponsored)	100 Per Project	___ X 100=
c.	PG Projects (Sponsored)	500 Per Project	___ X 500=
d.	PG Projects (Non-Sponsored)	300 Per Project	___ X 300=

III. **Research Output (Publications)**

a.	International Journals (ISSN)	600 Per Paper	___ X 600=
b.	National Journals (ISSN)	300 Per Paper	___ X 300=
c.	International Proceedings (ISBN)	400 Per Paper	___ X 400=
d.	National Proceedings (ISBN)	200 Per Paper	___ X 200=
e.	Books Authors (ISBN)	600 Per Paper	___ X 600=
f.	Book Edited (ISBN)	200 Per Paper	___ X 200=

(1st Author: full points, 2nd Author: points allotted X .5, 3rd Author: points allotted X .25)

IV. **Citations** 100 per Citations ___ X 100=

3. MOU signed / Centre of Excellence Established 200/Per Work ___ X 200=

4. Membership of Professional Societies
a. New Membership taken during the year 250/Per Unit ___ X 250=

5. Number of Students guided for Presentation of Projects / Posters (Not covered in Point 2 (III)) 200/Per Event ___ X 200=

5.9 Visiting/Adjunct/Emeritus Faculty etc. (10)

Institute Marks :

6 FACILITIES AND TECHNICAL SUPPORT (80)

Total Marks 74.00

6.1 Adequate and well equipped laboratories, and technical manpower (30)

Total Marks 27.00

Institute Marks : 27.00

Sr. No	Name of the Laboratory	Number of students per set up(Batch Size)	Name of the Important Equipment	Weekly utilization status(all the courses for which the lab is utilized)	Technical Manpower Support		
					Name of the Technical staff	Designation	Qualification
1	Analog Electronics lab ,Op AMP and LIC Lab Logic Design Lab	20	Digital IC Trainer Kit, Spring board, Bread Board, Signal Generators, RPS,DRB,DCB,DIB and Multimeter, Electronic components	12hrs	Rupa H D	Asst.Instructor	BE
2	Microcontrollers Lab, Digital Signal Processing Lab	20	8051 Development Kit with power, Interfacing cards for kits	12 hrs	Nirmala S H	Foreman	BE
3	Power Electronics Lab	20	SCR,MOSFET,UJT, Oscillator, TRIAC ,DIAC, DC motor, Universal motor, IM motor, DRB,DCB,DIB and Multi-meter	6 hrs	Rupa H D	Asst. Instructor	BE
4	Electrical Machines Lab-1	20	Single & 3phase Transformer, Single & 3phase IM motor, Voltmeter, Ammeter, Wattmeter and Induction Generator	6 hrs	Nirmala S H	Foreman	BE
5	Electrical Machines Lab-2	20	DC compound Generator, DC shunt & series motor, Synchronous Motor & Generator and DC rectifier units	6 hrs	Nirmala S H	Foreman	BE
6	Control Systems Lab	20	Time & frequency response kit, Lead-Lag &PID controller kit, AC-DC servo motor and syncro transmitter & receiver	6 hrs	Nirmala S H	Foreman	BE
7	Relay & High Voltage Lab	20	Electromechanical, microprocessor over /under voltage/current and negative phase sequence relay, Fuse testing kit, Motor protection kit, Oil test kit, Field	6hrs	Nirmala S H	Foreman	BE
8	Power System Simulation Lab/Computer Aided Electrical Drawing	20	Computers 3.20GHz, 4GB RAM & 500GB hard disk	12 hrs	Nirmala S H	Foreman	BE
9	Basic Electrical Lab	20	Power supply,DC Voltmeter, Ammeter,Rehostat,LED, Fluorescent Lamp,2Way,intermediate switch,1Phase,3Phase Resistive Load, Multifunction Meter,1 Phase Energymeter, MCB & Fuses, DC Shunt Motoar, 3phase Induction Motor, 3phase Synchronous Motor.	20hrs	Rupa H D	Asst. Instructor	BE

10	Circuit Simulation Using Pspice	20	Computers 3.20GHz, 4GB RAM & 500GB hard disk	6hrs	Rupa H D	Asst. Instructor	BE
11	Simulation of Op Amp Circuits	20	Computers 3.20GHz, 4GB RAM & 500GB hard disk	6hrs	Rupa H D	Asst. Instructor	BE

6.2 Additional facilities created for improving the quality of learning experience in laboratories (25)

Total Marks 23.00

Institute Marks : 23.00

Sr. No	Facility Name	Details	Reason(s) for creating facility	Utilization	Areas in which students are expected to have enhanced learning	Relevance to POs/PSOs
1	Internet Lab	Equipped with Computer Systems, LAN connectivity & Ethernet/WiFi	For faculties & students to enhance their knowledge	Faculties, Research Scholars & UG students. It is available throughout the year for utilization	Inculcate self- learning Skills and communication skills	1,2,5,6,8,9,10
2	Digital Library	Equipped with computer systems, E- Resources packages available, IEEE-IEL Online, Springer, EBooks/ Test Preparation Platform, Proquest, Knimbus, Kopykitab, Taylor & Francis, Asian Age International, NDL of India, Institutional Repository, VTU-E-Consortium	To help students to enhance their knowledge with latest trends and updates in the field of Technology	It is available throughout the year. Utilized by all the research scholars, students and faculties	Inculcate self- learning skills	1,2,5,6,8,9,10
3	Edusat Lab	Equipped with Systems, A View Software LCD Projector, Audio System & Recording Option	To support students to gain academic knowledge through E-Learning	Faculties & UG Students	Self Learning	1,2,3,4,5,10
4	Access to e-learning and Journals	E-Resources packages available, IEEE-IEL Online,	To help students to enhance their knowledge with	It is available	Students and staff can access to e- learning and Journal	1,2,5,6,8,9,10
5	Language Lab	It is equipped with Computer Systems, Internet Connection, Projector, Software, Head Set and Teaching Board	To Teach Lessoning, Speaking, Reading & Writing Skills (LSRW	UG Students	English & Communication Skills	1,5,8,9,10,12
6	Virtual Lab	To provide remote- access to simulation- based Labs in various disciplines of Science and Engineering	To provide remote- access to simulation-based Labs in various disciplines of Science and Engineering	To enthuse students to conduct experiment s by arousing their curiosity. This would help them in learning basic and advanced concepts through remote experimention	Mi-power, PLC, Matlab, AutoCAD, Pspice ,keil micro vision,flashmagic	1,2,5,6,8,9,10
7	D-Book	D-Bookstore enables you to seek out precise context specific content	A teaching faculty of an institution uploads some content on a topic or subject through the D-Bookstore deployed in the institution	It is utilized by the students for their Academic purpose.	Students and staff can access to D- Book store , to have a better understanding of subjects.	1,2,3,4,5,10

6.3 Laboratories: Maintenance and overall ambiance (10)

Total Marks 9.00

Institute Marks : 9.00

Maintenance of Laboratory Equipment's:

Maintenance of laboratory equipment includes computer system, CRO, digital kit ,Function generator, single phase transformers, 3 phase transformers, multi-function meters, loading rheostats, induction motors, energy metres.

Maintenance is done in two ways:

Regular maintenance:

- Regular maintenance of computer system is done by deleting unnecessary files and formatting the system. As per requirement minor repairs are carried out by the lab assistant & faculty member.
- Major repairs are outsourced by following the procedure of the institute.
- **On call maintenance**:
- - On call maintenance is done in case of major issue or breakdown of the equipment.
  - In case of any major issue or breakdown of the equipment, a complaint is raised from the department to System administration department.
  - If issue is not resolved by System admin department further based on the recommendation the new equipment shall be procured.

Overall Ambience:

- All laboratories have a seating capacity as per the requirements.
- Laboratories are equipped with LCD projectors, white screen and white board. The boards are installed in places with proper lighting. The laboratories are spacious, well ventilated and well furnished.
- The laboratories are provided with un-interrupted power supply. House Keeping will be done regularly.
- The cleanliness of the laboratory is maintained.
- The overall ambience of the laboratories is serene and provide excellent learning environment.

6.4 Project laboratories (5)

Total Marks 5.00

Institute Marks : 5.00

Research plays an important role in the educational experience and provides practical skills for future employment of engineering students. The objective of this lab is to motivate and encourage students to do in-house project. This lab provides a place where the students can make & assemble their mini and major projects while working in groups. Management took initiation and developed R&D center in the Department of Electrical & Electronics Engineering. At this center, student can design, implement advanced solutions, thus preparing students for job readiness, lifelong problem solving, and leadership in the industry.

6.5 Safety measures in laboratories (10)

Total Marks 10.00

Institute Marks : 10.00

Sr. No	Laboratory Name	Safety Measures
1	Computer simulation Labs	1.Fire Extinguisher 2.Do’s and Dont's board 3.First aid box 4.Antivirus software 5.Centralized power backup CCTV 6.LAN
2	Analog Electronics lab ,Op AMP and LIC Lab, Logic Design Lab, Microcontrollers Lab, Digital Signal Processing Lab	1.Fire Extinguisher 2.Do’s and Dont's board 3.First aid box 4.Antivirus software 5.Centralized power backup CCTV 6.LAN
3	Power Electronics Lab, Electrical Machines Lab-1,2, Control Systems Lab, Relay & High Voltage Lab, Basic Electrical Lab	1.Fire Extinguisher 2.Do’s and Dont's board 3.First aid box 4.Antivirus software 5.Centralized power backup CCTV 6.LAN 7. Rubber mat

7 CONTINUOUS IMPROVEMENT (50)

Total Marks 40.00

7.1 Actions taken based on the results of evaluation of each of the POs & PSOs (20)

Total Marks 18.00

Institute Marks : 18.00

POs Attainment Levels and Actions for Improvement- (2022-23)

POs	Target Level	Attainment Level	Observations
PO 1 : Engineering Knowledge			
PO 1	1.8	2.03	Target Achieved
-			
PO 2 : Problem Analysis			
PO 2	1.8	1.93	Target Achieved
-			
PO 3 : Design/development of Solutions			
PO 3	1.8	1.72	Target not achieved
Action 1: Students attended internship on "Python programming and application projects" Internship on "Web Design and development" Internship on "IOT Based coal mine safety and monitoring system " Internship on "Artificial EYE for blind people using ultrasonic vibrator glove" Internship on "Basic of PLC and mechatronics" Internship on "IOT Based air pollution monitoring system" Internship on "IOT Based Traffic light control system" Action 2: More assembly level programming to be taught in classes. Action 3: Students are motivated to carry out Mini project in Various Domain.			
PO 4 : Conduct Investigations of Complex Problems			
PO 4	1.8	1.95	Target Achieved
-			
PO 5 : Modern Tool Usage			
PO 5	1.8	2.15	Target Achieved
-			
PO 6 : The Engineer and Society			
PO 6	1.8	1.89	Target Achieved
-			
PO 7 : Environment and Sustainability			
PO 7	1.8	2.26	Target Achieved
-			
PO 8 : Ethics			
PO 8	1.8	1.97	Target achieved
-			
PO 9 : Individual and Team Work			
PO 9	1.8	1.99	Target Achieved
-			

PO 10 : Communication			
PO 10	1.8	2.07	Target Achieved
-			
PO 11 : Project Management and Finance			
PO 11	1.8	1.77	Target not Achieved
Action 1: Awareness was created among the student regarding the management principals and managing projects by the faculties.			
PO 12 : Life-long Learning			
PO 12	1.8	1.8	Target achieved.
-			

PSOs Attainment Levels and Actions for Improvement- (2022-23)

PSOs	Target Level	Attainment Level	Observations
PSO 1 : Graduates will be able to analyse, design and develop solutions for the problems and to apply the technical Knowledge in Power Systems and Renewable Energy Systems.			
PSO 1	1.8	1.85	Target achieved
-			
PSO 2 : Graduates will be able to design Power Electronic Converters and develop solutions for the problems in Analog and Digital Electronic Circuits.			
PSO 2	1.8	1.84	Target achieved
-			
PSO 3 : Graduates will be able to solve problems of Power system and Power Electronics using software tools and also to apply ethical principles, management skills and responsibilities.			
PSO 3	1.8	1.58	Target not met.
Action 1: Workshops, seminars and SDP's are conducted in areas like MATLAB applications.			

7.2 Academic Audit and actions taken thereof during the period of Assessment (10) Total Marks 9.00

Institute Marks : 9.00

A. **Course File Evaluation**

Course files are prepared by faculty members before the semester starts. The academic review committee consisting of HOD and few of departmental senior faculty members performs audit of course files. The comments of the committee are conveyed as feedback to the faculty member to include missing content in course file. This audit ensures the quality deliverables to the students. The Table 7.2(i) shows the course file contents.

