

R R Institute of Technology  
Electronics & Communication 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

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## 2 Name and Address of Affiliating University

Visvesvaraya Technological University

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## 3 Year of establishment of the Institution:

2008

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## 4 Type of the Institution:

- |  |  |
|--|--|
| <input type="checkbox"/> University        | <input type="checkbox"/> Autonomous            |
| <input type="checkbox"/> Deemed University | <input checked="" type="checkbox"/> Affiliated |
| <input type="checkbox"/> Government Aided  |  |
- 

## 5 Ownership Status:

- |   |  |
|---|--|
| <input type="checkbox"/> Central Government | <input checked="" type="checkbox"/> Trust          |
| <input type="checkbox"/> State Government   | <input type="checkbox"/> Society                   |
| <input type="checkbox"/> Government Aided   | <input type="checkbox"/> Section 25 Company        |
| <input type="checkbox"/> Self financing     | <input type="checkbox"/> Any Other(Please Specify) |
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## 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	R R Campus, Chikkabanavara, Bengaluru
R R School of Architecture	2014	bachelor of Architecture	R R Campus, Chikkabanavara, Bengaluru
R R Polytechnic	2010	diploma in Engineering	R R Campus, Chikkabanavara, Bengaluru
R R Institute of Advanced Studies	2006	Master of Business administartion	R R Campus, Chikkabanavara, Bengaluru
R R Institute of Management Studies	2010	B.Com, BBA (Aviation), BBA (Logistics), BCA (Cloud Computing), B.Com Tourism & Travel Management - Aviation (IATA)	R R Campus, Chikkabanavara, Bengaluru
R R college of Education	2004	B.Ed	R R Campus, Chikkabanavara, Bengaluru
R R College of Pharmacy	2005	D.Pharm, B.Pharm, M.Pharm (Pharmaceutics, Pharmacognosy), Pharm. D, Post Baccalaureate courses	R R 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	R R Campus, Chikkabanavara, Bengaluru
R R Institute of Medical Sciences	2016	B.Sc. in Optometry Technology, Radiotherapy Technology, Perfusion Technology, Radiography and Imaging Technology, Cardia Care Technology, OTT & Anesthesia Technology	R R Campus, Chikkabanavara, Bengaluru
NRR Hospital	2008	Multi Specialty health services	Hesarghatta main 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
BACHELOR OF ENGINEERING(BE)	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
<b>Sanctioned Intake for Last Five Years for the Computer Science Engineering</b>											
<b>Academic Year</b>						<b>Sanctioned Intake</b>					
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
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	2010	2010	60	Yes	60	Applying first time	--	--	No	4
<b>Sanctioned Intake for Last Five Years for the Mechanical Engineering</b>											
<b>Academic Year</b>						<b>Sanctioned Intake</b>					
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	Applying first time	--	--	No	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
<b>Sanctioned Intake for Last Five Years for the Civil Engineering</b>											
<b>Academic Year</b>						<b>Sanctioned Intake</b>					
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)	0	0	0	0	0	0
Faculty in Engineering (Female)	0	0	0	0	0	0
Faculty in Maths, Science & Humanities (Male)	0	0	0	0	0	0
Faculty in Maths, Science & Humanities (FeMale)	0	0	0	0	0	0
Non-teaching staff (Male)	0	0	0	0	0	0
Non-teaching staff (FeMale)	0	0	0	0	0	0

**10 Total number of Engineering Students:**

<b>Engineering and Technology- UG</b>	<input checked="" type="checkbox"/> Shift1	<input type="checkbox"/> Shift2
<b>Engineering and Technology- PG</b>	<input type="checkbox"/> Shift1	<input type="checkbox"/> Shift2
<b>Engineering and Technology- Polytechnic</b>	<input type="checkbox"/> Shift1	<input type="checkbox"/> Shift2
<b>MBA</b>	<input type="checkbox"/> Shift1	<input type="checkbox"/> Shift2
<b>MCA</b>	<input type="checkbox"/> Shift1	<input type="checkbox"/> 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
<b>Total</b>	<b>1271</b>	<b>1159</b>	<b>1024</b>

**11 Vision of the Institution:**

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:**

- 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	
<b>Name</b>	Dr.Mahendra K V
<b>Designation</b>	Principal
<b>Mobile No.</b>	7899743333
<b>Email ID</b>	rrit@rrinstitutions.com

**NBA Coordinator, If Designated**



## PART B: Criteria Summary

Criteria No.	Criteria	Total Marks	Institute Marks
1	VISION, MISSION AND PROGRAM EDUCATIONAL OBJECTIVES	60	57.00
2	PROGRAM CURRICULUM AND TEACHING - LEARNING PROCESSES	120	102.00
3	COURSE OUTCOMES AND PROGRAM OUTCOMES	120	109.00
4	STUDENTS' PERFORMANCE	150	108.07
5	FACULTY INFORMATION AND CONTRIBUTIONS	200	158.93
6	FACILITIES AND TECHNICAL SUPPORT	80	71.00
7	CONTINUOUS IMPROVEMENT	50	42.00
8	FIRST YEAR ACADEMICS	50	41.43
9	STUDENT SUPPORT SYSTEMS	50	44.00
10	GOVERNANCE, INSTITUTIONAL SUPPORT AND FINANCIAL RESOURCES	120	109.00
	<b>Total</b>	<b>1000</b>	<b>842</b>

## Part B

### 1 VISION, MISSION AND PROGRAM EDUCATIONAL OBJECTIVES (60)

Total Marks 57.00

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

Total Marks 5.00

Institute Marks : 5.00

Vision of the institute	To be a Premier globally recognized Institute with ensuring academic excellence, Innovation and fostering Research in the field of Engineering.						
Mission of the institute	<ul style="list-style-type: none"> <li>To consistently strive for Academic Excellence</li> <li>To promote collaborative Research &amp; Innovation.</li> <li>To create holistic teaching learning environment that build ethically sound manpower who contribute to the stake holders operating at Global environment</li> </ul>						
Vision of the Department	To impart technical education par excellence and prepare leaders to grow beyond leaps and bounds to serve the growing industries and society.						
Mission of the Department	<table border="1"> <thead> <tr> <th>Mission No.</th> <th>Mission Statements</th> </tr> </thead> <tbody> <tr> <td>M1</td> <td>To train the students to emerge as out-standing skilled technocrats imbued with professional ethics engineering and managerial skills with commitment to the society and nation at large.</td> </tr> <tr> <td>M2</td> <td>To create Centre of Excellence in the field of Electronics with industrial and university collaborations.</td> </tr> </tbody> </table>	Mission No.	Mission Statements	M1	To train the students to emerge as out-standing skilled technocrats imbued with professional ethics engineering and managerial skills with commitment to the society and nation at large.	M2	To create Centre of Excellence in the field of Electronics with industrial and university collaborations.
Mission No.	Mission Statements						
M1	To train the students to emerge as out-standing skilled technocrats imbued with professional ethics engineering and managerial skills with commitment to the society and nation at large.						
M2	To create Centre of Excellence in the field of Electronics with industrial and university collaborations.						

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

Total Marks 5.00

Institute Marks : 5.00

PEO No.	Program Educational Objectives Statements
PEO1	Graduates to identify, analyse and apply fundamental engineering and mathematical concepts for design of Electronics and Communication Engineering systems and demonstrate multidisciplinary expertise to handle societal needs and meet contemporary requirements.
PEO2	Graduates to develop innovative ideas leading to research and product development for real world problems.
PEO3	Graduates to perform with leadership qualities, team spirit, management skills, attitude and ethics need for successful career and entrepreneurship.

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

Total Marks 10.00

**Vision, Mission and PEOs are published:****A. Adequacy in respect of publication & dissemination**

- Institute website: <https://www.rrit.ac.in/electronics.php> (<https://www.rrit.ac.in/electronics.php>)
- Course file
- Alumni Survey forms
- Employer Survey forms
- Displayed in Staff & HOD's room
- Displayed on Department Notice Boards and in the Corridors
- Display in Laboratories & Classrooms
- lab manuals
- Institution / Department Information brochures
- Newsletter
- Seminar Hall
- IA report card

**B. Process of dissemination among stakeholders**

- Seminars
- Workshops
- Faculty Development Programme
- Conferences
- Alumni Meet
- Parent-teacher meeting
- DAB meeting
- Industry Institute Interaction
- Orientation day as well as other important meetings

**C. Extent of awareness of Vision, Mission & PEOs among the stakeholder**

Awareness of Vision, Mission and PEOs is created among the various stake holders through.

- Staff meeting
- Class Room teaching
- Parents meeting
- Induction Program

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

Total Marks 25.00



### A. 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.

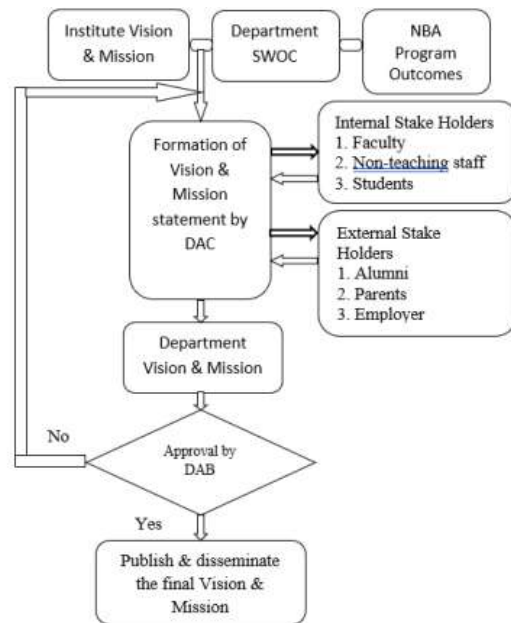
**Step 2:** Defining the initial department Vision and Mission statements to align with Institutional Vision and Mission statements, and feedback from the stakeholders are collected.

**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 the 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.

### A. 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.

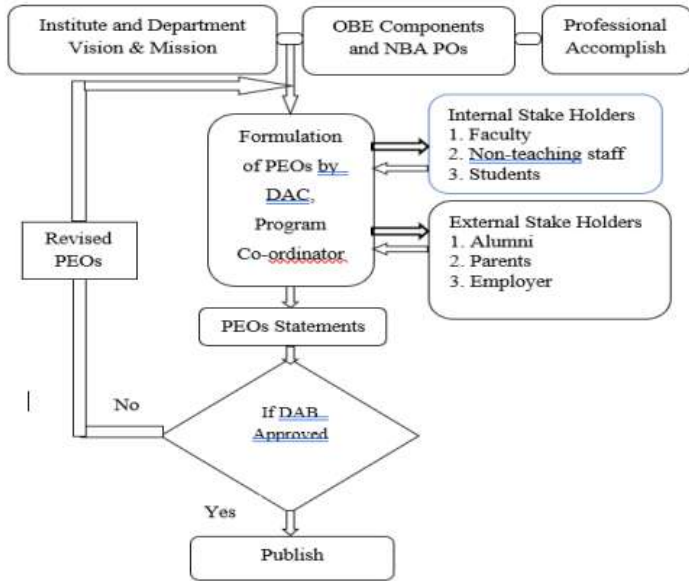


Figure 1.2: Process involved in defining the PEOs of the department.