Table 7.2(i) Course file contents

1.	Vision, Mission of Institution & Department
2.	Calendar of events - University
3.	Calendar of Events – College, Department
4.	Attendance Register
5.	Class Time Table
6.	Individual Time Table
7.	Syllabus Copy with text book, reference books
8.	Student List
9.	Toppers list & Below average Students list
10.	Proctor’s list and Proctor student data
11.	Course Objectives & Course Outcomes & Programme Outcome
12.	Lesson Plan
13.	University Question Papers
14.	Question Bank – Module wise for all five modules
15.	Assignment Questions – Module wise for all five modules
16.	Internal Test Question Papers & Scheme
17.	Class Test
18.	Lecturer Notes, Copies of PPT & Other Learning Materials
19.	Internal Test Marks List
20.	Subject Results & Student Feed back

B.Audit on Department File

The academic committee verifies the maintenance of department documents and provides feedback to head of the department, This ensures the maintenance of documentary evidence at department level. The list of department files audited by committee is listed below -

1. Subject Allocation File
2. Project File
3. Seminar File
4. Time Table
5. Lesson plan
6. CO-PO mapping file
7. Department Profile
8. Staff Meeting File
9. Circular File
10. Purchase File and Equipment Service Register
11. PTM File
12. Proctor File
13. Department Library File
14. Publication File
15. Collaboration with MOU
16. Conference/Seminar / Workshop
17. Stock register
18. Result Analysis File
19. Department Placement File
20. Course File
21. Personal File (Teaching and Non-Teaching)
22. Feedback Analysis
23. Remedial measure for the weaker student
24. CO-PO Calculation

Action taken by the faculty members:

Faculty members incorporate changes suggested by the academic committee.

7.3 Improvement in Placement, Higher Studies and Entrepreneurship (10) Total Marks 6.00

Institute Marks : 6.00

A. **Placement Details**

The Table 7.3(i) shows the placement data with packages.

Table 7.3(i): Placement Data with Packages

Year	No of Students for Final Examination	No of students Placed	Salary Packages INR in Lakhs	
			Min	Max
CAYm1 2022 -23	15	11(73%)	3.0 – 8.5	
CAYm2 2021- 22	14	8(71%)	3.0-4.8	
CAYm3 2020 - 21	13	10(62%)	1.80 - 2.40	

7.4 Improvement in the quality of students admitted to the program (10)

Total Marks 7.00

Institute Marks : 7.00

Item		2023-24	2022-23	2021-22
National Level Entrance Examination	No of students admitted	0	0	0
	Opening Score/Rank	0	0	0
	Closing Score/Rank	0	0	0
State/ University/ Level Entrance Examination/ Others	No of students admitted	21	7	5
CET	Opening Score/Rank	13912	76107	93537
	Closing Score/Rank	161588	210833	157937
Name of the Entrance Examination for Lateral Entry or lateral entry details	No of students admitted	5	2	0
	Opening Score/Rank	3572	8671	0
DIP-CET	Closing Score/Rank	12173	14133	0
Average CBSE/Any other board result of admitted students(Physics, Chemistry&Maths)		67	61	73

8 FIRST YEAR ACADEMICS (50)

Total Marks 36.89

8.1 First Year Student-Faculty Ratio (FYSFR) (5)

Total Marks 5.00

Institute Marks : 5.00

Please provide First year faculty information considering load for the particular program

Name of the faculty member	PAN No.	Qualification	Date of Receiving Highest Degree	Area of Specialization	Designation	Date of joining	Teaching load (%)			Currently Associated (Yes / No)	Nature Of Association (Regular / Contract)	Date Of leaving(In case Currently Associated is 'No')
							CAY	CAYm1	CAYm2			
Dr.SOWMYA A	EEKPS4588K	M.Sc. and PhD	03/10/2022	PHYSICS	Assistant Professor	27/09/2021	100	0	0	Yes	Regular	
MANGALA PY/	AHYPH4463P	M.E/M.Tech	09/11/2017	EEE	Assistant Professor	16/05/2022	20	0	0	Yes	Regular	
VIJAYALAKSH	AMVPV0448C	M.E/M.Tech	22/07/2012	ECE	Assistant Professor	08/03/2011	20	20	25	Yes	Regular	
Dr.SHANKARA	BMLPS5390F	M.Sc. and PhD	27/07/2014	PHYSICS	Associate Professor	20/10/2009	0	100	100	No	Regular	31/07/2023
Mr.GANESH Y.	OZDPS7824G	M.Sc	07/06/2021	MATHEMATICS	Assistant Professor	16/12/2021	0	25	0	No	Regular	31/07/2023
Mr.MADHUSUI	BEGPM2243J	M.Sc	15/02/2007	CHEMISTRY	Assistant Professor	13/07/2021	0	25	25	Yes	Regular	
Mr.VINOD K.L	AWNPL3713A	MA	26/10/2017	KANNADA	Assistant Professor	23/10/2019	0	20	0	No	Regular	31/07/2023
Mrs. MALA N	BSCPM8903P	MA	13/03/2018	ENGLISH	Assistant Professor	16/12/2021	0	20	0	No	Regular	12/06/2023
MALASHREE (	CRXPM6899M	M.E/M.Tech	12/11/2013	EEE	Assistant Professor	22/03/2021	0	25	20	Yes	Regular	
ABHISHEK M	GDUOM4932G	M.E/M.Tech	05/12/2020	CIVIL	Assistant Professor	15/12/2021	0	20	0	Yes	Regular	
SUSHMA R K	FTTPS4424K	M.E/M.Tech	17/07/2018	CIVIL	Assistant Professor	14/02/2021	0	20	0	Yes	Regular	
Dr NAVEEN M	AWVPN1431H	ME/M. Tech and PhD	02/08/2020	ISE	Associate Professor	02/10/2020	0	0	50	Yes	Regular	
Mrs. NAIK PAI	AJHPN7215Q	M.Sc	02/10/2012	MATHEMATICS	Assistant Professor	03/02/2020	0	0	25	Yes	Regular	
Mr. PAVAN SA(	DJMPB2334G	MA	06/06/2019	ENGLISH	Assistant Professor	23/10/2019	0	0	17	No	Regular	31/07/2022
HARISH M R	AOGPH5810R	M.E/M.Tech	01/09/2018	MECH	Assistant Professor	31/08/2020	0	0	20	Yes	Regular	
VEERABHADF	BEWPP5181A	M.E/M.Tech	21/12/2014	CIVIL	Assistant Professor	20/12/2021	0	0	20	Yes	Regular	

Mr.MURALI R	GDFPM4263K	M.Sc	20/03/2022	MATHEMATICS	Assistant Professor	08/02/2023	20	0	0	Yes	Regular	
Dr. MOHAN KU	BIZPM5287M	M.Sc. and PhD	15/07/2019	CHEMISTRY	Associate Professor	16/07/2022	100	0	0	Yes	Regular	
Dr. RAGHU K	AUFPR9779Q	ME/M. Tech and PhD	14/07/2023	CIVIL	Associate Professor	14/07/2023	25	0	0	Yes	Regular	
Mrs. J MARYM	BJLPM9910J	M.Phil	06/11/2011	ENGLISH	Assistant Professor	16/05/2022	20	0	0	Yes	Regular	
MURALI G E	CWAPM9182K	M.E/M.Tech	05/09/2015	MECH	Assistant Professor	04/02/2018	10	20	0	Yes	Regular	

Year	Number Of Students(approved intake strength) N	Number of Faculty members(considering fractional load) F	FYSFR (N/F)	*Assessment=(5*20)/FYSFR(Limited to Max.5)
2021-22(CAYm2)	60	4	15	5
2022-23(CAYm1)	60	3	20	5
2023-24(CAY)	60	4	15	5
Average	60	3	16	5

8.2 Qualification of Faculty Teaching First Year Common Courses (5) Total Marks 3.00

Institute Marks : 3.00

Year	x (Number Of Regular Faculty with Ph.D)	y (Number Of Regular Faculty with Post graduate Qualification)	RF (Number Of Faculty Members required as per SFR of 20:1	Assessment Of Faculty Qualification [(5x + 3y) / RF]
2021-22	1	1	3	2.00
2022-23	1	2	3	3.00
2023-24	2	1	3	4.00

Average Assessment: 3.00

8.3 First Year Academic Performance (10) Total Marks 4.89

Institute Marks : 4.89

Academic Performance	2023-24	2022-23	2021-22
Mean of CGPA or mean percentage of all successful students(X)	6.45	5.40	6.42
Total Number of successful students(Y)	26.00	23.00	6.00
Total Number of students appeared in the examination(Z)	46.00	24.00	6.00
API [X*(Y/Z)]	3.33	4.79	6.55

Average API[(AP1+AP2+AP3)/3] : 4.89

Assessment [1.5 * Average API] : 4.89

8.4 Attainment of Course Outcomes of first year courses (10) Total Marks 7.00

8.4.1 Describe the assessment processes used to gather the data upon which the evaluation of Course Outcomes of first year is done (5)

Institute Marks : 3.00

8.4Attainment of Course Outcomes of first year courses

8.4.1 Describe the assessment processes used to gather the data upon which the evaluation of Course Outcomes of first year is done

Attainment level measured in terms of student performance with respect to internal assessments of a subject plus the performance in the University examination

TARGET & ATTAINMENT LEVELS OF COS FOR INTERNAL ASSESSMENT

Target is stated in terms of number of students scoring greater than or equal to 40% (of Maximum) in the internal assessment for a maximum marks (defined by University) (both theory and lab). Attainment Level 40% of the students scoring greater than or equal to 40% in the internal assessment is set as an attainment level and if the targets are achieved then all the course outcomes are attained for that year.

TARGET & ATTAINMENT LEVELS OF COS FOR EXTERNAL ASSESSMENT

Target is stated in terms of number of students pass in examination i.e scoring greater than or equal to 40% of total marks in the external exam for a maximum marks of 100. Attainment Level 60% of the students scoring greater than or equal to 40 % of total Marks in the external assessment is set as an attainment level and if the targets are achieved then all the course outcomes are attained for that year

DATA COLLECTION PROCESS & PROCEDURE:

- In the Outcome Based Education (OBE), assessment is done through one or more than one processes, carried out by the institution, that identify, collect, and prepare data to evaluate the achievement of course outcomes (CO's).
- Assessment tools are categorized into two methods : Direct methods and indirect methods.
- Direct methods measures the student's knowledge and skills based on the performance in the continuous internal assessment tests, semester examinations and classroom and laboratory assignments etc. These methods measures the level of what students know and/or can do after learning.
- Indirect methods such as surveys will reflect on student's learning. They assess opinions or thoughts about the graduate's knowledge or skills and they are valued through survey from different stakeholders

Continuous Internal Evaluation (CIE)

Sl.No	Assessment Methods
1	Test
2	Quiz
3	Assignments
4	Seminar
5	Laboratory

Semester End Examination (SEE)

Sl.No	Assessment Methods
1	Theory examination
2	Laboratory examination

Direct Assessment of Theory & Lab:

- Internal test are conducted as per the calendar of Events set by institutions and IA marks are computed considering the performance of the students in internal test plus assignment.
- The lab evaluations are calculated as per the rubrics assigned
- The Maximum Internal assessment for respective scheme is as defined by University.

Direct Assessment Methods are formative as well as summative:

For some of the POs that are abstract, rubrics has been designed using performance indicators and shared with the students in advance. This helps students to understand against which parameter their work will be judged. These rubrics can be used by students in revising and judging their own work and progress.	
Internal Assessment Test	Qualitative performance assessment tool such as Class tests are conducted by course coordinator to assess student's knowledge and problem-solving skills.
End semester exam (theory + practical)	Semester End examination is the metric for assessing whether all the POs are attained or not. Examination is more focused on attainment of course outcomes and program outcomes.
Lab Internal Test	This is mainly to assess student's practical knowledge with their design thinking or logical analysis capabilities.
Indirect Assessment Methods	
Course end survey	To evaluate the success of program in providing students with opportunities to achieve the program outcome - every semester

Sl. No.	Assessment Method	Assessment frequency	Assessment Tool	Incharge	Reviewer
1	Internal Assessment Test	As per the regulations of University applicable to the respective scheme	Student's performance in internal assessment booklets.	Course Faculty	I st year co-ordinator

2	End semester exam (theory + practical)	At the end of the semester	Student's performance in university exams	Evaluators assigned by University	
3	Lab Internal Test	At the end of the semester	Student's performance in conducting experiments	Course Faculty	I st year co-ordinator
4	Course end survey	At the end of the semester	Student survey	Course Faculty	I st year co-ordinator

Rubrics for continuous evaluation in every lab session-Max Marks: 25

Parameters	High	Marks	Medium	Marks	Low	Marks
Conduct /Perform (10 Marks)	Understood the objective of the experimental setup/algorithm	2	Partially Understood the objective of the experimental setup/ compared the output with computation	1	Not Understood the objective & not completed the work in the lab session	0 marks
	Rigged up the circuit/ Executed the Program/Performed the expeiment/Recording the Tabulation / Calculation	4	Partially Rigged up the circuit/ Executed the Program/ Performed the expeiment/	2		
	Compare the output with computation / The output result with calibrated reading /Executed the program & obtained the output correctly	4	Partially compared the output with calibrated reading /computation / obtained the output.	2		
	Total: 10 Marks		Total: 5 Marks		Total: 0 Marks	

Record Writing (10 Marks)	Clearly Stated Aim/Procedure/theory for the given problem /experiment	4	Partially Stated Aim/Procedure/theory for the given problem /experiment	2	Non – Submission of record in the lab session	0
	Clearly Stated algorithm/ design/ Drawing / calculation/ tabulation	4	Partially Stated algorithm/ design/ calculation/ tabulation	2		
	Clearly Stated the result/conclusions/compared the result with computation/ drawn graph	2	Partially Stated the result/ conclusions /compared the result with computation/ drawn graph	1		