**1.5 Establish consistency of PEOs with Mission of the Department (15)**

Total Marks 12.00





Elements which are used to established to find out correlations between PEOs and Mission Statements:

- Professional accomplishments: {Employer/ Entrepreneur (En), Employee(E), Higher Education(H)}
- OBE Components: {Knowledge(K), Skill(S), Attitude(A), Behavior(B)}

These components are linked to the program Educational Objectives of the department and are as depicted in Table 1.5.1.

**Table 1.5.1.** Consistency of PEOs with Mission of the Department.

<b>PEO Statements</b>	<p><b>M1:</b> To train the students to emerge as out-standing skilled technocrats imbued with professional ethics engineering and managerial skills with commitment to the society and nation at large.</p> <p>{K, S, A, B, E, En, H}</p>	<p><b>M2:</b> To create Centre of excellence in the field of Electronics with industrial and university collaborations.</p> <p>{K, S, A, B, E, En}</p>
<p><b>PEO-1:</b> Graduates to identify, analyse and apply fundamental engineering and mathematical concepts for design of Electronics and Communication Engineering systems and demonstrate multidisciplinary expertise to handle societal needs and meet contemporary requirements.</p> <p>{K, S, A, E, En, H}</p>	<p><b>3</b></p> <p>(Out of 7 elements 6 are identical)</p>	<p><b>2</b></p> <p>(Out of 6 elements 6 are identical)</p>
<p><b>PEO-2:</b> Graduates develop innovative ideas leading to research and product development for real world problems.</p> <p>{K, S, B, E, En}</p>	<p><b>2</b></p> <p>(Out of 7 elements 5 are identical)</p>	<p><b>3</b></p> <p>(Out of 6 elements 5 are identical)</p>
<p><b>PEO-3:</b> Graduates to perform with leadership qualities, team spirit, management skills, attitude and ethics need for successful career and entrepreneurship.</p> <p>{K, S, A, B, E, H}</p>	<p><b>3</b></p> <p>(Out of 7 elements 6 are identical)</p>	<p><b>3</b></p> <p>(Out of 7 elements 6 are identical)</p>

**Table 1.5.2.:** Mapping of PEOs with Mission statements and Justification.

Mapping	Justification
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<p><b>PEO-1:</b> Graduates to identify, analyse and apply fundamental engineering and mathematical concepts for design of Electronics and Communication Engineering systems and demonstrate multidisciplinary expertise to handle societal needs and meet contemporary requirements.</p> <p>{K, S, A, B, E, En, H}</p>	<ul style="list-style-type: none"> <li>• Students are being trained with the cutting-edge technologies through the industrial interactions, workshops and training programs, conduction of labs, hands-on sessions for understanding technical concepts, thus imparting theoretical foundation by the effective teaching and learning process.</li> <li>• Department has initiated training programs for the students to inculcate ethical and leadership qualities, roleplay activities and have started student development program for the overall improvement for the student to meet the corporate world.</li> <li>• In concerned with knowledge transfer as well as professional &amp; technical career in inter disciplinary domains providing innovative and sustainable solutions using modern tools the graduate maps with substantial M1 and moderately with M2.</li> </ul>
<p><b>PEO-2:</b> Graduates develop innovative ideas leading to research and product development for real world problems.</p> <p>{K, S, A, B, E, En}.</p>	<ul style="list-style-type: none"> <li>• The curriculum has gaps with respect to the upcoming technology thus resulting in less exposure to the industry level multi-disciplinary environments hence Industrial trips and training programs are being conducted in the department to make student to familiarize what the industry expectation and attainment of the skillset.</li> <li>• Students are being encouraged and motivated to upgrade the skills through various online certification courses and also initiated career guidance program for the students to obtain good opportunities.</li> <li>• In concerned with effective communication, leadership, team building, problem solving, decision - making and creative skills maps substantial with M1 and M2.</li> </ul>

<p><b>PEO-3:</b> Graduates to perform with leadership qualities, team spirit, management skills, attitude and ethics need for successful career and entrepreneurship.</p> <p>{K, S, A, B, E, H}</p>	<ul style="list-style-type: none"> <li>• The curriculum has gaps with respect to the upcoming technology thus resulting in less exposure to the industry level multi-disciplinary environments hence Industrial trips and training programs are being conducted in the department to make student to familiarize what the industry expectation and attainment of the skillset.</li> <li>• Students are involved in the various technical fests to showcase the skills and to solve various society problems through innovative projects using modern tools.</li> <li>• Group activities like assignments, mini projects, Major projects are adapted for practicing ethics and other affective domains skills. Events are being organized in the institute to provide a platform for the students to be aware of the current trends in technology and also to obtain new skills in most recent developments which are carried out in the industry and in turn make students to solve societal problems and requirements. Hence, M1 is substantially and M2 is moderately supports PEO3.</li> </ul>
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PEO Statements	M1	M2
Graduates to identify, analyse and apply fundamental engineering and mathematical concepts for design of Electronics and Communication Engineering systems and demonstrate multidisciplinary expertise to handle societal needs and meet contemporary requirements.	3 ▾	2 ▾
Graduates to develop innovative ideas leading to research and product development for real world problems.	2 ▾	3 ▾
Graduates to perform with leadership qualities, team spirit, management skills, attitude and ethics need for successful career and entrepreneurship.	3 ▾	3 ▾

2 PROGRAM CURRICULUM AND TEACHING - LEARNING PROCESSES (120)

Total Marks 102.00

2.1 Program Curriculum (20)

Total Marks 18.00

**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 Annexure I. Also mention the identified curricular gaps, if any (10)**

Institute Marks : 10.00

The Department of Electronics and Communication Engineering, R R Institute of Technology is affiliated to Visvesvaraya Technological University (VTU), Belagavi, Karnataka. The department follows the curriculum defined by university.

The curriculum which is a composition of Basic sciences(BSC), Engineering Sciences (ESC), Humanity and Social Sciences(HSC), Professional Core Courses(PCC), Professional Electives (PEC), Open Electives (OEC) and Non Credit Mandatory Courses (NCMC) to the extent of learning as specified by university. The curriculum is reviewed by Board of Studies (BoS) as per university norms.

The composition of curriculum compliance with course curriculum as defined by AICTE. The curriculum is reviewed once in 4 years or even earlier as need base demand through the Board of Studies (BoS) by university to attain PO. The suggestion on curriculum received by the university are considered by BoS for revision of curriculum to meet Course Outcome (CO) / PO / PSO attainment and gap analysis.

With the implementation of NEP-2020, from the academic year 2021-22, the university has provided a new curricular and pedagogical structure, for holistic, multidisciplinary focus in curriculum implementation to nurture young minds.

The Table 2.1.1.a provides composition of University curriculum in comparison with AICTE.

Reference to AICTE Curriculum page no. 360 [https://www.aicte-india.org/flipbook/p&ap/Vol.%201%20UG/UG\\_1.html#p=390](https://www.aicte-india.org/flipbook/p&ap/Vol.%201%20UG/UG_1.html#p=390) ([https://www.aicte-india.org/flipbook/p&ap/Vol.%201%20UG/UG\\_1.html#p=390](https://www.aicte-india.org/flipbook/p&ap/Vol.%201%20UG/UG_1.html#p=390))

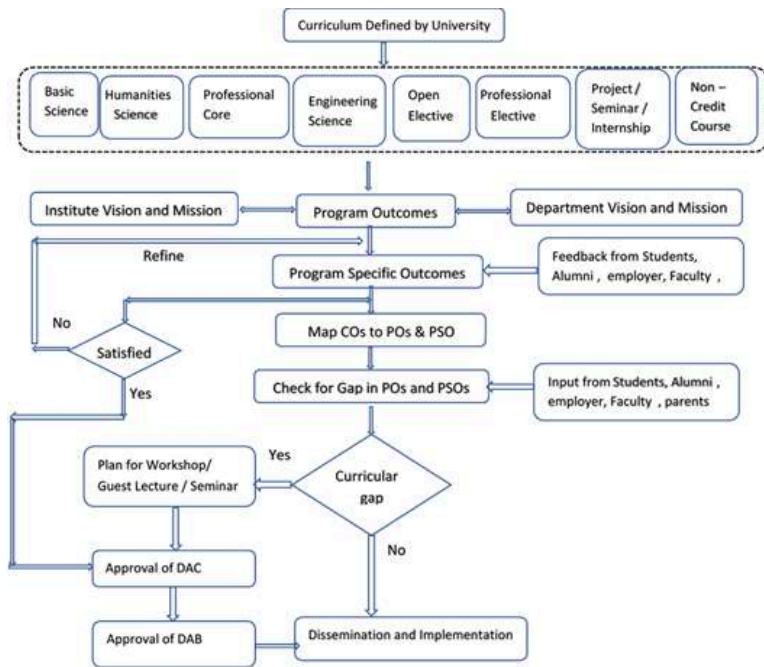
Table 2.1.1.a Structure of Curriculum as per AICTE and University

Sl No	Components of courses	Course code & No of courses mapped	Total No. of contact hours	Total number of credits	Total No. of Course	Percentage of Weightage in	
						Credit	Course
1.	HSMC	18CIV59,18ES51,18CPC49,18KAK39/49, 18EGH18,18EGH28	11	8	6	4.6	9.4
2.	BSC	18MAT11,18PHY12,18PHYL16,18MAT21,18CHE22,18CHEL26,18MAT31,18MAT41	34	24	8	13.7	12.5
3.	ESC	18CPL27,18ME25,18ELN24,18CPS23,18ELEL17,18EGDL15,18CIV14,18ELE13	30	20	8	11.4	12.5
4.	PCC	18EC42,18EC43,18EC44,18EC45,18EC46, 18ECL47,18ECL48,18EC52,18EC53,18EC54,18EC55,18EC56,18ECL57,18ECL58,18EC61,18EC62,18EC63,18ECL66,18ECL67,18EC71,18EC72,18ECL76, 18ECL77,18EC32,18EC33,18EC34,18EC35, 18EC36,18ECL37,18ECL38,18EC81	117	90	31	51.4	48.4
5.	PEC	18EC741,18EC733, 18EC646,18EC823	12	12	4	6.9	6.3
6.	OEC	18XX75X,18XX65X	07	6	2	3.4	3.1
7.	PSI	18ECI85,18ECS84,18ECP83,18ECP78,18ECMP68	12	15	5	8.6	7.8
8.	NCMC	18MATDIP31,18MATDIP41	06	0	2		
Overall Component Mapping			229	175	64+2	100%	100 %

#### Curricular GAP Identification:

The Head of the department oversees academic activity of the program under the guidance of Head of the Institution. The HOD conducts regular meeting with staff and collects input from various stake holders to identify the curricula gap and prepares action plan to fill the gap.