	Total: 10 Marks		Total: 5 Marks		Total: 0 Marks	
Viva Voce or Quiz (5Marks)	Answered 5 questions	Answered 4 questions	Answered 3 questions	Answered 2 questions	Answered 1question	Student did not answer any question
	Total: 5 Marks	Total: 4 Marks	Total: 3 Marks	Total: 2 marks	Total: 1 Mark	Total: 0 Marks

Continuous internal evaluation	Conduct/perform	10 marks
	Record writing	10 marks
	Viva voce/quiz	5 marks
	Total	25 marks

- Final lab CIE will be reduced to 15

Rubrics for Evaluation of Internal Lab Examination-Max Marks: 25

Parameters	**High**	**Marks**	**Medium**	**Marks**	**Low**	**Marks**

Writeup	Student is able to design//tabulate / write appropriate formula used for calculation / write algorithm /expected result.	4	Partially Able to draw circuit but doesn't design / write a program doesn't know the algorithm	2	No knowledge of the given experimental setup &problem statement	0
	Draw/ Tabulate or write Program / Computation and obtain result	4	Partially Know the Program / Experimental setup	**2**		
	Writes expected output/result	2	Partially writes the expected result/output	1 1		
	Total: 10 Marks		Total: 5 marks		Total: 0 Marks	
Execution (5 Marks)	Able to Execute the experiment compile the problem without error	5	Partially able to conduct the given experiment	**2**	Not able to execute	0
	Draw/ Tabulate/ conduct/ execute the program	3	Partially calculated the result, partially resolve error	2		
	Obtain the result as expected	2	Partially obtain the result as expected	1		
	Total: 10 Marks		Total: 5 Marks		Total: 0 Marks	

Viva Voce or Quiz (5 Marks)	Answered 5 questions	Answered 4 questions	Answered 3 questions	Answered 2 questions	Answered 1 question	Did not answer any question
	Total: 5 Marks	Total: 4 Marks	Total: 3 Marks	Total: 2 marks	Total: 1 Mark	Total: 0 Marks

Internal lab	Conduct/perform	10 marks
	Execution	10 marks
	Viva voce/quiz	5 marks
	Total	25 marks

- Final test marks will be reduced to 10

Total Marks	CIE	15
	Internal	10
	Final IA	25

8.4.2 Record the attainment of Course Outcomes of all first year courses (5)

Institute Marks : 4.00

Course Name: CALCULUS AND DIFFERENTIAL EQUATIONS (Subject code: 21MAT11)

CO1	Apply the knowledge of calculus to solve problems related to polar curves and its applications in determining the bentness of a curve.
CO2	Learn the notion of partial differentiation to calculate rate of change of multivariate functions and solve problems related to composite functions and Jacobian.
CO3	Solve first-order linear/nonlinear ordinary differential equations analytically using standard methods.
CO4	Demonstrate various models through higher order differential equations and solve such linear ordinary differential equations.
CO5	Test the consistency of a system of linear equations and to solve them by direct and iterative methods

Course Name: Engineering Physics (Subject code: 21PHY12/22)

CO1	Interpret the types of mechanical vibrations and their applications, the role of Shock waves in various fields.
CO2	Demonstrate the quantisation of energy for microscopic system.
CO3	App[y LASER and Optical fibers in opto electronic system
CO4	Illustrate merits of quantum free electron theory and applications of Hall effect.
CO5	Analyse the importance of XRD and Electron Microscopy in Nano material characterization.

Course Name: BASIC ELECTRICAL ENGINEERING (Subject code: 21ELE13/23)

CO1	Analyze basic DC and AC electric circuits.
CO2	Explain the working principles of transformers and electrical machines.
CO3	Explain the concepts of electric power transmission and distribution of power
CO4	Understand the wiring methods, electricity billing, and working principles of circuit protective devices and personal safety measures.

Course Name: ELEMENTS OF CIVIL ENGINEERING AND MECHANICS (Subject code: 21CIV14/24)

CO1	Understand the various fields of civil engineering.
CO2	Compute the resultant of a force system and resolution of a force.
CO3	Comprehend the action for forces, moments, and other types of loads on rigid bodies and compute the reactive forces
CO4	Locate the centroid and compute the moment of inertia of regular and built-upsections.
CO5	Analyze the bodies in motion.

Course Name: Engineering Visualization (Subject code: 21EVN15/25)

CO1	Understand and visualize the objects with definite shape and dimensions
CO2	Analyze the shape and size of objects through different views
CO3	Develop the lateral surfaces of the object
CO4	Create a 3D view using CAD software.
CO5	Identify the interdisciplinary engineering components or systems through its graphical representation.

Course Name: ENGINEERING PHYSICS LABORATORY (Subject code: 21PHYL16/26)

CO1	Understand the measuring techniques
CO2	Operate different instruments and be capable to analyse the experimental results.
CO3	Construct the circuits and their analysis.

Course Name: BASIC ELECTRICAL ENGINEERING LABORATORY (Subject code: 21ELE17/27)

CO1	Verify KCL and KVL and maximum power transfer theorem for DC circuits. CO3: CO4:. CO5:. CO6:
CO2	Compare power factors of different types of lamps.
CO3	Demonstrate the measurement of the impedanceofanelectricalcircuitandpowerconsumedbya3-phase load.
CO4	Analyze two-way and three-way control of lamps
CO5	Explain the effects of open and short circuits in simple circuits
CO6	interpret the suitability of earth resistance measured.

Course Name: COMMUNICATIVE ENGLISH (Subject code: 21EGH18)

CO1	Understand and apply the Fundamentals of Communication Skills in their communication skills
CO2	Identify the nuances of phonetics, intonation and enhance pronunciation skills.
CO3	To impart basic English grammar and essentials of language skills as per present requirement.
CO4	Understand and use all types of English vocabulary and language proficiency
CO5	Adopt the Techniques of Information Transfer through presentation.

Course Name: INNOVATION and DESIGN THINKING (Subject code: 21IDT19/29)

CO1	Appreciate various design process procedure
CO2	Generate and develop design ideas through different technique
CO3	Identify the significance of reverse Engineering to Understand products
CO4	Draw technical drawing for design ideas

Course Name: **ADVANCED CALCULUS AND NUMERICAL METHODS (Subject code: 21MAT21)**

CO1	Apply the concept of change of order of integration and change of variables to evaluate multiple integrals and their usage in computing the area and volume
CO2	Illustrate the applications of multivariate calculus to understand the solenoidal and irrotational vectors and also exhibit the inter dependence of line, surface and volume integrals.
CO3	Formulate physical problems to partial differential equations and to obtain solution for standard practical PDE's .
CO4	Apply the knowledge of numerical methods in modelling of various physical and engineering phenomena.
CO5	Solve first order ordinary differential equations arising in engineering problems.

Course Name: ENGINEERING CHEMISTRY (Subject code: 21CHE12/22)

CO1	Discuss the electrochemical energy systems such as electrodes and batteries.

CO2	Explain the fundamental concepts of corrosion, its control and surface modification methods namely electroplating and electroless plating
CO3	Enumerate the importance, synthesis and applications of polymers. Understand properties and application of nanomaterials.
CO4	Describe the principles of green chemistry, understand properties and application alternative fuels.
CO5	Illustrate the fundamental principles of water chemistry, applications of volumetric and analytical instrumentation.

Course Name: PROBLEM-SOLVING THROUGH PROGRAMMING (Subject code: 21PSP13/23)

CO1	Elucidate the basic architecture and functionalities of a computer and also recognize the hardware parts.
CO2	Apply programming constructs of C language to solve the real world problem
CO3	Explore user-defined data structures like arrays in implementing solutions to problems like searching and sorting
CO4	Explore user-defined data structures like structures, unions and pointers in implementing solutions
CO5	Design and Develop Solutions to problems using modular programming constructs using functions

Course Name: BASIC ELECTRONICS & COMMUNICATION ENGINEERING (Subject code: 21ELN14/24)

CO1	Describe the concepts of electronic circuits encompassing power supplies, amplifiers and oscillators
CO2	Present the basics of digital logic engineering including data representation, circuits and the microcontroller system with associated sensors and actuators.
CO3	Discuss the characteristics and technological advances of embedded systems.
CO4	Relate to the fundamentals of communication engineering spanning from the frequency spectrum to the various circuits involved including antennas.
CO5	Explain the different modes of communications from wired to wireless and the computing involved.

Course Name: ELEMENTS OF MECHANICAL ENGINEERING (Subject code: 21EME15/25)

CO1	Understand basic concepts of mechanical engineering in the fields of energy and its utilization, materials technology, manufacturing techniques, and transmission systems through demonstrations.
CO2	Understand the application of energy sources in Power generation and utilization, Engineering materials, manufacturing, and machining techniques leading to the latest advancements and transmission systems in day to day activities
CO3	Apply the skills in developing simple mechanical elements and processes

Course Name: ENGINEERING CHEMISTRY LABORATORY (Subject code: 21CHEL16/26)

CO1	Determine the pKa and coefficient of Viscosity of a given organic liquid.
CO2	Estimate the amount of substance present in the given solution using Potentiometer Conductometric and Colorimetric
CO3	Determine the total hardness and chemical oxygen demand in the given solution by volumetric analysis method
CO4	Estimate the percentage of Nickel, copper and Iron in the given analyte solution by titration method.
CO5	Demonstrate flame photometric estimation of sodium & potassium and the synthesis of nanomaterials by Precipitation method.

Course Name: COMPUTER PROGRAMMING LABORATORY (Subject code: 21CPL27/17)

CO1	1. Define the problem statement and identify the need for computer programming
CO2	Make use of C compiler, IDE for programming, identify and correct the syntax and syntactic errors in programming
CO3	Develop algorithm, flowchart and write programs to solve the given problem
CO4	Demonstrate use of functions, recursive functions, arrays, strings, structures and pointers in problem solving. 5. Document the inference and observations made from the implementation.
CO5	Document the inference and observations made from the implementation.

Course Name: Professional Writing Skills in English (Subject code: 21EGH28)

CO1	To understand and identify the Common Errors in Writing and Speaking.
CO2	To Achieve better Technical writing and Presentation skills.
CO3	To read Technical proposals properly and make them to Write good technical reports.
CO4	Acquire Employment and Workplace communication skills.
CO5	To learn about Techniques of Information Transfer through presentation in different level.

Course Name: Scientific Foundations of Health (Subject code: 21SFH19/29)

CO1	To understand Health and wellness (and its Beliefs)
CO2	To acquire Good Health & It's balance for positive mindset
CO3	To inculcate and develop the healthy lifestyle habits for good health.
CO4	To Create of Healthy and caring relationships to meet the requirements of MNC and LPG world
CO5	To adopt the innovative & positive methods to avoid risks from harmful habits in their campus & outside the campus
CO6	To positively fight against harmful diseases for good health through positive mindset.

Sl.No.	Subject Code	Subject Name	CO 1	CO 2	CO 3	CO 4	CO 5
1	21MAT11	CALCULUS AND LINEAR ALGEBRA	2.35	2.41	2.36	2.39	2.38
2	21CHE12	ENGINEERING CHEMISTRY	2.25	2.09	2.28	1.79	2.28
3	21PSP13	PROBLEM SOLVING THROUGH PROGRAMING	2.85	2.43	2.64	1.98	2.52
4	21ELN14	BASIC ELECTRONICS AND COMMUNICATION ENGINEERING	2.54	2.21	2.95	2.87	2.93
5	21EME15	ELEMENTS OF MECHANICAL ENGINEERING	2.62	2.68	2.68	2.52	2.60
6	21CHEL16	ENGINEERING CHEMISTRY LABORATORY	2.93	3.00	2.40	2.40	2.40
7	21CPL17	C PROGARMING LAB	1.42	1.21	1.32	0.68	1.50
8	21EGH18	COMMUNICATIVE ENGLISH	2.84	2.83	2.83	2.81	2.62
9	21IDT19	INNOVATION AND DESIGN THINKING	2.34	2.22	2.22	2.34	
10	21MAT21	ADVANCED CALCULUS AND NUMERICAL METHODS	2.27	1.78	1.71	1.93	1.98
11	21PHY22	ENGINEERING PHYSICS	2.48	2.56	2.20	2.60	2.53
12	21ELE23	BASIC ELECTRICAL ENGINEERING	2.09	2.06	2.16	2.10	
13	21CIV24	ELEMENTS OF CIVIL ENGINEERING AND MECHANICIS	2.11	2.81	2.93	2.26	2.96

14	21EVNL25	ENGINERING VISUALIZATION	2.94	2.94	2.95	2.94	2.94
15	21PHYL26	ENGINEERING PHYSICS LABORATORY	2.99	2.96	2.96		
16	21ELEL27	BASIC ELECTRICAL ENGINEERING LABORATORY	2.93	3.00	2.40	2.40	2.40
17	21EGH28	PROFESSIONAL WRITING SKILLS IN ENGLISH	2.89	2.73	2.87	2.86	2.37
18	21SFH29	SCIENTIFIC FOUNDATIONS OF HEALTH	1.78	1.72	1.78	1.75	1.78

8.5 Attainment of Program Outcomes from first year courses (20) Total Marks 17.00

8.5.1 Indicate results of evaluation of ezch relevant PO and/ or PSO, if applicable (15) Institute Marks : 12.00

POs Attainment:

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
21MAT11	2.28	1.68	1.35	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	1.68
21CHE12	1.44	1.44	1.44	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
21PSP13	1.47	1.29	1.47	0.36	PO5	0.18	PO7	PO8	PO9	PO10	PO11	1.83
21ELEN14	0.78	0.57	0.36	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
21EME15	2.61	0.87	0.87	PO4	1.47	0.87	1.20	PO8	PO9	0.87	PO11	0.87
21CHEL16	PO1	2.97	1.98	0.99	PO5	PO6	0.99	PO8	PO9	PO10	PO11	PO12
21CPL17	1.77	1.77	PO3	PO4	PO5	PO6	PO7	PO8	.78	0.78	PO11	PO12
21EGH18	PO1	PO2	1.89	PO4	PO5	2.30	PO7	PO8	1.55	2.41	PO11	1.86
21IDT19	1.53	1.53	0.75	0.75	PO5	PO6	PO7	PO8	PO9	PO10	PO11	1.53
21MAT21	2.07	1.74	1.50	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	1.50
21PHY22	1.59	1.29	0.96	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
21ELE23	1.74	1.74	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
21CIV24	2.47	2.29	2.47	2.57	2.57	2.47	2.36	2.57	1.92	2.46	2.00	1.92
21EVNL25	2.94	1.96	PO3	PO4	2.94	0.98	0.98	0.98	PO9	2.94	PO11	1.96
21PHYL26	2.97	2.97	2.32	0.99	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
21ELEL27	PO1	2.97	1.98	0.99	PO5	PO6	0.99	PO8	PO9	PO10	PO11	PO12
21EGH28	PO1	PO2	1.92	PO4	PO5	2.27	PO7	PO8	1.55	2.37	PO11	1.83
21SFH29	PO1	0.24	1.62	PO4	PO5	PO6	PO7	1.05	PO9	PO10	PO11	1.77

PO Attainment Level

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
Direct Attainment	1.97	1.71	1.53	1.11	2.33	1.51	1.30	1.53	1.45	1.97	2.00	1.68
CO Attainment	1.97	1.71	1.53	1.11	2.33	1.51	1.30	1.53	1.45	1.97	2.00	1.68

PSOs Attainment:

Course	PSO1	PSO2	PSO3
21MAT11	1.20	1.53	0.90
21CHE12	PSO1	PSO2	PSO3
21PSP13	2.49	1.32	1.17
21ELEN14	0.36	PSO2	PSO3
21EME15	1.74	1.74	PSO3
21CHEL16	PSO1	PSO2	PSO3
21CPL17	PSO1	PSO2	0.74
21EGH18	PSO1	PSO2	PSO3
21IDT19	1.53	1.53	PSO3
21MAT21	1.02	1.17	PSO3
21PHY22	PSO1	PSO2	PSO3
21ELE23	PSO1	PSO2	0.69
21CIV24	2.46	2.46	PSO3
21EVNL25	2.94	2.94	PSO3
21PHYL26	PSO1	PSO2	PSO3
21ELEL27	PSO1	PSO2	PSO3
21EGH28	PSO1	PSO2	PSO3
21SFH29	1.17	1.17	PSO3

PSO Attainment Level

Course	PSO1	PSO2	PSO3
Direct Attainment	1.66	1.73	0.88
CO Attainment	1.66	1.73	0.88

8.5.2 Actions taken based on the results of evaluation of relevant POs (5) Institute Marks : 5.00

POs Attainment Levels and Actions for Improvement- (2022-23)

POs	Target Level	Attainment Level	Observations
PO 1 : Engineering Knowledge			
PO 1	1.80	1.97	ATTAINED
1.Science Fiction video play were held on 30-05-2023 2.Session on Emerging Trends in Electronics were held on 01-06-2023			
PO 2 : Problem Analysis			
PO 2	1.80	1.71	NOT ATTAINED
1. Organised Guest Lecture on Computational Physics on 19th November 2022 2. Organised Idea Pitching Competition on 3rd December 2022			
PO 3 : Design/development of Solutions			
PO 3	1.80	1.53	NOT ATTAINED
1.seminar on “Physics Of Sensors And Sensor Industry” were held on 22-7-2023			
PO 4 : Conduct Investigations of Complex Problems			
PO 4	1.5	1.11	NOT ATTAINED
!. Conducted a session on Vedic mathematics on 02nd December 2022			
PO 5 : Modern Tool Usage			
PO 5	1.8	2.33	ATTAINED
1. Organised a session on Proficiency and Exposure skill- MS office data science on 5th December 2022 2. Organised a session on Virtual lab on 5th December 2022			
PO 6 : The Engineer and Society			
PO 6	1.8	1.51	NOT ATTAINED
1. Organised a session on Role of Engineer 27 th May 2023			
PO 7 : Environment and Sustainability			
PO 7	1.80	1.30	NOT ATTAINED
Organised a session on Role of Engineer 27 th May 2023			
PO 8 : Ethics			
PO 8	1.8	1.53	NOT ATTAINED
1. Conducted a session on Universal Human Values 3rd December 2022 2.Conducted a session on Universal Human Values 5th December 2022 3. Conducted a session on Anti Ragging 25th May 2023 4. Conducted a session on Anti Sexual Harassment 30 th May 2023			
PO 9 : Individual and Team Work			
PO 9	1.80	1.45	NOT ATTAINED
Organised Idea Pitching Competition on 3rd December 2022			
PO 10 : Communication			

PO 10	1.80	1.97	ATTAINED
1.Organised session on Importance of Communication Skill 6th December 2022 2. Literacy activity on 3rd June 2023			

PO 11 : Project Management and Finance

PO 11	1.80	2	NOT ATTAINED
1. Organised session on Time management on 9thDecember 2022			

PO 12 : Life-long Learning

PO 12	1.80	1.68	NOT ATTAINED
1. Organised session on YOGA practice on 10 th December 2022			

PSOs Attainment Levels and Actions for Improvement- (2022-23)

PSOs	Target Level	Attainment Level	Observations
PSO 1 : Graduates will be able to analyse, design and develop solutions for the problems and to apply the technical Knowledge in Power Systems and Renewable Energy Systems.			
PSO 1	1.5	1.66	ATTAINED
NOT TAKEN			
PSO 2 : Graduates will be able to design Power Electronic Converters and develop solutions for the problems in Analog and Digital Electronic Circuits.			
PSO 2	1.5	1.73	ATTAINED
NOT TAKEN			
PSO 3 : Graduates will be able to solve problems of Power system and Power Electronics using software tools and also to apply ethical principles, management skills and responsibilities.			
PSO 3	1.5	0.88	NOT ATTAINED
NOT TAKEN			

9 STUDENT SUPPORT SYSTEMS (50) Total Marks 44.00

9.1 Mentoring system to help at individual level (5) Total Marks 5.00

Institute Marks : 5.00

9.1.1 Mentoring System

- **Objective: Faculty members as Mentors must keep in mind the students' best interests, abilities, skills and talents, by guiding them to realize their best potential.**
- **Type of Mentoring: All round development, focusing on their academic, co-curricular and career growth activities.**
- **Operating procedure:**

1. **Students of all departments will be brought under this system from the date of their joining.**
2. **Each faculty member/mentor is allotted with 20-25 students as mentees by the mentor coordinator /HOD at the beginning of the academic year.**
3. **Procedure for allocation**

$$No.of\ mentors = \frac{Total\ no.of\ students}{Total\ no.of\ available\ faculty}$$

4. **Mentor orientation by the head of the institution.**
5. **Orientation for students by the head of the department**
6. **The basic science department faculty will be the mentors for first year students.**
7. **The records of mentees, updated in all respects will be handed over to the respective departments by the basic science department at the end of 2 semester.**
8. **A slot in the timetable is provided to facilitate meetings with the mentees.**
9. **The mentors should be aware of the strengths and weaknesses of the mentees.**
10. **Mentor should maintain a file on each mentee, recording their meetings, academic record, parent contact, any medical or personal problem, co-curricular activities, general behaviour in class, future plan, mentoring reports and other important documents. e.g. medical certificate, leave letters etc.,**
11. **Mentors should bring to the notice of the head of the department/chief mentor/ Principal in case of any issues/problems.**
12. **Mentors must send the progress report to the parents after every internals within ten days from the last day of the test.**
13. **Mentors should regularly communicate parents regarding their ward's academic performance.**
14. **Regular meeting will be held between the head of the department and the mentors to assess the progress. The mentors can discuss the issues related to their mentees. Head of the department should also meet mentees informally to take feedback about mentor and the mentoring process.**
15. **Mentoring will be a parameter in evaluating a faculty members performance in a year.**
16. **Mentor committee will monitor and evaluate the process, by conducting regular audits and submit the report to the head of the institution.**

- **Frequency of meetings: compulsory twice in a month or need based.**

Table 9.1: No. of mentors department wise

Academic Year	No. of Mentors							Total mentors	Total no. of students
	ECE	CSE	ISE	EEE	Mech	Civil	Basic sciences		
2023-2024	8	14	7	7	5	9	14	64	418
2022-2023	8	12	8	7	5	12	13	65	413
2021-2022	9	8	7	9	7	13	12	65	398

1. **Efficacy of mentoring:**

- **helps in identifying students' interests.**
- **helps in building a rapport of students with faculty.**
- **motivate students to participate in co-curricular activities.**

- **facilitates information gathering and dissemination.**
- **facilitates placements.**
- **improvement in the academic performance, attendance, behaviour and attitude of the student.**

9.1.2.1Efficacy on academic activities and progress:

- **Students are monitored from day 1 for them being regular to classes. Students are counselled to be regular and the same is brought to the notice of the parents.**
- **After every internal assessment test respective mentors facilitate a meeting with the mentees and discuss regarding their performance in the test.**
- **Slow learners are advised to attend remedial classes, fast learners are encouraged to improve their percentage.**
- **The performance of the students in the internal assessment tests has improved and the students who perform better are motivated to do well in the upcoming tests.**
- **Slow learners have also shown improvement in their test performance because of peer learning. They are motivated to perform better in the ensuing tests.**
- **To motivate the students to perform better, semester toppers are awarded with medals and certificates.**

9.1.2.2 Efficacy of mentoring for co-curricular activities:

- **Students have participated in many co-curricular and extracurricular activities and have won prizes.**
- **Students have presented papers in conferences and published papers in journals.**
- **Students have participated and won prizes in sports and cultural events organised by inter/intra institutions.**

9.1.2.3 Efficacy of mentoring for career growth

- **Mentors encourage mentees to take exams like GATE, UPSC or KPSC or other competitive exams.**
- **Students have cleared GATE, IELTS, TOEFL and university entrance exams.**
- **Students have started their own ventures and start-ups.**
- **Students are placed in good companies like: Infosys, WIPRO, TCS, Capgemini, L & T etc.,**

9.2 Feedback analysis and reward /corrective measures taken, if any (10) Total Marks 8.00

Institute Marks : 8.00

Feedback collected for all courses: YES

Feedback collection process: google forms

Average percentage of students who participate: 70%

The institute follows a systematic approach in collecting feedback on teaching learning, curriculum, infrastructure and facilities. Feedback of all stakeholders is sought regularly about infrastructure and other learning resources to ensure their satisfaction. Feedback analysis is done, and suitable actions are taken. Feedback and surveys from stake holders help institution to understand the scope for all-round improvement.

9.2.1 Feedback on teaching & learning

Feedback on teaching & learning by students is collected every semester. Mid semester and end semester feedback are taken by IQAC for all courses during each even semester and odd semester through google forms. Mid semester feedback helps the faculty to know and understand the academic requirements of the students and initiate corrective actions to ensure for better teaching and learning environment.

9.2.1.1 Action on feedback:

Number of corrective actions taken: need based Counselling is done by the Principal and respective HoD

- The institute assesses the performance by circulating structured feedback forms to students and, the same will be evaluated by the IQAC . The faculty who scores less than 75% in feedback analysis are counselled by HOD and Principal and suggest necessary improvement.
- Suggestions are given to enhance their academic skill set by attending seminars, workshops & FDPs and incorporate corrective measures within a stipulated time period
- The Principal conducts meetings with student coordinators of the classes to get the feedback about classes and communicates to the respective faculty members to take corrective measures and appreciates for their initiative.
- A performance appraisal system has been developed by RRIT to encourage teaching and non-teaching staff to work towards their responsibilities and commitments. The Performance Appraisal System facilitates self-appraisal based on a prescribed API format from AICTE. All staff members are required to fill the Annual Performa of Appraisal report whereby, they enlist their yearly activities and achievements in academic and administrative areas. The form captures all major academic milestones of members every year.
- The feedback and self-appraisal points are considered for annual increment of teaching and non-teaching staff. The period of appraisal is for a particular academic year i.e from August to July.
- All regular teaching and non-teaching staff of RRIT are eligible for Performance Appraisal. Annually the performance appraisal process is completed. All Teaching faculty performance is reviewed based on:

- student results,
- number of papers presented/published.
- number of conferences and workshops attended,
- students/research projects undertaken,
- students feedback on teaching & learning,
- professional membership
- involvement in college/universities activities

- To motivate teachers to perform better awards are given on Teachers' Day- Best teacher award, Best Mentor and Best researcher award. Criteria to get an award will be based on scores from self -appraisal of teachers.