#### Process followed to compute formation of PSO and Curricula Gap from the prescribed Curriculum



#### 1. Process to define PSOs of the department

- Define or refine PSOs whenever University / Institution Vision, Mission and Program Educational Objectives (PEO) statements are framed.
- The Head of Department (HOD) & Faculty members frame PSO by considering the feedback received from Faculty, Alumni, Parents, students and Employer
- The final draft of the PSOs statements is reframed by HOD with Department academic committee (DAC) members and Department Advisory Board
- The finalized PSO statements is communicated to all

#### PROGRAM SPECIFIC OUTCOMES (PSOs)

A Graduates of the Electronics and Communication Engineering will be able to demonstrate

1. The capability to analyse , design, build and test analog, digital systems in the areas related to Microelectronics, communication, signal processing and embedded systems to provide solutions to real world problems.
2. The ability to identify and solve complex problems in Electronics and Communication Engineering and provide efficient solutions using modern tools/algorithms individually or working in a team

#### 2. Curricular GAP Identification:

1. Prepare Course Articulation Matrix , mapping COs to POs and PSOs of the courses offered across the Program and compute percentage of Compliance.
2. Compute percentage of Mapping strength to identify Gap in curriculum
3. Receive Input from Stake Holder
3. Consider the point 1,2 &3 and prepare an action plan to fill the gap
4. Review and Approval by DAC and DAB for Implementation

#### 2. Preparation of Course Articulation Matrix and Mapping to CO and PO:

Extent of compliance of the curriculum for attaining the program outcomes and program specific outcomes is prepared as shown in Table B.2.1.1.b

1. Faculty handling the course prepares Course Articulation Matrix of the course allotted, identifies the course gap based on input received
2. The Class teacher compiles course gap for the year
3. Entry '-' in the table indicates that the course has articulated to corresponding PO/PSO.
4. The percentage of compliance of a course addressing POs and PSOs is shown in the last column.
5. Extent of compliance of the program curriculum for each PO and PSO in terms of percentage of
6. articulation, is shown in last row of the table .

The table B.2.1.1 b shows extent of mapping of the courses to program outcomes and table B.2.1.1.d shows the mapping of the courses to program specific outcomes.

Course code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
18MAT11	√	√	√								√	√	√	
18CHE12	√	√	√									√	√	
18CPS13	√	√	√	√	√						√	√	√	
18ELN14	√	√	√								√	√	√	
18ME15	√										√		√	
18CHEL16	√	√	√								√	√	√	
18CPL17	√	√									√	√		
18EGH18									√		√		√	
18MAT21	√	√	√								√	√	√	
18PHY22	√	√	√			√	√							
18ELE23	√	√										√	√	
18CIV24	√	√	√											
18EGDL25	√	√	√		√						√	√	√	
18PHYL26	√	√	√	√			√							
18ELEL27	√	√			√						√	√		
18EGH28	√		√		√						√	√	√	
18MAT31	√	√	√	√							√	√	√	
18EC32	√	√	√	√							√	√	√	
18EC33	√	√	√	√	√	√					√	√	√	
18KAK28/39/49						√	√		√				√	
18EC34	√	√	√	√							√	√	√	
18EC35	√	√	√								√	√	√	
18EC36	√	√	√	√	√						√	√		
18ECL37	√	√	√	√	√	√					√	√	√	
18ECL38	√	√	√	√							√	√	√	
18MAT41	√	√	√	√							√	√	√	

18EC42	√	√	√	√	√			√	√	√
18EC43	√	√	√	√		√			√	√
18EC44	√	√	√	√				√	√	√
18EC45	√	√	√	√					√	√
18EC46	√	√	√	√	√			√	√	√
18ECL47	√	√	√	√	√			√	√	√
18ECL48	√	√	√		√			√	√	√
18CPC49	√					√	√	√	√	√
18ES51	√	√			√	√	√	√	√	√
18EC52	√	√	√	√					√	
18EC53	√	√	√	√	√			√	√	
18EC54	√	√	√				√	√	√	√
18EC55	√	√	√							
18EC56	√	√	√	√	√			√	√	
18ECL57	√	√	√	√	√			√	√	√
18ECL58	√	√	√		√			√	√	√
18CIV59	√							√	√	√
18EC61	√	√	√						√	
18EC62	√	√	√	√				√	√	√
18EC63	√	√	√	√	√				√	√
18CS653	√	√	√	√	√			√		√
18EC646	√	√	√	√	√					√
18ECL66	√	√	√	√	√			√	√	√
18ECL67	√	√	√	√	√			√	√	√
18ECMP68	√	√	√	√	√	√	√	√	√	√
18EC71	√	√	√	√					√	√
18EC72	√	√	√		√			√	√	√
18EC733	√	√			√		√	√	√	
18EC741	√	√		√				√	√	
18ME751										
18ME753	√	√	√					√	√	√
18CV753										
18ECL76	√	√	√	√				√	√	√



18ECL77	√	√	√	√							√	√	√	
18ECP78	√	√			√	√						√		
18EC81	√	√	√	√							√	√	√	
18EC823	√	√	√	√								√	√	
18ECP83	√	√	√	√	√	√	√	√	√	√	√	√	√	
18ECS84	√	√	√		√	√	√			√	√	√	√	
18ECI85	√	√	√	√	√	√	√	√	√	√	√	√	√	
No. of courses	60	60	58	30	27	13	7	13	17	16	8	45	48	41
% of Articulation	93	93	90	47	42	20	11	10	27	25	13	70	74	64

The percentage of courses mapping to POs and gaps in PSOs identified is listed in table B 2.1.1e .

SI No	POs & PSOs	% of Mapping	Shortcomings Identified in Program Curriculum
1	PO1.Engineering Knowledge:	93	Maximum Courses correlated to engineering knowledge
2	PO2. Problem analysis:	93	Strong correlation to mathematical knowledge
3	PO3. Design/development of solutions:	90	Moderate correlation in applying engineering knowledge to design
4	PO4. Conduct investigations of complex problems:	47	Limited research literature review to courses specified
5	PO5. Modern Tool Usage:	42	Limited use of software tools in curriculum
6	PO 6. The Engineer and Society:	20	Limited integrated approach in curriculum towards integrated professional practice
7	PO7. Environment and Sustainability:	11	Limited integrated approach in curriculum towards Environment and sustainability
8	PO8. Ethics	10	Limited approach towards ethics in curriculum practice
9	PO9. Individual and Team Work:	27	approach towards experiential learning is minimum and limited courses for team works
10	PO10. Communication	25	Lack of exposure due to limited hours allocated , poor communication skill
11	PO11. Project Management and Finance:	13	Limitation of duration in executing project and less exposure to finance management skill
12	PO12. Life-long learning:	70	Course components moderately address life skills

13	PSO1	74	Moderately meets industry needs
14	PSO2	64	Limitation to product development skill in curriculum

**Table B.2.1.1.c Gaps identified in program outcome**

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

SI No	Course Name	Course Code	Gap Identified in the course
1	Transform Calculus, Fourier Series And Numerical Techniques	18MAT31	More focus is given to solve the Problems appeared in university Exams. Less focus is given to higher order thinking
2	Network Theory	18EC32	More focus is given to solve the Problems appeared in university Exams. Less focus is given to higher order thinking
3	Electronic Devices	18EC33	Practical Exposure using Multisim for the Concepts related to the Electronic devices and Design and its Execution
4	Digital System Design	18EC34	Practical Exposure using Multisim for the Concepts related to the Digital system Design and its Execution
6	Computer Organization And Architecture	18EC35	Virtual design of practical circuits
7	Power Electronics And Instrumentation	18EC36	Virtual design of practical circuits Using MATLAB
8	Electronic Devices And Instrumentation Laboratory	18ECL37	Practical Exposure using Multisim for the Concepts related to the EDI system Design and its Execution
9	Digital System Design Laboratory	18ECL38	Practical Exposure using Multisim for the Concepts related to the Digital system Design and its Execution
10	Complex Analysis, Probability And Statistical Methods	18MAT41	Problems appeared in VTU Exams are to be solved
11	Analog Circuits	18EC42	Virtual design of practical circuits
12	Control Systems	18EC43	Simulation Experiments using MATLAB
13	Engineering Statistics And Linear Algebra	18EC44	Problems appeared in VTU Exams are to be solved
14	Signals And Systems	18EC45	Problems appeared in VTU Exams are to be solved
15	Microcontroller	18EC46	Incomplete CPU Knowledge

16	Microcontroller Laboratory	18ECL47	The Microcontroller ICs used for practice Experiments are Outdated, Need to use advanced ICs.
17	Analog Circuits Laboratory	18ECL48	. Practical Exposure using Multisim for the Concepts related to the Analog circuits and its Execution
18	Technological Innovation Management And Entrepreneurship	18ES51	Surveys, Case studies, presentations and Reports
19	Digital Signal Processing	18EC52	Insufficient scope for Practical Implementation
20	Principles Of Communication Systems	18EC53	Article based Assignments from Research papers of Communication systems
21	INFORMATION THEORY And CODING	18EC54	Computation of Codeword using LBC, Cyclic and Convolution codes
22	Electromagnetic Waves	18EC55	Problems appeared in VTU Exams are to be solved
23	Verilog HDL	18EC56	Demonstration Lab on timing analysis
24	Digital Signal Processing Laboratory	18ECL57	No Practical and Real time experiments
25	Hdl Laboratory	18ECL58	Demonstration Lab on timing analysis
26	Digital Communication	18EC61	Some more examples are to be solved
27	Embedded Systems	18EC62	Real time practical approaches are necessary in the prescribed programmes
28	Microwave And Antennas	18EC63	Demonstration of practical experiments for various types of Antennas
29	Programming In JAVA	18CS653	It's a low level programming language
30	Python Application And Programming	18EC646	Hands on session to work in IDLE Mode
31	Embedded Systems Laboratory	18ECL66	Once the IC is Configured , it cannot be changed
32	Communication Laboratory	18ECL67	Providing Data Security, Increasing transmission Data rates
33	Computer Networks	18EC71	LORA and study of latest protocols in wireless communication
34	Vlsi Design	18EC72	Fault types and Models, Controllability and Observability, introduction to Low power VLSI Design.

35	Digital Image Processing	18EC733	Practical Exposure using MATLAB for the Concepts related to the Digital Images and its processing.
36	Internet Of Things And WSN	18EC741	Practical Exposure using JAVA or Python coding for the Concepts related to the IOT scenarios present in real world.
37	Energy and Environment	18ME751	Research for pollution free Environment in Maintaining Energy Sources
38	Industrial Safety	18ME753	A Study on fire safety precautions in industries.
39	Environmental protection management	18CV753	Research for pollution free Environment
40	Computer network lab	18ECL76	Providing Data Security, Increasing transmission Data rates
41	VLSI design lab	18ECL77	Capture the schematic of 2-inputs CMOS,NOR and XNOR circuit
42	Project	18ECP78	Applying for Patents for the Academic Projects
43	Wireless and Cellular communication	18EC81	Practical concepts of transport layer DNS are yet to be approached
44	Radar Engineering	18EC823	Techniques to locate blind sectors and Shadow areas are to be developed

**Follow-up actions:**

1. At each academic year, shortcomings in the curriculum are identified and an action plan to overcome the same is chalked outs.
2. This action plan is discussed in department meeting and activities are carried out in the subsequent semester is taken.

- **Initiatives taken to address curricular gaps:**

- **Guest lecturers:** Experts from industry and academia are invited to deliver lectures on the latest trends and thrust areas in Electronics and Communication engineering.
- **Technical talk/ Seminars:** Students are kept updated about the advances in technologies through technical talks/seminars.
- **Workshops:** Students are encouraged to participate in hands-on workshops to enhance their application skills.
- **Soft skill training:** To emphasizes personality development ,to improve communication and behavioural impart soft skill training as it plays a major role in the employability of students.
- **Industrial visits:** Visits to industries are organized to keep the students abreast with the latest technological advancements and their applications.
- **Internships:** Students are encouraged to take up internships in industries to understand industry practices. There is a mandatory internship introduced in the VTU scheme that encourage to get industry exposure.

**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 content beyond the syllabus identified for the attainment of Program outcomes and Program specific outcomes are delivered by the any one of the following methods

#### **1. Assignments:**

The faculty handling the course identifies topics of content beyond syllabus to meet the desired POs and PSO. The students are encouraged to complete the assignments.

#### **2. Seminars and Guest Lectures:**

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 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.

#### **3. Demonstration and Animations**

The concepts to be learned by the students as Content beyond the syllabus are demonstrated to them with the aid of demo or with the help of videos and presentation. Also, the working principles are explained with animated videos for easy understanding of the subjects. These modes of delivery help the students to develop new ideas and designs.

#### **4. Project based learning**

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.

#### **5. Value added programs/Certificate courses**

The gap identified in the curriculum is delivered to the students by conducting additional certificate courses by the technical experts. According to the input from the industrial experts, academic experts and alumni students are motivated to take up additional certificate courses to map their industrial need

This enhances the knowledge of the students to go forward in lifelong learning and self-study.

#### **6. Industrial Visit , Internship**

In order to inculcate the industry requirements for the students and to bridge the gap between theoretical learning and practical training, Industrial visits are arranged. Students undergo Internships aspart of curriculum to gain the industrial knowledge.

This supports them to learn and upgrade the knowledge towards the placement.

#### **7. Hands on Workshop**

The curricular gaps in courses are framed by the faculty handling the courses are prepared and necessary workshops/ training sessions are conducted to strengthen the gap

#### **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:**

Studetns 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 speciifed by University. The Holistic development of the students are ensured by encouraging students to take Universal Human Value Workshop organized by AICTE UHV. Also the students register for AICTE PARAKH and take up courses offered and on completion receive certificate.

S.No	Gap	Action Taken	Date-Month-Year	Resource Person with Designation	% of students	Relevance to POs, PSOs
1	Start-Up Now & Career Goal	Entrepreneurship & Innovation as Career Opportunity & Ideation	17/10/2022	Mr Nagarjun M G Project associates KSCST	21	PO6,PO10,PSO1
2	Learn Software tools to upkeep with Technology	Introduction to JAVA and its Applications	05/11/2022	Ms Sangeetha C Associate consultant @VLSI @VTU Extension centre Bangalore	17	PO1,PO2,PO3,PO5,PSO1
3	On the Path to a bright career	"Career Awareness" on What next?	04/11/2022	Dr.C V Ravishankar Vice Chiarmen , IETE Vice President	87	PO7,PO12
4	Exposure to Industry Practice	Industrial Visit to GFTI, Hesarghatta	16/12/2022	GFTI Hesaragatta	17	PO6,PO7,PO8,PO9,PO11,PO12,PSO1
5	Exposure to Emerging Technology	Python programming with applications with projects and solutions	09/01/2023	Mr Mohan Shamanna founder and Mentor indo skill Bangalore	17	PO5,PO6,PO12,PSO1
6	Crafting career Goals	Digital awareness and Placement	14/02/2023	Mr Jayanatah V VP Training Rooman Technologies	69	PO8,PO12,PO11,PSO1
7	Enhance Technical Skills in line with the requirements of the industry	Data Warehousing	28/02/2023	Mr Madhu J Senior Engineer London Stalk exchange group Bangalore	63	PO3,PO8, PO11,PO12,PSO2
8	Exposure to Emerging technologies	"The future of Automation with IoT and Cloud. A hands on Training Programme"	28/04/2023	Dr.Shashikanth Reddy R &D Head Parvam Consultancy PVT.LTD. Chikkabanavara	17	PO3,PO5,PO6 PO11,PO12,PSO1
9	Industrial Exposure	Industrial Visit to JVS Electronics	25/02/2023	Pear Coordinator JVS Electronics	17	PO5,PO12,PSO2
10	Crafting career Goals	Global Education Awareness Program	06/06/2023	Mr Nagarjun M G Project associates KSCST	17	PO5,PO12,PSO2
11	Enhance Technical Skills in line with the requirements of the industry	Connecting the dots from wired to wireless and role of antennas in it-A practical approach	07/10/2023	Dr.Shwetha Amith Business Head ZOSH aerospace PVT.Ltd	85	PO2,PO6,PO4,PO12,PSO1
12	Exposure to technologies	Energy conservation and innovation in household applications	19/07/2023	Dr.KrishnaKumar Assciate Professor,ECEDEpt, GCEM Bnagalore	100	PO5,PO6,PO11,PO12,PSo1
13	Exposure to Constitutional Rights	Awareness program on article 21	17/07/2023	Prof. Ranganathan, Associate Professor CV Detp. RRIT	69	PO6,PO7,PO12
14	Enhance Technical Skills in line with the requirements of the industry	Trends in IC design using Mentor Graphics	08/08/2023	Mr. Vinnalan ka Application Engineer Corel Technologies	21	PO1,PO2,PO4,PO5,PSO1,PSO2,PO11,PO12
15	Interaction with External members	State level project Exhibition and Competition "TECHTOPIA" in association with IETE	05/05/2023	Prof.Shnkara Dasiga , Chief Technology office vellnesos IMCR	58	PO1,PO2,PO3,PO4,PO5,PO6,PO7,PO8,PO9,PO10,PO11,PO12,PSO1,PSO2

16	Engineer and Society	Inauguration of "IETE student chapter Seminar on Computation Technique	01/12/2022	Dr.V LLANGO, ProF @CMRIT Dr.S Mohan Kuamr Directorate of Reseach and Innovatioj QUALITY ASSURANCE CMR University	100	PO6,PO7,PO12
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**2021-22**

S.No	Gap	Action Taken	Date-Month-Year	Resource Person with Designation	% of students	Relevance to POs, PSOs
1	Limited use of software tools in curriculum	"Research Trends in Image Processing"	27/09/2021	Dr. Thippeswamy G, Professor, CSE, BMSIT Dr. Vijayalakshmi V, Associate Professor, ECE, Prof. Thyagaraj TM, Assistant Professor , BMSIT Bangalore	100	PO3,PO4,PO5,PO12,PSO1
2	Enhance Technical Skills in line with the requirements of the industry	Certificate Program on " Introduction to java and its Applications"	13/11/2021	Ms. Sangeetha C, Alumina Student, Associate consultant VLSI at VTU Extention Centre, UTL Technologies Bengaluru	68	PO1,PO2,PO3,PO4,PO5,PO6,PO8,PO12
3	Usage of Software tools to upkeep with Technology	3 days Hands on workshop on "IOT & its Applications"	22/12/2021	Prof. Anil Kumar BE. M. Tech (Ph.D) Assistant Professor, Dept. of ECE, Ambient Technologies Bangalore	68	PO1,PO2,PO3, PO4,PO5,PO6, PO8,PO12, PSO1,PSO2
4	Industry readiness	Enterprise resource planning systems applications and products in data processing	20/12/2021	Mr. Mahesh , Project Manager, Syslog Technologies, Bengaluru	68	PO1,PO2,PO3,PO4,PO7,PO8,PO8,PSO1, PSO2
5	Industry readiness, usage of modern tools and technologies	workshop on "Microcontroller Applications for innovative thinking"	21/12/2021	Sri. Manjunath Technical Adviser, Technosoft Solutions, SIT Extension, Tumkur	68	PO1,PO2,PO3,PO6,PO7,PO10,PSO1,PSO2
6	Holistic development	Awareness Program on "Yoga : Relax, Replenish, Revive"	01/01/2022	Dr. Geetha Rani A , Director & Founder, Swami vivekananda yoga shala, Bengaluru	100	PO6,PO7
7	Enhance Technical Skills in line with the requirements of the industry	NSDC Certificate program	30/03/2022	Mr. Siddalinkeshwara UTL Tecghnologies	100	PO1,PO2,PO3,PO6,PO7
8	Industry readiness	Industrial visit to TDPS	23/10/2021	T D power systems, Dabaspeta,Nelamangala	45	PO1,PO2,PO3,PO4,PO8
9	Insight about the career, placements, ethics, responsibilities, team work.	Career Guidance	08/12/2021	Mr.Ramesh P, Asst Prof.,ACE college of Engineering Bangalore	82	PO1,PO2,PO3,PO8
10	Bridging gap between academics and industrial requirement	Virtual Industrial visit .	25/10/2021	Mr.MalayPorwal(CEO), MESON,Surat,Gujarath	100	PO1,PO2,PO3,PO4,PO8
11	Bridging gap between academics and industrial requirement	Industrial visit to BEL	18/12/2021	Bharath Electronics Limited, Jalahalli post, Bengaluru	100	PO1,PO2,PO3,PO4,PO8
12	Bridging gap between academics and industrial requirement	Industrial visit to 3N Electronics	27/04/2022	Mr.P F Naikar,3N Electronics(CEO), Tumakuru	100	PO1,PO2,PO3,PO4,PO8
13	Enhancement of skills, leading to better employment opportunities	Creative learning of DSD using Microwind software	09/02/2022	Mr.Mallesha B Y, Assoc Prof Department of ECE	32	PO1,PO2,PO3,PO4,PO5,PSO1, PSO2
14	Enhancement of skills, leading to better employment opportunities	5G and thinking towards 6G	20/06/2022	Prof.C . Murali	100	PO1,PO2,PO3,PO4,PO5,PO9, PO12
15	Insight about the career, placements,	Career opportunities in VLSI	20/06/2022	Mr.Arun John Mathias,CoreEL technologies pvt.Ltd	68	PO1,PO2,PO3,PO5,PO6,PO7, PO8
16	Insight about the career, placements,	Embedded system with Microcontroller Real Time applications	09/05/2022	Mr.Vijay Mahantesh, Cleverbit Solutions	68	PO1,PO2,PO3,PO4,PO5,PSO1, PSO2