Table 9.1 : List of awards

Academic Year	Best teacher award	Best Mentor	Best researcher award	Best result-oriented teacher	Innovative teacher
2022-2023	Dr.Manjunath R	Mrs.Shruthi S	Dr.Manjunath R	Dr.Jagadeesh kumar	Mrs.Shruthi
2021-2022	Mrs.Shruthi S	Mrs.Shruthi S	Dr.Manjunath R	Dr.Sunitha H D	Mrs.Shruthi S
2020-2021	Dr.Sunitha H D	Mr.Dhananjaya	Dr.Mohan Kumar B N	Dr.Manjunath R & Mrs.Sunanda C V	

Indices used to measure the effectiveness of teaching & learning:

1. Is the Faculty punctual to class?
2. Does the Faculty take class regularly?
3. Rate the pace of teaching and syllabus coverage.

4. The teacher has good command over the Subject.
5. Does the faculty maintain the classroom discipline.
6. Does the faculty effectively use visual media (Black board/ppt/videos other ICT facilities etc)
7. Does the faculty encourage students' interaction and clarify the doubts satisfactorily?
8. Is the Faculty available for discussion apart from the class hours.
9. Does the faculty solve the VTU Questions and sets the IA papers as per VTU Standard.
10. Does the faculty discuss the scheme of IA and maintains transparency in evaluations?

9.3 Feedback on facilities (5) Total Marks 4.00

Institute Marks : 4.00

Feedback on facilities will be collected by IQAC every year through google forms.

9.3.1 Procedure:

1. The feedback on the infrastructure facility is collected through student survey and Graduate exit survey forms.
2. The feedback is also collected orally during meeting with stakeholders during PTM, alumni meetings etc.
3. The feedback is analysed by IQAC and the report of the same is communicated to the Principal and in turn to the management for implementing corrective measures.

9.3.2 Parameters of Exit survey:

- Before RRIT
- Educational guidance/student grievance
- Academics
- Premises
- Attitude towards students
- Canteen
- Library
- Teaching & Learning
- Practicals
- Placement & Training
- Sports/NSS/yoga/Transportation

9.3.3: Feedback Analysis:

1. The feedback given by the students is consolidated and analyzed by the IQAC. The report of the same will be submitted to the Principal.

2. The Principal in consultaion with the Heads of the departments plans and prepares plan of action

3. All the department executes the plan as discussed

9.4 Self-Learning (5)

Total Marks 5.00

Institute Marks : 5.00

9.4.1 The students are motivated to pursue the following curricular components that needs them to exceed the limits of their knowledge and explore self-learning. These components include:

- Project Work
- Mini project
- NPTEL videos
- Internship programs
- Enrolment in NPTEL courses
- Enrolment for Honors and Minors degree
- Innovation and Product development
- Seminars and Group discussion
- Virtual labs

- Students are also encouraged to participate in Techfests, Ideathon, project competitions, paper presentations in conferences and becoming members of professional bodies which provide scope for learning beyond the syllabus.

- Further, students are encouraged to participate in student competitions, hackathons, technical paper presentations etc. which provide scope for learning beyond the prescribed syllabus.

9.4.2 Library is supporting the students with self-learning activities, for which it has a special collection of books on General literature, Competitive exams like GATE, CAT, GRE, and personality development books.

- The primary mission of the library is to support the educational and teaching programs with self-learning activities for which, the library is equipped with collection of books on General literature, Competitive exams like GATE, CAT, GRE, and personality development books.
- The library comprises of 21,944 volumes of Books with 2,488 Titles and 7 National printed Magazines, 36 journals. The Library subscribes to about 10,692 full text E-journals from ASCE, IEEE, Springer Link, Taylor & Francis, Elsevier Science Direct, Knimbus, Proquest (Engg & Mgt.) & DELNET.
- Member of VTU e-consortium
- The E-Books Subscription package includes around 1035 from Taylor & Francis-CRC Netbase, Knimbus, delnet & McGrawhill Education. In addition, there are 109 Bound volumes of journals, Project Reports, 1,149 CD's/DVD's.
- Specialized Services: Book Bank facility, Bibliography Compilation, Printing, Remote access to e-resources, Newspaper Clipping Services, Assistance in searching database, plagiarism check to ensure quality paper/ project report are part of library special service.

9.4.3 Effectiveness: Students have participated in techfest, project competitions and have presented papers in international conferences organized by other colleges and have won prizes. Students have also successfully completed NPTEL courses.

9.5 Career Guidance, Training, Placement (10) Total Marks 9.00

Institute Marks : 9.00

Institute has a robust system to provide support to students for skill development, grooming, career counselling for higher education, competitive exams, placements and entrepreneurship and for guiding students towards a better career and providing job opportunities through campus interviews with the support of prospective employers visiting this institution for placement of students in various employment sectors.

Table 9.5.1: List of career guidance, training and placement activities organized.

SIno	Event	Dates conducted	Resource
AY 2023-2024			
1	Placement- Communication skills & how to crack the interview	30/3/2024	1. Mrs.Anshu Deepak Assistant professor Dept of ECE, RRIT 2.Mrs.Vijayalakshmi Assistant professor Dept of ECE RRIT
AY 2022-2023			
2	Digital awareness and placements	13/2/2023	Mr.V Jayanth VP-Training Rooman Technologies Pvt ltd Rajajinagar, Bengaluru
3	Seminar on “Career awareness on what next?”	4/12/2022	Dr.Ravishankar C V Vice-Chairman, IETE, Bangalore
4	Placement training	2/11/2022 to 15/11/2022	RRIT
5	Workshop on Entrepreneurship & innovation as career opportunity & Ideathon	17/10/2022	Mr.Nagarjun M G, Project Associate, KSCST
AY 2021-2022			
6	Seminar on “Career opportunities in VLSI & Embedded systems in industry	20/6/2022	Arun John Mathias Manager Coreel technologies India Pvt.Ltd
7	Communication for placement II	8/4/2022 to 23/6/2022	RRIT
8	Upskilling program	6/4/2022	Diverge solutions pvt limited
9	Exclusive prospect of career counselling and innovation abroad educational programs.	4/4/2022	Texas review
10	Career Guidance	1/12/2021	Mr.Ramesh P Assistant Professor ACE Engineering college, Bengaluru

11	Placement training-Communication for placement I	8/10/2021 to 24/12/2021	Basic science department, language lab, RRIT
AY 2020-2021			
12	Career options and opportunities for electronic graduates	7/7/2021	Mr.Ranjith C V Electrical architect/product designer, Philips India pvt ltd
13	Online seminar on “Tips to crack interview”	22/05/2021	Mr.Shreyas Nadig .S Q.Q. Engineer, Encora Innovation labz
14	Preplacement talk	8/4/2021	RRIT
15	Seminar on “Career opportunities & overseas education”	23/12/2020	Mr.Prasanna Poojar, Managing Director Lokahh International India
16	Study abroad opportunities & VISA guidance	19/10/2020	IDP, Bangalore
AY 2019-2020			
17	Seminar on “career opportunities in VLSI & AI	20/6/2020	Mr.G S Krishna Semiconductor Professional Inohmic Technologies 2. Mr.Ganesh Machine learning professional Inohmic technologies
18	Talk on “Career opportunities in core electronics, industry, product development & IoT training	26/2/2020	Mr. Karunakaran S SchemaZen Technologies pvt ltd Bengaluru
19	Test by LIVEWIRE	16/10/2019	LIVEWIRE, Bengaluru
20	Job opportunities in India & abroad	31/8/2019	Ranganathan B A Associate Professor, Dept of civil Engg RRIT

9.6 Entrepreneurship Cell (5) Total Marks 3.00

Institute Marks : 3.00

A. Initiatives Taken:

The Entrepreneurship cell was started with the aim of promoting trained knowledge in the field of entrepreneurship development. In view of worldwide shortage of jobs in both government and private sectors leading to unemployment problems and lack of proper utilization of human resources, the Cell strives to identify talented youth to entrepreneurial works. The Cell plans to organize various programmers regarding Entrepreneurship development.

B. Objective of the Cell:

- Creating awareness among Students.
- Training Programs in the field of Entrepreneurship and Development.
- To Provide Guidance and facilities for the budding entrepreneurs during gestation.
- To encourage the development for the better linkages between the parent institutions, Industries, Research and Development (R&D) in the region and other organizations engaged in promoting Small and Medium Enterprises (SME) and Non-Governmental Organization.
- To industrialize rural and backward sections of the society.
- To offer profitable employment opportunities to Interested Students.
- To increase the supply of entrepreneurs for quick industrial development.
- To investigate the environmental set-up relating to small industries and small businesses.
- To respond effectively to the emerging challenges and opportunities both at national and international level relating to SME's and Micro Enterprises

C. Functions

- To organize entrepreneurship awareness camps, entrepreneurship development programmes and faculty development programmes in the region for the benefit of Student and Teacher.
- To develop and introduce curriculum on entrepreneurship development at various levels including degree/diploma courses of the parent institution and other institutes in the region.
- To conduct research work and survey for identifying entrepreneurial opportunities.
- To guide and assist prospective entrepreneurs on various aspects such as preparing project reports, obtaining project approvals, loans and facilities from agencies of support systems and information on various technologies.
- To arrange industry visits for prospective entrepreneurs.
- To extend necessary guidance and escort services to the trainees in obtaining approval and execution of their projects.
- To conduct skill development training programms leading to self-employment

Table: 9.6.1 List of entrepreneurship events conducted in the college

Slno	Name of the event	Date	Resource
AY 2023-2024			
1	2nd Idea pitching competition	10-02-2024	Institute Innovation Council(IIC),RRIT
2	Intellectual property rights and patent procedure	05-04-2023	Dr.Ramesh Shahabadkar, Professor,CSE,AMC college of Engineering
3	Seminar on Data Warehousing	28-02-2023	Mr.Madhu J, Senior Engineer, London stock group exchange
4	Idea Pitching competition	03-12-2022	IIC, RRIT

AY 2022-2023			
5	Innovation and design thinking	21-03-2022	Mr.Jayathirtha M patil, Jyothi Institute of Technology, Bangalore
6	Entrepreneurship and Innovation as career opportunity and ideation	17-10-2022	Mr.Vivek Anand sagar, Patent Information centre,KSCST,IISC
7	2 days workshop on "Entrepreneurship and electric vehicles"-Innovation for future trend	23/12/2021 to 24/12/2021	Mr.Naveen Chander, Founder & Director, 3Q Sutantra LLP, Bangalore
			Mr.Shravan, Managing Director, Mastiebikes Pvt Limited, Bangalore
AY 2021-2022			
8	Company law and IPR	24-07-2021	Mr.Rajagopal CR, Practicing High court advocate

Table: 9.6.2 List of Entrepreneurs

Name of the student	Department	Company name	started in the year	link
HARSHITH G	ECE	ACE VENTURES	2022	https://m.indiamart.com/aceventures-128639791/
JOY BHOWMIK	ECE	GOLD BUSINESS(BANGLADESH)		
SHAMANTH P	CIVIL	i2i INFRATECH	2019	https://in.linkedin.com/in/shamanth-p-717747169
NAVEEN CHANDER	EEE	3Q SUTANTRA LLP	2020	https://www.zaubacorp.com/company/3Q-SUTANTRA-LLP/AAT-2656

9.7 Co-curricular and Extra-curricular Activities (10) Total Marks 10.00

Institute Marks : 10.00

The Institute organizes several extension activities in institute-neighbourhood community to sensitize the students towards community needs and deeds. The students of our institute enthusiastically participate in social service activities.

1. **Sensitization to Neighbourhood community:**

- The NSS unit of the institute has taken various activities to inculcate social responsibilities and to sensitize institute-neighbourhood community. As initiative the institute carry out the following activities:

- Cleanliness drive at Hesarghatta lake as Swachh Bharat initiatives,
- Social awareness on Earth Day,
- Save Soil,
- Ozone day
- Sensitization to school children on hygiene,
- Road safety awareness campaign to General public
- Walkathon for health awareness-“Jagruthi”
- Students participation in Cyclothon as part of health awareness campaign
- Celebrating days such as National youth day,
- International Yoga Day,
- Sadbhavna Diwas,
- Independence day,
- Ambedkar Jayanti etc., as national and international importance

- Every year the NSS students coordinate with the other clubs of the institute to demonstrate on a current social problem through parades and rallies.

2. **Sensitizing students to social issues**:

- The students are sensitized to understand social issues through activities such as

- Go green initative – Green club organized programs on Go green, environment day, forestry day, plastic usage etc., Clean to Green awareness program on e-waste management system to bring awareness on environmental causes such as deforestation, land degradation, water pollution, soil erosion which leads to global warming.
- Environment awareness campaign on seed ball, forestry day, say No to plastic bags, addiction free India.
- plantation of saplings, to recycle and re-use most of the materials.
- As part of AICTE Activity point, students have energetically taken up activities to address social issues such as digital India Transformation, Tourism promotion innovative approach, Reduction in Energy Consumption, facilitating 100% Digitized money, assist the marketing of rural produce.

- As Swachh Bharath initiative our students visited nearby villages and sensitized rural people about cleanliness and involved in cleaning the government school’s premises.