S.No	Gap	Action Taken	Date-Month-Year	Resource Person with Designation	% of students	Relevance to POs, PSOs
1	Carrier Insight to ECE	Introduction to embedded systems & IOT	16/11/2020	Dr. MAIathi	94	PO1,PO2,PO3,PO6,PO8,PO10, PSO1,PSO2
2	Current trends in ECE	Scope of Machine learning for ECE"	10/11/2020	Mr. Abhishek R Patil	98	PO1,PO21,PO3,PO5,PO6,PO12,PSO1,PSO2
3	Practical approach is not addressed in course	"Power Converters simulation"	19/11/2020	Prof. Arshitha M	100	PO1,PO21,PO3,PO4,PO7
4	Bridging gap between academics and industrial requirement	Introduction of Python and its Applications	21/12/2020	Prof. Chandran venkatesan & Dr. Nageswara Gupta	100	PO1,PO21,PO3,PO4,PO5PO6,PO8,PO12,PSO1,PSO2
5	Enhancement of skills for better employability & Career Development.	Career opportunities in overseas Education	23/12/2020	Mr. Prasanna Poojary, Managing Director, Lokahh International India, Bengaluru	100	PO3,PO6,PO7, PO10
6	Awareness on Environment conscious	Clean to Green	24/09/2021	Ms. Ankita, Gemini Marketing Solutions New Delhi, India	69	PO6,PO7,PO9
7	Enhancement of skills for better employability & Career Development.	Online Seminar on Tips to crack interview	22/05/2021	Mr Shreyas Nadig S Q.A. Engineer (Trainee) Encora Innovation lab	100	PO2,PO8,PO10
8	Practical approach is moderately addressed in course	Network Simulator	29/05/2021	Sanjay K Nagendra ,Senior Consultant Sony India Software Pvt Ltd, Bengaluru	100	PO1,PO2,PO3, PO4,PO5,PSO1,PSO2
9	Life long learning skill not addressed through curriculum	"Being Successful , the stress free way!"	08/06/2021	Smt.S.Sreekala, Director of Programme Management, FINTech, Bengaluru & amp; Senior teacher, Art of living	100	PO6,PO7
10	Life long learning skill not addressed through curriculum	"Mind Mapping- A tool for Thinking and Learning".	09/06/2021	Mr. Abhishek P M Master trainer, Inkspiration Consultants.	100	PO6,PO7
11	Bridging gap between academics and industrial requirement	"Industrial Automation"	26/06/2021	ERYX technologies, Bangalore.	100	PO1,PO2,PO3 ,PO5,PO7
12	Bridging gap between academics and industrial	"Neuromorphic computing based on MEMS resistor -challenges and opportunities"	03/07/2021	Dr. Shashidhara H R., Associate professor The National Institute of Engineering, Mysore,	100	PO1,PO2,PO3,PO8
13	Enhancement of skills for better employability & Career Development.	"Developing Employability Skills Using Siemens Centre of Excellence"	09/07/2021	Mr.Aman Ghimire, Mechanical design engineering , design tech system Pvt ltd GTTC	100	PO1,PO2,PO6
14	Bridging gap between academics and industrial requirement	Introduction to Android Application Development;	10/07/2021	Mr Madhu J. Senior Software Engineer, Capgemini India	100	PO1,PO2,PO3, PO4
15	Professional ethics moderately addressed	"Fundamental Rights, Company Law and IPR"	24/07/2021	Mr. Rajagopal C R M.S( Counseling an psychotherapy), L.L.B.	100	PO2,PO6,PO7, PO8
16	Bridging gap between academics and industrial requirement	Autonomous Robotics	01/05/2021	experts from pantech e-Learning	100	PO1,PO2,PO3, PO4,PO5,PSO1, PSO2
17	Bridging gap between academics and industrial requirement	Evolution of Machine Learning & AI for medical diagnosis	12/06/2020	Prof.Thyagaraj T,Asst.Prof.ECE Dept, BMSIT&M	100	PO1, PO2,PO3, PO4, PO5,PSO1, PSO2

18	Current trends in ECE	Career options & opportunities for electronic graduates	07/07/2021	Mr.Ranjith C V,Electrical Architect/product Designer Philips indiaLtd, pune	100	PO6,PO7
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**2.2 Teaching - Learning Processes** (100)

Total Marks 84.00

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

Institute Marks : 22.00

The Process followed to improve the Quality of Teaching learning process includes

- Preparation and adherence to Academic Calendar
- Preparation and use to Various Instructional methods
- Use real-world examples for experimental learning
- Laboratory experience with regard to conducting experiments, recording observations, analysis of data etc.
- Encouraging bright students, assisting weak students.

The whole process/system for Teaching and Learning Quality Improvement is shown in Fig.2.2.1.a

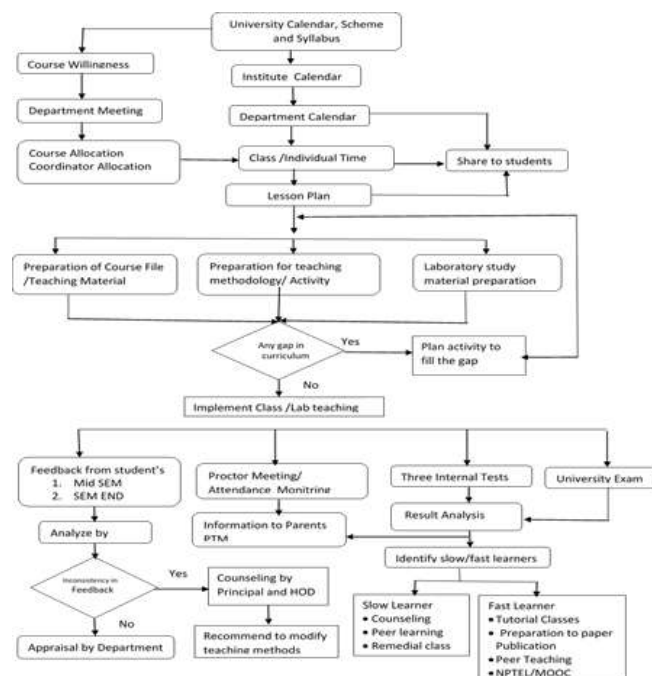


Fig 2.2.1 a Process followed in teaching Learning

#### a. Academic Calendar:

- University announces academic calendar specifying start end date of semester , examination dates , probable reopening date for forthcoming semester. By adhering to university calendar an academic calendar is prepared at the Institute level mentioning the details of holidays , internal test date , institute level events date.
- The Department prepares calendar of events specifying dates for project presentation, Technical seminar, workshop ,seminar, guest lecture and PTM dates .
- The HOD allocates the courses for next semester by keeping the reference of university calendar.
- The Course plan i.e lecture material, assignment questions, Internal question papers are prepared by faculty members in adherence to calendar of Events
- The calendar of events and lesson plan are communicated to students well before commencement of the semester.

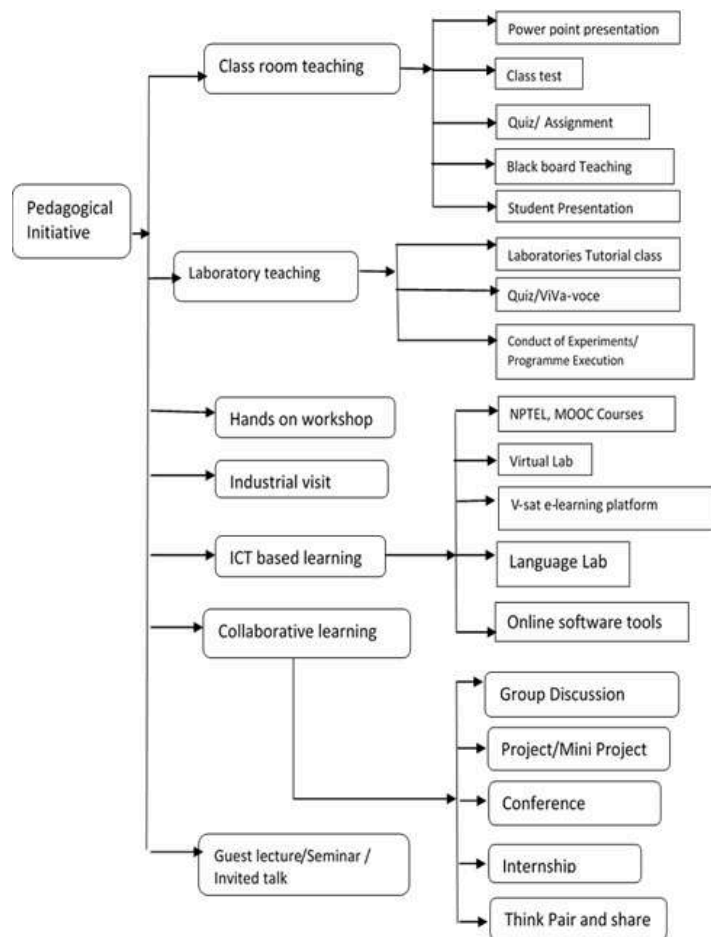
#### b. Use of various instructional methods and pedagogical initiatives:

The following are the various Student-centric methods to enhance Teaching- Learning

- class Lectures
- Class presentations
- Tutorials
- Laboratory experimental work

- Simulations exercises
- Written Assignments
- E-Learning: identifying online resources for self-learning.
- Learning management system (LMS) materials, NPTEL videos
- Case Studies / Technical reports
- seminars /Guest lecture /Workshop
- Virtual lab

Faculties use innovative teaching methods to cater to the needs of OBE. The Pedagogies followed by the Department is as shown in Figure 2.2.1.1b



#### Classroom Teaching:

Classrooms are spacious and equipped with black board and Projector with an ambience for effective teaching learning environment.

Each lecture is scheduled for 55 minutes, during the lecture, faculties keep students engaged by reviewing and asking questions on previous lecture, clear the doubts and deliver the lecture planned for the day. At the end of the lecture, quizzes, class test are conducted, assignment on topic learned are carried out measure the learning of students.

#### Laboratory Teaching :

The laboratories are equipped with necessary infrastructure to facilitate effective conduction of the experiments in the laboratory. Tutorial classes prior to laboratory classes are conducted to prepare them work with program/experiments intended for the day.

This practice ensures students to learn the concept Students are advised to study the theory behind the experiment and the procedure to conduct the experiment before the lab session. Students conduct the experiments and record the observations in the observation book. After completion of the experiment students are encouraged to discuss the learning from the experiment

#### **Collaborative Learning :**

- o Collaborative learning is peer-to-peer or larger groups learning
- o Students are encouraged to participate in project competitions, design contests, Club activities, Mini Project competition, Group Discussion and Various technical festivals in activity-based learning.
- o Industrial and field visits are for special surveys. In addition to the courses students are encouraged to participate co- and extra-curricular activities
- o The benefits of collaborative learning include:
  - i. Development of oral communication, self-management and leadership skills, self-esteem, and responsibility
  - ii. Exposure to and an increase in understanding of diverse perspectives.
  - iii. Encourages student to work as a team to improve their knowledge by sharing

#### **Think-pair-share**

- o The course coordinator poses a question on analysis and evaluation.
- o Students think a few minutes to give an appropriate response.
- o Students turn to a partner (project group) and share their responses, which are shared with the entire class during a discussion

#### **ICT Based Learning:**

- o Students are advised to register for MOOCs (Massive Open Online Courses) and watch NPTEL, VTU V-sat e-Learning, and SWAYAM videos
- o Students are encouraged to use Virtual lab, online compiler to experimental on topics learned, to write assignments.
- o In students are encouraged to give presentations on project, seminar internship to improve their domain knowledge, communication skills
- o Simulation software like PSpice, MATLAB and Mentor Graphics are used for effective learning.

In addition to the above and regular class room/laboratoriesteaching, the students are motivated to learn from workshops, guest lecture/seminar /invited talkand hands-on workshop organized bythe dept. The students are encouraged and supported with learning through NPTEL courses, Spoken tutorials-IIT Bombay.

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

The faculty handling the course/ proctor identifies weak/bright students based on following parameter

- i. Performance in Continuous Internal Evaluation(CIE),
- ii. Interaction in theory and laboratory classes and questioning ability
- iii. Feedback from proctors
- iv. Semester end examination performance (SEE)

#### **Encouragement to bright Students:**

- The bright students are encouraged to learn beyond the syllabus related to concerned courses by attending conferences/ workshops/ seminars/ contests/ internship conducted in-house/outside by industry/institutes.
- Motivate to update themselves with the latest tools and technologies, demonstrate critical thinking and take up innovative projects
- Motivate to take up higher studies in the field of research and development enhance their skill and managerial quality to become a successful entrepreneur/employee
- They are provided with the guidance about patents, project management and prototype building.
- Bright students are encouraged to lead the students' association team which organizes various activities viz. paper presentation, to apply for KSCST funded projects etc
- Encourage them to take up NPTEL-MOOC courses

#### **Assisting weak students:**

- After the Continuous Internal Evaluation, students who scores less than class average are identified. Remedial classes are conducted for these students to ensure that their performance is improved in the subsequent assessments.

- After announcement of SEE results , the failures are identified and remedial classes are conducted to prepare them for supplementary examination.
- Question banks and additional assignments, class test are given to improve performance
- Participative and progressive weak students are given chance to improve team work to motivate and appreciate their effort
- Parents are informed periodically about the progress of their wards
- Attempts are made by the course faculty and proctors to give personal attention to these students.

#### Impact Analysis:

- Bright students have taken courses in NPTEL and MOOC platform and recieved certificate for course completion
- Studnets have participated in Project exhibition and recieved cash awards
- The students have passed in supplementary examination

#### D. Quality of classroom teaching

The classroom is spacious and equipped with black board and audio visual aids to create an better ambience for effective teaching learning environment.Lecture is scheduled for 55 minutes, faculties take efforts to keep students engaged by reviewing and asking questions on previous lecture and interactively deliver the lecture planned for the day. At the end of the lecture, students are encouraged to summarize, ask doubts from the content taught. Each classroom is equipped with Projectors, Screens, Board, Imparts Lecture Capture facilities, Boards disseminating POs, PEOs and PSOs. The classroom ambience ensures the students to get more involved in the topic.

Faculty uses Various teaching aids such as

- Chalk & Board, PowerPoint presentation, Charts, Animation etc are used appropriately.
- Quiz programs to assess the student's understanding. The quiz is conducted either online or offline and the scores are recorded.
- Use of modern teaching aids like Projector, Smart board
- Faculty members prepares study materials and share to students
- During the pandemic faculty use various tools such as Microsoft teams,Google classroms and techniques to deliver online lectures.

#### Personality development of students:

The Curriculum defined by university supports to prepare students industry ready. The following courses in curriculum that supports self development of individual students and mold them into industry ready models.

- Communicative English course in I year
- Kannada course in II year
- constitution of India and professional ethics in II year
- Mandatory Internship in III Year during semester vacation and internship presentation during IV Year
- Technical Seminar, Projects in IV year
- Mini Project and project presentation in III year
- AICTE activity point as an add on activity as part of non- credit but mandatory activity that spread across academic year.

#### Breadth and depth of learning Scope:

The university curriculum offers Elective courses from 6<sup>th</sup> Semester onwards, Students have the flexibility to choose the electives of their choice/areas of interest. Class teachers / Proctors facilitate students in selecting elective courses in the stream of students' choice. Students are also given an opportunity to broaden the horizon of knowledge by choosing open electives offered from other disciplines.

**Subject Seminars:** In selected courses, students are motivated to present group seminar or individual seminar on topics related to the course. This enables students to improve their communication skills, individual work capability also build the ability to work in team.

#### Impact Analysis:

Good Teaching Learning process as shown improved performance of students.

Award: Students have consistently performed well by bagging institution best outgoing student award of the year

Placement: Consistently high placement over the years.

Result analysis : Consistent success index seen in overall result

#### E. Conduct of experiments (Observation in Lab)

The laboratories are equipped with necessary infrastructure to facilitate effective conduction of the experiments in the laboratory.



Prior to the laboratory session ,tutorial classes on laboratory experiments are conducted and students are asked to get prepared with observation book and record book, study the theory behind the experiment and the procedure to conduct the experiment before the lab session. Students conduct the experiments and record the observations , compute results and verify theoretical observation with experimental observation.

Student understanding levels are verified through quiz/viva-voce during each lab.

Continuous evaluation is done by the faculty in every lab session as per rubrics as shown in Table 2.2.1.1.

### **Rubrics for continuous evaluation in every lab session**

#### **Maximum Marks :25**

Parameters	High	Marks	Medium	Marks	Low	Marks
Conduct /Perform	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 experiment/ Recording the Tabulation / Calculation	4	Partially Rigged up the circuit/ Executed the Program/ Performed the experiment/	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			
Record Writing	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	2		
	Total: 10 Marks		Total: 6 Marks			
Viva Voce or Quiz	Answered 5 questions	Answered 4 questions	Answered 3 questions	Answered 2 questions	Answered 1 question	Student did not answer any question
	Total: 5 Marks	Total: 4 Marks	Total: 3 Marks	Total: 2 marks	Total: 1 Mark	Total: 0 Marks

**Rubrics for Evaluation of Internal Lab Examination****Maximum Marks 15**

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

**The final internal marks are computed for 40 marks as per university regulation for the batch 2018-22, 2019-23, 2020-24.**

**Students feedback:** To accomplish quality teaching -learning process, a well-defined closed loop feedback system is in place. Students provide feedback about the faculty handling the course r in two phases i.e., Mid-Semester feedback and Semester End feedback. Mid-Semester feedback assist course faculty to take corrective measures during the semester itself. Semester End feedback helps course faculty in analyzing various aspects of teaching skills for further improvements. The feedback are collected through online by IQAC and analyzed and Faculty not meeting 80% of stated expectations are counselled and asked explanation for the same and faculty development is suitably planned.

Some of the parameters of feedback are:

- Clarity in explaining the subject
- Course explained was easy to understand o Faculty answers to your queries

- Coverage of topic/course is on time
- The concepts were explained with example and others
- Content quality is relevant and useful

**Feed back from Parent:**

Formally Parent -Teacher Meeting is conducted every semester to communicate to parents about the academic progress of their children. Informal parent-teaching happens as and when necessary. The interaction helps to support to know the students in a better manner. The parent teacher meetings are coordinated by the proctoring coordinator of the department.

**Course end survey:**

The Course Exit Survey is an important part of the educational process. Students are required to fill feedback on the course, course conduct/delivery, and knowledge/skills obtained as part of the survey. The survey is evaluated by the faculty handling the course and being submitted to the Department Head for approval and appropriate actions. The course end survey helps faculty members to know to what extent course content have learnt by the student to the stated course outcomes.

**Exit survey:**

At the end of the program, graduates are asked to give feedback on level of accomplishment of stated Program Outcomes and same data is analyzed to understand the improvements required in Teaching Learning Processes. The data is gathered are examined in order to determine how well the programme is delivered to the batch. The outcomes are assessed, also used to enhance the quality of the teaching and learning process, as well as extracurricular activities.