3. **Community service for Holistic development:**

- As part of Unnat Bharat Abhiyan program under MHRD flagship, the institute has adopted 5 villages and carried out extensive survey, spread awareness of various schemes offered by government for the upliftment of families residing in the village. As service to community the institute the organizes various activities such as-

- Blood donation camps from the inception of the institute, Free Eye Check-up and Annual Mega Health Check-up Camps in association with Lions Blood Bank, Redcross Society of India and Mediscope.
- During Covid-19 pandemic organized Vaccination drive for public, students and staff of RRIT.
- The National Service Scheme (NSS) unit of RRIT College has undertaken a noble initiative to collect funds for the flood victims of Kodagu disaster that took place in 2018.

4. **Impact of Activities**

- The institute received overwhelming response from students, and seen active participation in rallies, donate blood, care for nature and protect environment, respect each culture and student behave as responsible citizen.

- These activities have given opportunities to develop leadership skills, promote personal growth, and foster empathy and social awareness and tuned everyone socially responsible to develop future India.
- Our initiatives have brought about a positive change in the lives of many people and have helped in creating a better and more equitable society. Institute will continue to undertake such initiatives in the future and strive to make a positive impact on the community.

Table9.7.1a :Number of NSS and other club activities

Sl no	Name of the activity	Organising unit/ agency/ collaborating agency	Name of the scheme	Year of the activity
2023-2024				
1	Mega Health and blood Donation Camp	NSS-RRIT/Mediscope/Lions blood bank/Himalaya Pvt. Ltd./NRR Hospital/Sapthagiri Medical college/Partha Dental/Sparsh Hospital/Eye Foundation/Embiotic laboratories	Blood Donation & Health camp	2023-24
2022-2023				
2	Mega Health and blood Donation Camp	NSS-RRIT/Mediscope/Lions blood bank/Himalaya Pvt. Ltd./NRR Hospital/Sapthagiri Medical college/Partha Dental/Sparsh Hospital/Eye Foundation/Embiotic laboratories	Blood Donation & Health camp	2022-23
3	Environment and Social Awareness program in government school near haroketanahalli	NSS-RRIT	Awareness program	2022-23
4	Health awarenesss campaign	NSS/Red cross/Lions Club/Prakriya hospital/Partha Dental clinic	Health campaign	2022-23
5	Plantation drive	NSS/Bank of Baroda	Plantation	2022-23
2021-2022				
6	Awareness on Save soil	NSS/IQAC	Awareness program	2021-22
7	Awareness campaign on swachhta/covid	Mechanical Engineering/MSME	Swachh Bharat	2021-22
8	UNNAT BHARAT ABHIYAN	UBA committee/PDO (Panchayat Development Office)	UNNAT BHARAT ABHIYAN	2021-22
9	National youths day	NSS	Awareness program	2021-22
10	Awareness on National voters day	NSS	Awareness program	2021-22

11	Earth day	Green club	Awareness program	2021-22
12	Save soil	Green club	Awareness program	2021-22
13	Svasthya Jagruti	NSS/Red cross/Lions Club/Prakriya hospital/Partha Dental clinic	Walkathon, Blood Donation & Health camp	2021-22
14	Yoga: Relax, Replenish, Revive	Electronics Dept./Swami Vivekananda Yoga Shala	Awareness program	2021-22
15	Vaccination Drive	IQAC	Vaccination against COVID	2021-22
16	Women Hygiene and Safety	IQAC & ICC	Awareness program	2021-22

- The institute every year organizes “KALATARRANGA”- an annual cultural & sports fest of RR Institutions, to provide platform for students to showcase their talents. Students are also motivated to participate in competitions organized by VTU and other colleges. The institution has sports facilities like indoor games hall, Foot Ball Ground, Basket Ball Ground, Volley Ball Court, Swimming Pool and badminton court.

Table 9.7.1b: Kalatarranga Organized dates

Academic Year	Event	Dates conducted	Venue
2023-2024	Kalatarranga 2k24	April 5th & April 6th 2024	RR Institutions
2022-2023	Kalatarranga 2k23	March 31st & April 1st 2023	RR Institutions
2021-2022	Kalatarranga 2k22	March 18th & March 19th 2022	RR Institutions

Table 9.7.2 shows the list of sports & cultural events organized as a part of Kalatarranga

slno	Sports events	Off-stage events	Onstage events
1	100m, 200m running (B & G)	Mehendi	Group dance
2	400m relay (B & G)	Rangoli	Student band
3	Chess (B & G)	Hair style	Fashion show
4	Carrom doubles (B & G)	Fireless cooking	Solo Singing
5	Shot put (B & G)	Pencil sketching	Solo dance

6	Disc throw (B & G)	Photography	
7	Badminton singles (B & G)	Instagram reels	
8	Badminton doubles (B)	Face painting	
9	Badminton doubles (G)	Best out of Waste	
10	Volleyball (B)	Wall Painting	
11	Throwball (G)	Mr & Ms RR	
12	Gully cricket (G)	Minute to Win it	
13	Football (B)		
14	Kho-Kho (B)		
15	Kho-Kho (G)		

10 GOVERNANCE, INSTITUTIONAL SUPPORT AND FINANCIAL RESOURCES (120)

Total Marks 109.00

10.1 Organization, Governance and Transparency (40)

Total Marks 37.00

10.1.1 State the Vision and Mission of the Institute (5)

Institute Marks : 5.00

Vision :

Vision of RR Institute of Technology (RRIT)

"To be a Premier globally recognized Institute with ensuring academic excellence, Innovation and fostering Research in the field of Engineering."

Mission :

Mission of RR Institute of Technology (RRIT)

- To consistently strive for Academic Excellence
- To promote collaborative Research & Innovation.
- To create holistic teaching learning environment that build ethically sound manpower who contribute to the stake holders operating at Global environment

10.1.2 Governing body,administrative setup,functions of various bodies,service rules, procedures, recruitment and promotional policies (10) Institute Marks : 9.00

10.1.2.1 Governing council

- The management of the institute has constituted the Governing Council (GC) to provide effective governance through the realization of the Vision and Mission of the institute.
- The GC of the institute is formed as per the guidelines of AICTE.
- It comprises of member nominee from university, management, academic institution, industry, and representatives of faculty.
- The Governing Council overseas the growth of the college and set the framework of governance and approves strategic set to achieve the mission and vision of the institution, long term academic plans and annual budgets in accordance to meet the desires of the stakeholders.
- The principal is appointed as Executive member by Governing council as system of control to monitor overall performance and ensure growth of the institute to higher level.
- The council ensures that the principal maintains accountability including financial & operational and risk assessment; and also set procedure for handling internal grievances.
- Governing Council monitors overall activities of the institution's performance as per approved plans and sets the benchmarks for future academic plans and research activities by providing direction of implementation wherever possible to ensure the achievement of the mission and vision of the organization;
- Governing Council approves the budgetary allocation, recruitment process that support the head of the institution for smooth execution of the programmes.
- Frequency of meeting of the Governing Council is minimum once in a year or whenever needed.
- Figure 10.1 and table 10.1 shows the organogram of the institute and functions of various members of GC

Organization chart

The figure 10.1.2(a) shows the organization chart of R R Institute of Technology

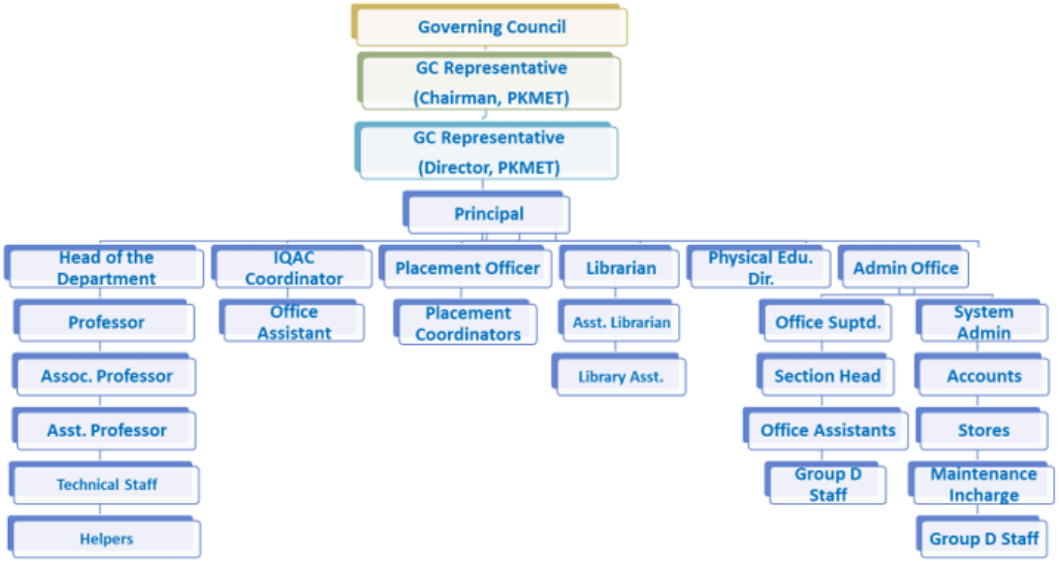


Figure 10.1.2(a): Organization chart of RRIT

Table 10.1: Functions of members of GC

Position	Functions
Governing Council	· Frame directive principles and policies · Amend and approve policies from time to time · Approve budgets
G C Representative Director	· To look after the over all development of the institute · Mobilize external resources to strengthen the institute · Plan & provide for necessary facilities/ equipments for development
Principal	· Design &define organization structure · Define & delegate responsibilities of various positions in the organization. Ensure periodic monitoring& evaluation, of various processes & sub-processes · Ensure effective purchase procedure · Define equality policy and objectives · Prepare annual budget · Conduct periodic meeting of various bodies such as Governing Council, Academic Review, Anti Ragging, Standing Committee and Grievance Redressal Committee etc · Manage accounts and finance Employee recruitment process · Office Administration Compliance with AICTE, DTE & University Admission Internal and External examinations
Head of Departments	· Plan and execute academic activities and organizes events for overall development of the department · Maintain discipline and culture in the department · Co-ordinate the activities of class teachers · Organizes Faculty Development Programs
IQAC	· IQAC provides strategic support, helps in planning and implementing many strategic initiatives aimed at imparting quality of education and attainment of POs, PSOs and PEOs. · IQAC strives for Achieving Excellence, Building Competencies and nurturing Global Professionals. · IQAC constantly monitors,suggests changes to be made in academic and administrative activities. · The compliance of academic, administrative procedures and continual improvement is ensured through systematic audit by IQAC.

Office Superintendent	· Liasoning with AICTE, DTE and University · College register, Service Books · Faculty personal files · Recruitment process · Maintain minutes of meeting(all) · New proposals · Co–ordinate day today activities of office Purchase process · Prepare annual College budget
Faculty members	· The primary role of faculty is disseminate the work allotted by head of the department time to time · Deliver lectures (theory classes) and conduct Lab sessions (Practical classes) as per the allotted Timetable. · Counsel and mentor the students, maintain Academic/Course files, plan and conduct tests, design assignments/projects for students, discharge examination duties, and assist co-curricular and extracurricular activities as assigned by the department · Carry out collaborative with industry and present papers, seek growth opportunities and participate in FDPs and update technical knowledge and keep a breast with developments in their domain
Placement Officer	· Liaison with industry · Student Training and Placement drive · Identify and provide training needs of students · Arrange interviews · Ensures the smooth coordination with various stakeholders required for the process of placement
Librarian	· Maintains the library assets · Procure the necessary learning materials such as books, monographs, journals ,e resources that meets the need of all stakeholder
Director -Physical Education	· Ensure smooth conduct of sports · Maintains and manages sports facility · Encourage students to participate in tournaments
Admin Staff	· Admin Staff are responsible for upkeeping the office of the institute with all necessary documentation and records. · They collectively are responsible for: Maintenance of student and staff records Undertake all responsibilities in recruitment and admission related requirements of the institute

Table 10.1.2(ii): List of GC members(2023-24)

Sl. No	Name of the member	Affiliation	Position
1	Shri Y. Raja Reddy	Chairman, P.K.M.E. Trust	Chairman
2	Shri H. R. Kiran	Secretary, P.K.M.E. Trust	Member
3	Shri H. R. Arun	Trustee, P.K.M.E. Trust	Member
4	Dr. K. Rajanikanth	Former Principal, MSRIT	Member
5	Mr. Somashekar H L	Retd. Additional Controller, Acounts Department, Govt . of Karnataka	Member
6	Mr. L.N.Prasad	Lakshmi Vacuum Technologies Pvt. LTD, Bengaluru	Industrialist
7	Prof. Ramalingaiah	Professor , Mechanical Engineering	Member, VTU Nominee
8	Dr. S.G. Sreekanteswara swamy	Former Executive Secretary, KSCST	Member,
9	Commissionerate	Department of Collegiate Education , Bengaluru	Member, DTE Nomine
10	Nominee, AICTE	Regional Office & Assistant Director	Member, AICTE Nomine
11	Dr. Suresha C N	HOD, Basic science	Member, faculty Nomine
12	Mrs. Parimala Ghandhi	Associate Professor ECE	Member, faculty Nomine
13	Dr. Mahendra K V	Principal , RRIT	Member Secretary

Table 10.1.2(iii): List of GC members(2022-23)

slno	Name of the member	Affiliation	Position
1	Shri Y. Raja Reddy	Chairman, PKM Educational Trust	Chairman