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

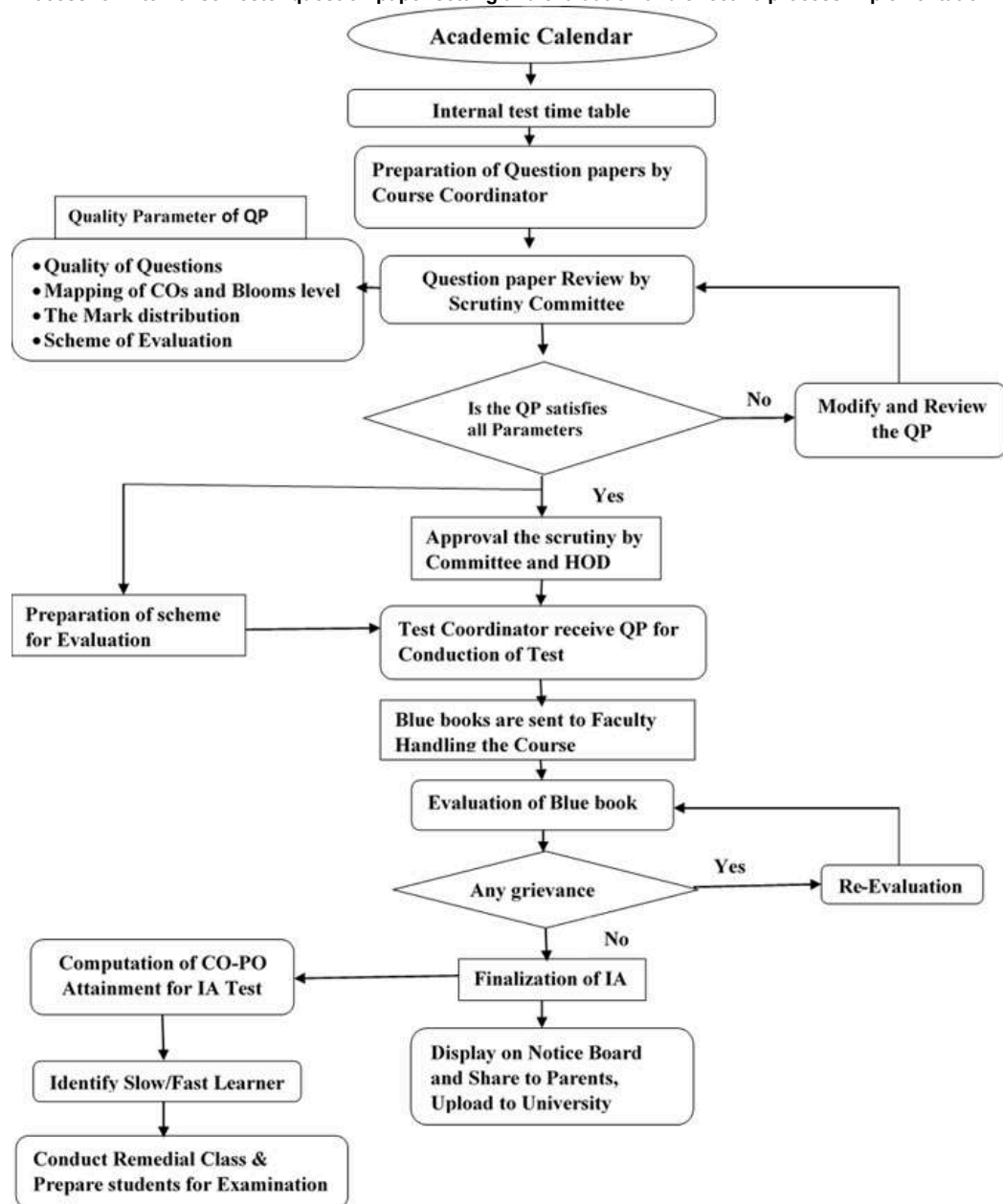
Institute Marks : 18.00

**Course Assessment Process:** The academic performance of the students is a measurement tool for assessment of the teaching and learning process by the program. The performance evaluation done on subjective and formal.

1. Subjective evaluation is done through proctor interaction, student interaction in class room, observation and feedback etc. However, these tools are subjective and vary from person to person.

2. Formal Evaluation is done as per university guidelines. As per the guidelines the course evaluation has three components namely, continuous internal evaluation, assignment/quiz and semester end evaluation with a ratio of 40(CIE +Assignment) :60 (SEE) on a scale of 100.

### Process for internal semester question paper setting and evaluation and effective process implementation



#### Process for Internal Assessment Test :

- The continuous Internal Evaluation(CIE) is computed for 40 marks as per university regulation. In general three test conducted at the end of fifth, tenth and fifteenth week of the semester. The final test marks are average of three test for maximum of 30 marks and 10 marks are allotted for assignment/class test/quiz.
- Internal Assessment marks are evaluated for both theory and lab subjects according to the scheduled calendar of events.

- The course co-ordinator sets the question paper for the Internal Assessment and ensures to frame questions based on various RBT levels and are mapped to the Course Outcomes (COs) to assess the students at various RBT levels

#### **Procedure for Conduction and Evaluation of Internal Assessment Test:**

- The department Internal Assessment Test committee consists of HOD, Test coordinators, IA Question paper scrutiny committee Course coordinator.
- The test coordinator schedule the test time table, test invigilation allotment, room allotment and coordinate in smooth execution of the test in the scheduled time as per COE and display the same one week ahead on the notice boards. The test time table, seating arrangement are shared to students.
- Assessment questions for both lab and theory are framed by the course coordinators according to the blooms level, verified by the IA Scrutiny committee and approved by HOD.
- The duration of the test is 1 ½ hrs and the question papers are set to make the students to learn time management. Before each test one third of the syllabus is covered by course coordinator.
- Department provides blue books for writing the three internal assessment tests and shall be maintained by the Department and available for verification.
- The students write the test in their allotted seats as per their USNs in a test hall, under the invigilation of a faculty member.
- The scheme of valuation for the question paper is prepared by the course co-ordinator ensuring appropriate distribution of marks for fair valuation.
- The course co-ordinator values the blue books adhering to the scheme of valuation and explain the solution of the question in the class which will student to perform well in the final examination.
- **To ensure the quality of the internal test question paper, IA Scrutiny committee is formed, Where two Senior faculty members and HOD being part of the review committee.**
- The course co-ordinator ensures that the internal assessment questions are framed based on various blooms taxonomy levels and are mapped to the COs.
- The course coordinator decides the number of questions and marks allotted for each question.
- The course coordinator submits the question paper to the scrutinizing committee and the committee checks the quality and RBT level and CO compliance and suggests any changes, if required.
- Once the question paper gets corrected, the printing of the question paper is done and the same is distributed to students during assessment
- Question selection is referred from the prominent textbooks, previous years papers, and case studies. The standard questions level is strictly maintained and monitored. Papers setting adheres strictly to the university question paper template and the guidelines.
- Post-evaluation, the critical solutions, usual mistakes, and the top answer from the answer scripts are discussed and shared

#### **Evidence of COs coverage in class test**

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

Following initiatives have been devised at the department level to prepare quality assignments. Assignments are given by faculty handling the respective courses.

- Assignments are given to the students to achieve the outcomes of the courses to promote the self-learning.
- The assignments are designed to assess the application-oriented knowledge gained by the students in the relevant course.
- The assignment question papers are formulated in such a way that
- It prepares the students for university and semester examinations.
- It measures the learning outcome of the students on the recent completed topics.
- It reflects the implications of the recently learned topics on the society.
- It analyses the applicability of ongoing topics for solution of real-life problems.
- Along with evaluation, the concerned staff will give the feedback for further improvement if necessary.
- The evaluations of the assignments are based on the basic concepts, coverage of the courses and the way the student present it.
- Faculty members are also encouraged to include case studies and standard questions from an examination viewpoint.
- Students are encouraged to use standard content/references and follow standard books while writing their assignments.
- Subject assignments also include a few questions on contents beyond the syllabus.

#### **Evaluation and Analysis Student assignments**

- Assignments are evaluated as per the rubrics. The Sample rubrics levels are shown below
- The department-level committee analyses sample copies of evaluated assignments.
- The Department Head also ensures regularity and time-bound evaluation of the course assignments.
- The assignment carries 10 marks as one of the internal assessment components in each course, adhering to the university guidelines.
- The absentees of assignment submission are questioned to investigate the reason, and appropriate feedback action .
- The answers are discussed in the course lecture after the evaluation.
- Average of all the assignment marks are finally compiled to out of 10 marks and added with internal assessment marks.

## Rubrics for Assignment evaluation

Criteria	Initial learning or Incomplete	Develop	Accomplish	Exemplory
Knowledge	No grasp or No Understanding of Subject	Only Basic Concept is Understood	Able to Explain	Elobrate explanation with full knowledge
Design	Explanations are not as per need	Lack in Explanation	Only few details are explained	All relevant details are well presented
Timely Submission	Not submitted ON time even after 2 days from due date	Partially writes and submits oN time	Submits compete work with 1 or 2 days after due date	Submits as per due date

**IMPACT ANALYSIS:**

The average internal Marks obtained by most of the students are gradually improved over the 3 tests. All the Students could earn their eligible marks to appear for their semester-end examination.

**2.2.3 Quality of student projects (25)**

Institute Marks : 22.00

## Quality of student projects

As per university curriculum each student as a team has to undertake one project during 7<sup>th</sup> and complete before end of 8<sup>th</sup> semester. The students carryout group project to apply the knowledge acquired in three years of study.

### A. Project identification and guide allocation process:

- The students are communicated through a department circular to initiate their projects at the end of sixth semester
- HOD nominate a faculty member as project coordinator, who will oversee all the process
- The project coordinator educate students with different domains areas such as Communication, VLSI, Embedded systems, IoT, Signal processing, to propose a project title
- The students identify a project in line with their thrust area of interest and are encouraged to select interdisciplinary/multidisciplinary topics from the thrust areas
- The Project coordinator prepares schedule of all activities related to students project
- On completion of the project, students are encouraged to publish paper in Journals and conferences

#### i. Formation of Project Group:

- Students are advised to form groups consisting of minimum two or maximum of four members. If the students are not able to form the group, then the project coordinator will help them to form the group. Project coordinator in consultation with the HoD allocates project guides, prepares guidelines for project selection, approval, evaluation format and forms project evaluation committee.

#### Project Identification & approval and Guide Allocation Process

- The project coordinator gives a time line for the students to identify the project titles, submit the synopsis and for approval adhering to the timelines as given as per calendar of events
- In case, the group of students taking projects from Public/Private sectors need to take prior recommendation by HOD and approval of Head of the institute. The same to be submitted to the concerned private or public sector.
- A faculty allotted at the department act as Internal Guide to students and the scientist/researcher at the concerned private/ public sector act as External Guide
- Students submit the project title and synopsis to project coordinator.
- The Project coordinator in consultation with the HoD allocates project guide based on the faculty specialization/domain or interest.
- The departmental project committee checks the relevance and context of the project synopsis submitted and approves the project as per suitability.
- The list of approved projects are informed to project team through their project guide.
- Once the project is approved students start working on the same.
- Every week, the students should meet their concerned guide and update their project work progress and discuss the work to be carried out for the week
- The project batch must give presentation on the progress in front of the project committee as per schedule given by project coordinator
- The category of students projects identified can be categorized as
  - Study and Review
  - Research and Development
  - Design, fabrication & prototype Development
  - Multi-disciplinary approach
  - Application based
- The projects also address the various aspects of teaching learning processes, namely
  1. Social issues
  2. Environmental issues
  3. Ethical issues.