2	Shri. H. R. Kiran	Secretary, PKM Educational Trust	Member
3	Shri. H. R. Arun	Director, PKM Educational Trust	Member
4	Dr. K. Rajinikanth	Former Principal, MSRIT	Member
5	Mr. Somashekar H L	Retd. Additional Controller, Accounts Department, Govt. of Karnataka	Member
6	Mr. L N Prasad	Lakshmi Vacuum Technologies Pvt. Ltd., Bengaluru.	Industrialist
7	Dr. Mrityunlaya V Latte	VTU Nominee	Member
8	Dr. S.G.Sreekanteswara Swamy	Former Executive Secretary, KSCST	Member
9	Prof. Dr. Vishnukant S Charpalli	Vice Chancellor, Karnataka State Rural Development and Panchayat Rai University, Gadag	Member
10	Dr.H U Talwar	DTE Nominee, Bengaluru	Member
11	Dr. R Sakthivel	AICTE Nominee, Regional Officer & Assistant Director	Member
12	Mrs. G. Parimala Gandhi	Associate Professor, Dept. of ECE., R R Institute of Technology	Member, Faculty Nominee
13	Dr. Ramachandra Murthy	Professor, Department of Mathematics,RRIT	Member, Faculty Nominee
14	Prof. Dr. Mahendra KV	Professor & Principal, R R Institute of Technology	Member Secretary

Table 10.1.2(iv): List of GC members (2021-22)

slno	Name of the member	Affiliation	Position
1	Shri Y. Raja Reddy	Chairman, PKM Educational Trust	Chairman
2	Shri. H. R. Kiran	Secretary, PKM Educational Trust	Member
3	Shri. H. R. Arun	Director, PKM Educational Trust	Member
4	Dr. K. Rajinikanth	Former Principal, MSRIT	Member
5	Mr. Somashekar H L	Retd. Additional Controller, Accounts Department, Govt. of Karnataka	Member

6	Mr. L N Prasad	Lakshmi Vacuum Technologies Pvt. Ltd., Bengaluru.	Industrialist
7	Dr. Mrityunlaya V Latte	VTU Nominee	Member
8	Dr. S.G.Sreekanteswara Swamy	Former Executive Secretary, KSCST	Member
9	Prof. Dr. Vishnukant S Charpalli	Vice Chancellor, Karnataka State Rural Development and Panchayat Rai University, Gadag	Member
10	Dr.H U Talwar	DTE Nominee, Bengaluru	Member
11	Dr. R Sakthivel	AICTE Nominee, Regional Officer & Assistant Director	Member
12	Mrs. G. Parimala Gandhi	Associate Professor, Dept. of ECE., R R Institute of Technology	Member, Faculty Nominee
13	Dr. Ramachandra Murthy	Professor, Department of Mathematics,RRIT	Member, Faculty Nominee
14	Prof. Dr. Mahendra KV	Professor & Principal, R R Institute of Technology	Member Secretary

B. Service Rules, Policies and Procedures

The service rules, policies and procedures are well defined by R R Institute of Technology. The service rules is approved by Governing Council. same is communicated to employees on Joining to the institute. The institute encourages the faculty by giving various awards based on performance appraisal procedures set by Institute and various schemes are in practice for the welfare of the staff.

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Table 10.1.2(V): Frequency of GC meetings

slno	Academic Year	frequency of meeting	Dates conducted
1	2023-2024	1	13/3/2024
2	2022-2023	1	24/5/2022
3	2021-2022	1	16/12/2021

10.1.2.2- Service Rules, Policies and Procedures

The service rules, policies and procedures are well defined by R R Institute of Technology. The service rules is approved by Governing Council. same is communicated to employees on Joining to the institute. The institute encourages the faculty by giving various awards based on performance appraisal procedures set by Institute and various schemes are in practice for the welfare of the staff.

10.1.3 Decentralization in working and grievanceredressal mechanism (10)

Institute Marks : 9.00

Decentralization in working:

1.The Principal is the Head of the Institution and takes care of all the academic and nonacademic requirements of the institution.

2.As per the University Norms College has also constituted various statutory and non-statutory Committees including Anti Ragging Cell, Internal Complaint Committee and Grievance Redressal Committee for effective and efficient functioning and enjoys autonomy in many of its activities.

3. The college has a clearly defined organizational hierarchy and structure to support decision making processes that are clear and consistent with its purposes. The Institute has a wellstructured Service Rules, consisting of recruitment, promotional and other various procedures which is approved by the Governing Council.

10.1.3.1 Grievance redressal committee:

Grievance Redressal Committee (GRC)is formed in RR Institute of Technology as per Clause 1 of section 23 of the AICTE Act, 1987 (52 of 1987) AICTE. The Committee has been formed in order to ensure transparency by technical institutions imparting technical education in admissions, preventing unfair practices, complaints of alleged discrimination by students of Scheduled Caste, Scheduled Tribe, OBC, Women, Minority or Disabled Categories, scholarship issues and sexual harassment and to provide a mechanism for redressal of their grievances.

Procedure: The students, Parents & others concerned with any grievance shall fill the Grievance Redressal Form available on the website and submit all relevant documents to the Principal's office. The committee will investigate the matter and shall try to resolve it as quickly as possible.

Link to raise complaints- https://www.rrit.ac.in/committees-grievance.php (https://www.rrit.ac.in/committees-grievance.php)

Composition:

Slno	Name of the member	Designation	Role
1	Dr.Mahendra K V	Principal	Head of the committee
2	Dr.Channabasavraj S	Professor & HoD(Mech)	Member
3	Dr.Sunitha H D	Professor & HoD(ECE)	Member
4	Dr.Manjunath R	Professor & HoD(CSE)	Member
5	Dr.Suresha CN	Professor & HoD(Basic science)	Member
6	Dr.Erappa G	Professor & HoD(ISE)	Member
7	Dr. Kumar R Rao	Professor & HoD(Civil)	Member
8	Dr.Shivkumar swamy	Professor & HoD(EEE)	Member

10.1.3.2 Anti ragging committee(AY 2023-24)

As per the directions of Honble Supreme Court of India, an Anti Ragging Committee has been constituted in this institution to ensure strict compliance on the prevention of Ragging in any form

Composition:

Slno	Name of the member	Designation	Role
1	Dr.Mahendra K V	Principal	Head of the committee
2	Dr.Channabasavraj S	Professor & HoD(Mech)	Member
3	Dr.Sunitha H D	Professor & HoD(ECE)	Member

4	Dr.Manjunath R	Professor & HoD(CSE)	Member
5	Dr.Suresha CN	Professor & HoD(Basic science)	Member
6	Dr.Erappa G	Professor & HoD(ISE)	Member
7	Dr. Kumar R Rao	Professor & HoD(Civil)	Member
8	Dr.Shivkumar swamy	Professor & HoD(EE)	Member

10.1.3.3 ICC(Internal Compliance Committee):

- As per Vishakha guidelines given by Honourable Supreme Court and with reference to Section 4 All India Council for Technical Education Regulations, 2016 vide no. F AICTE/WH/2016 (Gender sensitization, prevention and prohibition of sexual harassment of women employees and students and Redressal of Grievances in Technical Institutions), Internal Complaint Committee (ICC) has been formed in RR Institute of Technology to prevent sexual harassment of woman at work place.
- Internal Complaint Committee sensitises the female faculty members and students on the prevention and prohibition of sexual harassment of woman at workplace. According to the Supreme Court's order.

Sexual Harassment is any unwelcome:

- Physical contact and advances
- Demand or request for sexual favors
- Sexually colored remarks
- Display of pornographic content in any form
- Any other unwelcome physical, verbal and non-verbal conduct of a sexual nature.

Objectives:

- To promote awareness about sexual harassment through educational initiatives that encourages and fosters a dignified and safe environment for women on campus.
- To provide a neutral, confidential, and supportive environment for the campus community who may have been sexually harassed.
- To ensure fair and timely resolution of complaints about sexual harassment.
- To provide information regarding counselling and support services on the campus.
- To ensure that students, faculty, and staff are provided with current and comprehensive information on sexual harassment and assault.

Composition(AY 2023-2024):

Slno	Name of the member	Designation	Role	Gender	USN
1	Mrs. Parimala Gandhi G(ECE)	Associate Professor	Head of the committee	Female	-
2	Dr.Amarnath G(Mech)	Associate Professor	Member	Male	-
3	Dr.Savitha A L(Civil)	Associate Professor	Member	Female	-
4	Dr.Swetha G(CSE)	Associate Professor	Member	Female	-
5	Dr.Emmanuel Rajarathnam(ISE)	Associate Professor	Member	Male	-
6	Mrs.Sunanda C V(EEE)	Assistant Professor	Member	Female	-

7	Mrs.Tejaswini D(Basic science)	Assistant Professor	Member	Female	-
8	Mrs.Anshu Deepak(ECE)	Assistant Professor	Member	Female	-
9	Mrs.Nirmala S H	Non-teaching staff	Member	Female	-
10	Mrs.Chaitra S	Non-teaching staff	Member	Female	-
11	Ms.Nimishahsri Ravalli	Student	Member	Female	1RI21EC042
12	Ms.Supreetha B	Student	Member	Female	1RI22IS056
13	Dr.Padmakshi Lokesh	Member, NGO	Member	Female	-

10.1.4 Delegation of financial powers (10)

Institute Marks : 9.00

- The institution has a mechanism to ensure adequate budgetary provisions for academic and administrative activities to monitor the effective, efficient, and optimal use of financial resources.
- The annual budget is prepared according to needs and requirements of departments by considering annual intake of students, laboratory, infrastructure developmental expenses, requirements of latest technologies, additional facility, staff requirements and other routine expenditures.
- HODs of respective departments submit budget proposals regarding expenditure for the financial year, which is scrutinized by Head of the Institution and thereafter a consolidated budget is placed before Governing council for approval.
- The main source of income is the annual fee from students.
- The funds are utilized for approved academic and administrative expenses as per the norms.

The optimal utilization of funds is done as shown below:

- The academic infrastructure, including classrooms, seminar hall, lab equipments, software, and hardware, IT facilities etc., is regularly upgraded to improve students learning ambience.
- Funds are allocated to encourage research and development activities and for enhancing library facilities like subscriptions to Books/ Journals/ Periodicals/ Magazines.
- In addition to academics, extracurricular activities including sports and games have been organised for students to develop their physical abilities.
- Conduct conferences, workshops, FDPs, training programs etc. for staff, to ensure the quality teaching-learning of students and staff.
- Conduct student activities like Induction-cum-Orientation Programs, technical competitions, cultural activities, literary events, seminars, workshops, placements, Industrial visits etc.
- To maintain environment-friendly campus with facility for rainwater harvesting, waste management, solar plant etc.,
- Adequate funds are utilized for maintenance of infrastructure of the Institute towards up keeping of the fixed assets, maintenance of classrooms, repairs & maintenance of laboratories, administrative set up and maintenance etc.
- Emphasis on public relations to optimize brand equity and reduce expenditure on publicity.

10.1.5 Transparency and availability of correct/unambiguous information in public domain (5) Institute Marks : 5.00

Information to stakeholders is made available on the website:

1. Audit report: https://www.rrit.ac.in/audit.php
2. Service rules: https://www.rrit.ac.in/pdf/Service%20Rule%20of%20RRIT.pdf
3. Mandatory disclosure: https://www.rrit.ac.in/mandatory.php
4. Committees: https://www.rrit.ac.in/#
5. NAAC details: https://www.rrit.ac.in/mandatory.php#
6. Facilities: https://www.rrit.ac.in/audit.php#

RULES & REGULATIONS

1. All students should attend the classes start from the reopening day of the Semester.
2. Students should be punctual , regular for lecture classes, laboratories, workshops, seminars etc., and any other activity organized by the college.
3. Students shall be attentive in all classes and labs without creating any disturbance to fellow students
4. Students shall compulsorily wear their identity cards when they are in the college campus.
5. Loss / theft of ID cards / library cards and change of address or contact number shall be informed to HOD / college office without delay Use of mobile phones, iPods, and walkman are strictly banned inside the campus.
6. Any kind of indecent or tight fitting dresses are not permitted.
7. Students shall maintain strict discipline and good behavior at all times in campus
8. Smoking, chewing of pan masala / gutka consuming alcoholic drinks and drugs of any kind in the campus are strictly prohibited.
9. Strike or any such undesirable activities in the campus are not permitted and those involved in such activities will be severely punished.
10. Tuition fees shall be paid within as per circular set by college after the reopening of the odd semester in every academic year.
11. Students shall take prior permission from HOD before availing leave.
12. Attendance condonation will be given as per University Norms.
13. Leave / Permission letters to be signed by parents/guardians/ hostel wardens.
14. Students are encouraged to participate in co-curricular and extracurricular activities and develop their skills.
15. Students are counseled periodically regarding academic performance, higher studies, placement, attendance, discipline etc.
16. Hostel students shall abide by the rules and regulations of the hostel.Students are advised to wear helmets while riding two wheeler vehicles.

ACADEMIC RULES

1. Students shall submit their assignments, records, observation notebooks etc. within the specified time.
2. Attendance condonation will be given as per University Norms.
3. Students shall equip themselves with approved drawing material, instrument boxes and record note books as required.
4. Student are advised to handle Lab equipments with care. Loss or damage attracts penalty.
5. Students have to use college official lab record books to write the practical record. No other notebook shall be permitted.
6. Students are encouraged to participate in conferences, workshops, seminars and technical paper presentation.
7. To ensure good Internal assessment marks and overall academic performance attendance is mandatory for all the internal tests.

EXAM RULES AND REGULATIONS SET BY AFFILIATING UNIVERSITY

1. Only a single answer book will be issued. No additional answer books are permitted.
2. Answer books should be handed over personally to room superintendent before leaving the examination hall.
3. The candidate should not take any books / notes, log tables, scribbling pads, cell phones, programmable calculators or any kind of references into the examination hall.

4. No candidate shall be admitted into the Exam hall after the commencement of the examination.
5. No candidate shall be allowed to leave the examination hall before 30 minutes after commencement of the examination.
6. The candidate should append his / her signature at the specified space on the answer book as and when he / she received the answer book
7. Answer books should be handed over personally to room superintendent before leaving the examination hall.
8. The student leaving the examination hall till 30 minutes before the scheduled completion time of the examination shall not be permitted to take the question paper.
9. Students are strictly instructed not to write any matter on the question paper except their USN.
10. The candidate should append his / her signature at the specified space on the answer book as and when he / she received the answer book.

Any candidate appearing for UG / PG examination is liable to be charged for committing malpractice in the following cases

1. Possessing any written matter on any paper, scribbling pad, question paper, admission ticket, calculator, palm, hand, leg, kerchief, clothes, etc.
2. Copying from the material of another candidate or similar aid, or assistance is rendered to another candidate
3. Supply of copying material from inside or from outside the examination hall.
4. Unruly behavior inside or near the examination hall.
5. Communicating with any candidate or any other person inside or outside the examination hall.
6. For more detailed information on academic regulation please refer to VTU website: www.vtu.ac.in (http://www.vtu.ac.in/)

10.2 Budget Allocation, Utilization, and Public Accounting at Institute level (30) Total Marks 28.00

Summary of currentfinancial year’s budget and actual expenditure incurred(for the institution exclusively)in the three previous financial years :

Total Income at Institute level: For CFY,CFYm1,CFYm2 & CFYm3
CFY : (Current Financial Year),
CFYm1 : (Current Financial Year minus 1),
CFYm2 : (Current Financial Year minus 2) and
CFYm3 : (Current Financial Year minus 3)

Table 1 - CFY 2023-24

Total Income 96793895				Actual expenditure(till…): 116006098			Total No. Of Students 1271
Fee	Govt.	Grants	Other sources(specify)	Recurring including salaries	Non Recurring	Special Projects/Anyother, specify	Expenditure per student
96793895	0	0	0	112454827	3551271	0	91271.52

Table 2 - CFYm1 2022-23

Total Income 71095468				Actual expenditure(till…): 87021290			Total No. Of Students 1159
Fee	Govt.	Grants	Other sources(specify)	Recurring including salaries	Non Recurring	Special Projects/Anyother, specify	Expenditure per student
71095468	0	0	0	78436028	8585262	0	75083.08

Table 3 - CFYm2 2021-22

Total Income 47785769				Actual expenditure(till…): 64145160			Total No. Of Students 1024
Fee	Govt.	Grants	Other sources(specify)	Recurring including salaries	Non Recurring	Special Projects/Anyother, specify	Expenditure per student
47785769	0	0	0	59586825	4558335	0	62641.76

Table 4 - CFYm3 2020-21

Total Income 53239212				Actual expenditure(till…): 62770657			Total No. Of Students 897
Fee	Govt.	Grants	Other sources(specify)	Recurring including salaries	Non Recurring	Special Projects/Anyother, specify	Expenditure per student
53239212	0	0	0	57807524	4963133	0	69978.44

Items	**Budgeted in 2023-24**	**Actual Expenses in 2023-24 till**	**Budgeted in 2022-23**	**Actual Expenses in 2022-23 till**	**Budgeted in 2021-22**	**Actual Expenses in 2021-22 till**	**Budgeted in 2020-21**	**Actual Expenses in 2020-21 till**

Infrastructure Built-Up	0	0	0	0	0	0	0	0
Library	169558	161484	351642	325595	746618	697774	785254	747861
Laboratory equipment	0	0	0	0	0	0	0	0
Laboratory consumables	49927	47550	49156	45515	39590	37000	18900	18000
Teaching and non-teaching staff salary	50099408	47713722	42014505	38902320	33475507	31285521	21078700	20074953
Maintenance and spares	8069801	7685525	10416813	9645198	3481682	3253909	6347853	6045575
R&D	0	0	0	0	0	0	0	0
Training and Travel	4455643	4243470	664233	615031	1818877	1515736	6010550	5510313
	51504395	49051805	30911508	28621767	23291343	21767611	25749670	24523496
Others, specify	0	0	0	0	0	0	0	0
Total	**114348732**	**108903556**	**84407857**	**78155426**	**62853617**	**58557551**	**59990927**	**56920198**

10.2.1 Adequacy of budget allocation (10)

Institute Marks : 10.00

1. Adequacy of budget allocation
    - The department prepares the budget on recurring and non recurring details and submit to Head of Institution.
    - The Head of Institution prepares budget by keep in view of Departmental requirements, Salary component, Infrastructural Development and Additional requirements and also considering the previous year expenditure.
    - The prepared budget will be submitted to GC Meeting for Approval.

Table 10.2.1 Budget allocation

Academic Year	Budget(in lakhs)	Expenditure(in lakhs)	Remarks
2023-2024	114.348732	108.903556	adequate
2022-2023	84.407857	78.155426	adequate
2021-2022	62.853616	58.557551	adequate
2020-2021	59990927	56920198	adequate

10.2.2 Utilization of allocated funds (15)

Institute Marks : 13.00

Financial Year	Approved Budget (in lakhs)	Actual Budget in lakhs)	Percentage of Utilization
2023-2024	**114.348732**	**108.903556**	95.23%
2022-2023	**84.407857**	**78.155426**	92.59%
2021-2022	**62.853617**	**58.557551**	93.16%
2020-2021	**59.990927**	**56.920198**	94.48%

10.2.3 Availability of the audited statements on the institute's website (5)

Institute Marks : 5.00

Audited statements are available on RRIT website

Weblink: https://www.rrit.ac.in/audit.php

10.3 Program Specific Budget Allocation, Utilization (30)

Total Marks 26.00

Institute Marks :

Total Income at Institute level: For CFY,CFYm1,CFYm2 & CFYm3
CFY: (Current Financial Year),
CFYm1 : (Current Financial Year minus 1),
CFYm2 : (Current Financial Year minus 2) and
CFYm3 : (Current Financial Year minus 3)

Table 1 :: CFY 2023-24

26281099.08		Actual expenditure (till…): 24334351		Total No. Of Students 121
Non Recurring	Recurring	Non Recurring	Recurring	Expenditure per student
6039229.32	20241869.76	5591879	18742472	201110.34

Table 2 :: CFYm1 2022-23

15663831		Actual expenditure (till…): 14503548		Total No. Of Students 109
Non Recurring	Recurring	Non Recurring	Recurring	Expenditure per student
1545347	14118484	1430877	13072671	133060.07

Table 3 :: CFYm2 2021-22

18930630		Actual expenditure (till…): 17528362		Total No. Of Students 70
Non Recurring	Recurring	Non Recurring	Recurring	Expenditure per student
8205003	10725627	7597225	9931137	250405.17

Table 4 :: CFYm3 2020-21

11298716		Actual expenditure (till…): 10461775		Total No. Of Students 55
Non Recurring	Recurring	Non Recurring	Recurring	Expenditure per student
893363	10405353	827188	9634587	190214.09

Items	**Budgeted in 2023-24**	**Actual Expenses in 2023-24 till**	**Budgeted in 2022-23**	**Actual Expenses in 2022-23 till**	**Budgeted in 2021-22**	**Actual Expenses in 2021-22 till**	**Budgeted in 2020-21**	**Actual Expenses in 2020-21 till**
Laboratory equipment	0	0	0	0	178678	165443	0	0
Software	0	0	0	0	0	0	0	0

Laboratory consumable	0	0	0	0	6659	6166	3240	3000
Maintenance and spares	8559	7925	1736135	1607533	585703	542318	1088202	1007595
R & D	0	0	0	0	0	0	0	0
Training and Travel	763824	707245	110705	102505	272831	252622	991855	918385
	8829325	8175301	5151917	4770294	3918169	3627935	4414228.92	4087249
Total	**9601708**	**8890471**	**6998757**	**6480332**	**4962040**	**4594484**	**6497525.92**	**6016229**

10.3.1 Adequacy of budget allocation (10)

Institute Marks : 10.00

Financial Year	Approved Budget(in Lakh)	Adequate/Non-Adequate
2023-2024	**9.601708**	Adequate
2022-2023	**6.998757**	**Adequate**
2021-2022	**4.962040**	**Adequate**
2020-2021	**6.497525**	**Adequate**

10.3.2 Utilization of allocated funds (20)

Institute Marks : 16.00

Utilization of allocated funds

Financial Year	Approved Budget (in lakhs)	Actual Budget in lakhs)	Percentage of Utilization
2023-2024	**9.601708**	**8.890471**	92.59%
2022-2023	**6.998757**	**6.480332**	92.5%
2021-2022	**4.962040**	**4.594484**	92.6%
2020-2021	**6.497525**	**6.016229**	95.5%

10.4 Library and Internet (20)

Total Marks 18.00

10.4.1 Quality of learning resources (hard/soft) (10)

Institute Marks : 8.00

Library statistics & services

1	Library Books Volumes/ Titles (Print)	23,258/3,599(UG – 21788, PG – 304, CC- 1107, SC /ST- 59)
2	CD/DVD's	1149
3	Bound Volumes of Journals	117
4	E-Books	40,933
5	E-Journals	21,883
6	Newspapers	7
7	Magazines	5
8	Print Journals	13
9	Project reports	296
10	Reading Room Capacity	160
11	Digital Library	D- Space
12	Library Automation	Integrated Institutions Management software (IIMS), V-2.1.3
13	Computers	17
14	Area	540m2

e-resources

S/L	(E-Resources Subscribed through VTU Consortium) Publisher (2023-2024)	No. of e-Journals	No of e-Books(perpetual Access)
1	Elsevier - Science Direct(Engg+CSE)	298	436
2	Taylor & Francis (Engineering)	585	4950
3	Springer Nature(ME, CV, CS, EC, ME and allied branches)	690	14309
4	Tata McGraw Hill	-	505
5	DELNET Database (IM 7401)		10849
6	Mint Books	-	3469
7	PACKT BOOKS	-	3000
8	ProQuest	4900	-
9	IEEE ASPP	198	
10	Emerald	212	-
11	New Age International	-	3415
12	Knimbus	15000+	

15	Library Working hours –	Monday to Friday 9.00 AM to 5.00 PM Saturday 9:00 AM to 1:30 PM	13	NDLI (National Digital Library Membership) Reg. No INKANC42BYZHWWZ	-	-
				Total	21,883	40,933

Categorical books details

S/L	Departments (Main Library)	No. of Titles	No. of Volumes	Categories	No. of Titles	No. of Volumes
1	Electronics and Communication Eng.	504	3294	UG	2888	21788
2	Computer Science and Eng.	660	2747	SC/ST Cell Book Bank	56	59
3	Information Science Eng.	536	2552	PG	81	304
4	Mechanical Eng.	292	3296	CC Copies	574	1107
5	Electrical and Electronics Eng.	430	3420	Total	3,599	23,258
6	Civil Eng.	205	2237			
7	Basic Science	171	3478			
8	Others/General	90	764			
Total		2,888	21,788			

The library supports the students with self-learning activities, for which it has a special collection of books on General literature, Competitive exams like GATE, CAT, GRE, and personality development books.

Specialized Services: Book Bank facility, Bibliography Compilation, Printing, Remote access to e-resources, Newspaper Clipping Services, Assistance in searching database, plagiarism check to ensure quality paper/ project report are part of library special service.

10.4.2 Internet (10) Institute Marks : 10.00

Name of the Internet provider	City online services
Available band width	500MBPS
WiFi availability	Available
Internet access in labs, classrooms, library and offices of all Departments	Available
Security arrangements	Centralized management by router

Annexure I

(A) PROGRAM OUTCOME (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 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.

(B) PROGRAM SPECIFIC OUTCOME (PSOs)

PSO1	Graduates will be able to analyse, design and develop solutions for the problems and to apply the technical Knowledge in Power Systems and Renewable Energy Systems.
PSO2	Graduates will be able to design Power Electronic Converters and develop solutions for the problems in Analog and Digital Electronic Circuits.
PSO3	Graduates will be able to solve problems of Power system and Power Electronics using software tools and also to apply ethical principles, management skills and responsibilities.

Declaration

The head of the institution needs to make a declaration as per the format given -

- I undertake that, the institution is well aware about the provisions in the NBA's accreditation manual concerned for this application, rules, regulations, notifications and NBA expert visit guidelines inforce as on date and the institutes hall fully abide by them.
- It is submitted that information provided in this Self Assessment Report is factually correct.
- I understand and agree that an appropriate disciplinary action against the Institute willbe initiated by the NBA. In case, any false statement/information is observed during pre-visit, visit, postvisit and subsequent to grant of accreditation.

Head of the Institute
Name : Mahendra K V
Designation : Principal
Signature :

Seal of The Institution :

Place : Bangalore
Date : 20-05-2024 15:31:50