All the students are made aware of certain unethical practices like violation of copyrights, indulgence in plagiarism etc. so that they can avoid these malpractices not only during their project work but also during report writing. This practice takes care of PO-8 on ethics

#### Project Planning, scheduling and execution:

##### Planning, scheduling and execution in 7<sup>th</sup> Semester

- Project group formation, title finalization and guide allotment
- Submission of Project synopsis and Approval of Project by Project committee and Head of the Department
- On approval Start the project work as per schedule prepared by project coordinator
- Prepare Project presentation and project report
- Power point presentation & submission of Phase -1 project report and take up final viva voce



Time Line	Scheduled Task	Details of task
End of 6th Sem	Allocation of Project coordinator	Circular to form project group and registration to project Coordinator before Commencement of 7th Semester
Seventh semester Project Phase -1		
1st week	Registration of Project Group	Students register the project group
2nd Week	Call for Project Titles and Abstract submission	Students are informed to submit the Title with Abstract
3rd week	Project Guide Allotment	Guide Allotment based on the domain Expertise
5th Week	Project Synopsis submission and presentation	Review of Presentations by HOD, Project Coordinator Guide and Faculty
6th Week	Project Work Approval	Project title approval or Resubmission of Project synopsis for approval
8th Week	Project Phase -1 Presentation	Project work Initial presentation by project team
12th Week	Completion status of Project Phase -1	Final Presentation of Project Phase -1
16th Week	Phase -1 Project report	Approval of report by Guide, HOD and Principal and Project Phase-1 Mark Allocation

#### Planning, scheduling and execution in 8<sup>th</sup> Semester

- General discussion between students & their corresponding guide for the project continuation
- If necessary, survey some more literature & discussion with guide
- Fabrication of parts and/or execution of project work & discussion with guide
- Prepare all necessary circuit drawings, block diagram etc. and approval by guide
- Assemble all parts and/or prepare necessary calculations as applicable
- Optimize input & output variables , If necessary, some modification will be done on experimental setup & discuss all modification & their corresponding output with guide
- Do experiment on experimental setup and complete all calculations, graph, result validation etc.
- Make a final project report (soft copy), get it verified by corresponding guide and prepare hard bound project report before one week of the scheduled project assessment
- Make a final power point presentation based on the project work and get it verified by corresponding guide
- Final power point presentation, Demonstration & submission of final project report in presence of project committee & viva voce

Time Line	Schedule Task	Details of Task
Seventh semester Project Phase -1		
4th Week	Project phase-II -First Review	Review of Hardware,Software and Design Methodology
8th Week	Project phase-II -Second Review	Review of Progress regarding design & implementation Process
12th Week	Final Presentation along with the demonstration of the Model	Students should demonstrate the working prototype and explain the results.

14th Week	Project Model Exhibition/ participation in Conference	Students Demonstrate Project in Exhibition/ present project finding in Conference or Jorurnal papers
16th Week	Report Submission	Submission of Final Project Report duly signed by Guide, Project Coordinator, HOD and Principal

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

Based upon the functional area of the projects, they are categorized as follows:

- Application-oriented
- Design and manufacturing
- Product and process development
- Need of Society
- Solution of the industrial problems

After categorizing the projects, they are mapped with the POs and PSOs and the attainments are assessed based on the following:

- Depth in fundamentals
- Clarity in problem analysis
- Methodology adopted.
- Modern tool usage
- Impact on societal needs as useful products/processes
- Future scope of the work
- Novelty of the work carried
- Teamwork
- Presentation and documentation
- Cost-effectiveness and project management
- Employability

The projects are selected by the students based on their choice of topics in consultation of the guide. However, the students are encouraged to take up project hardware execution. The variety of project successfully completed by the students broadly fall in the different categories which is shown in Table 2.2.3 .Some of the projects completed by the students and classification and relevance to PO is shown below.

**Table 2.2.3.a Mapping of Projects and contribution towards PO and PSO Academic Year 2022-23**

Sl. No	Title of the Projects/Relevance to PO and PSO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PsO1	PsO2
1	IOT based Realtime automatic headlight dimmer system.	3	2	2	2	2	23		2	2	3	2	3	2	2

2	Automated water leakage detection ,controlling and monitoring system using wireless sensor network for the improvement of water network management	3	3	3	2	1	2 3	1	2	3	2	3	3	3
3	Automatic Solar powered street lights and GPS Operated system to detect and identify traffic rule violation in toll roads and highways	3	2	2	2	3	2 3	1	2	3	2	2	2	2
4	Enhancing the livelihood of farmers using IOT based monitoring nd environment control system for indoor cultivation of Mushroom.	2	3	2	1	2	2 3	1	3	2	2 3		3	2
5	Rain Sensing automatic car wiper	3	2	1	1	1	2	2	2	3	1	2	1	2

**Table 2.2.3.b Mapping of Projects and contribution towards PO and PSO Academic Year 2021-22**

Sl. No	Title of the Projects/Relevance to PO and PSO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PsO1	PsO2
1	Natural disaster Detection and personalised Notification system based on Location	3	2	2	2	2	3 1		2	3	3	2	2	2	2
2	Design and implementation of wireless black box for vehicle tracking and accident alert system using aurdino and GPS module	3	2	2	1	1	1 1		1	2	3	2	3	3	2
3	Giving Voice to Vulnerable children: Machine Learning Analysis of speech Detects Anxiety and depression in early childhood	3	2	2	1	3	2		1	2	3	2	2	2	2
4	Vaccine storage unit in remote areas using peltier effect and solar energy	2	3	2	1	2	2		1	3	2	2		3	2
5	Assistive Device for Physically Challenged persons using Voice controlled Intelligent Robotic arm	3	2	1	1	1	2		2	2	3	1	2	1	2
6	Women safety device designed using IOT and Machine learning	3	2	2	2	2	1 2		1	2	3	3	2	1	1
7	Design of a fully digital BPSK Demodulator integrated into aTT &C satellite transponder	3	2	2	1	3	1		1	2	3	1	2	2	1
8	Innovative shopping cart for smart cities	2	2	3	1	2	2		1	3	2	2	3	1	2

**Table 2.2.3.c Projects maping and contribution towards PO and PSO Academic Year 2020-21**

Sl. No	Title of the Projects/ Relevance to PO and PSO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PsO1	PsO2
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	Cost Effective Arduino Based												
1	Automated washroom Sanitizing System	3	2	2	2	2	3 2	2	3	3	2	2	2
	Intelligent Covid-19 Pandemic												
2	Bus Service with Safety Measures	3	2	2	1	1	1	1	2	3	2	3	3
	Camouflage based emergency vehicles priority with intelligent traffic control using movable road dividers												
3		3	2	2	1	3	2	1	2	3	2	2	2
	Design and Implementation of												
4	Humming bird cryptographic Algorithm on FPGA	2	3	2	1	2	2	1	3	2	2	3	2
	Aged/Physically Challenged												
5	People friendly Smart electric voting machine (SEVM)	3	2	2	2	2	3 2	2	3	3	2	2	2
	Intelligent Accident Detection and Ambulance Rescue System												
6		3	2	2	1	1	1 2	1	2	3	2	3	3
	Cost Efficient Solar Based												
7	Multipurpose crop cutting Machine	3	2	2	1	3	2	2	2	3	2	2	2
	Environmental Radiation Monitoring using IOT												
8		2	3	2	1	2	2 3	1	3	2	2	3	2
	Smart Indoor Vertical Forming using IOT												
9		3	2	2	1	2	1 2	2	3	2	1	1	2

Table 2.2.3. d Projects classification consideration to various factors Academic year 2022-23

Sl. No	Title of the Projects/Relevance to PO and PSO	Project type	Impact of Project
1	IOT based Realtime automatic headlight dimmer system.	Research & Development	Environment and Societal Focus
2	Automated water leakage detection ,controlling and monitoring system using wireless sensor network for the improvement of water network management	Multidisciplinary approach	Societal focus
3	Automatic Solar powered street lights and GPS Operated system to detect and identify traffic rule violation in toll roads and highways	Multidisciplinary approach	Societal, safety and Environmental focus
4	Enhancing the livelihood of farmers using IOT based monitoring and environment control system for indoor cultivation of Mushroom.	Design, fabrication & prototype Development	Societal and Environmental focus

5	Rain Sensing automatic car wiper	Design, fabrication & prototype Development	Societal focus
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Table 2.2.3. e Projects classification consideration to various factors Academic year 2021-22

Sl. No	Title of the Projects/Relevance to PO and PSO	Project type	Impact of Project
1	Natural disaster Detection and personalised Notification system based on Location	Research & Development	Environment
2	Design and implementation of wireless black box for vehicle tracking and accident alert system using aurdino and GPS module	Multidisciplinary approach	Societal focus
3	Giving Voice to Vulnerable children: Machine Learning Analysis of speech Detects Anxiety and depression in early childhood	Multidisciplinary approach	Safety
4	Vaccine storage unit in remote areas using peltier effect and solar energy	Design, fabrication & prototype Development	Societal focus
5	Assistive Device for Physically Challenged persons using Voice controlled Intelligent Robotic arm	Design, fabrication & prototype Development	Societal focus
6	Women safety device designed using IOT and Machine learning	Design, fabrication & prototype Development	Safety
7	Design of a fully digital BPSK Demodulator integrated into aTT &C satellite transponder	Research & Development	Ethics
8	Innovative shopping cart for smart cities	Application based	Ethics

Table 2.2.3. f Projects classification consideration to various factors Academic year 2020-21

Sl. No	Title of the Projects/Relevance to PO and PSO	Project type	Impact of Project
1	Cost Effective Arduino Based Automated washroom Sanitizing System	Application based	Societal focus
2	Intelligent Covid-19 Pandemic Bus Service with Safety Measures	Multidisciplinary approach	Safety
3	Camouflage based emergency vehicles priority with intelligent traffic control using movable road dividers	Design, fabrication & prototype Development	Safety
4	Design and Implementation of Humming bird cryptographic Algorithm on FPGA	Design, fabrication & prototype Development	Societal focus

5	Aged/Physically Challenged People friendly Smart electric voting machine (SEVM)	Design, fabrication & prototype Development	Societal focus
6	Intelligent Accident Detection and Ambulance Rescue System	Design, fabrication & prototype Development	Safety
7	Cost Efficient Solar Based Multipurpose crop cutting Machine	Design, fabrication & prototype Development	Cost, societal focus
8	Environmental Radiation Monitoring using IOT	Application based	Ethics
9	Smart Indoor Vertical Forming using IOT	Application based	Cost, societal focus

**(c) Process for monitoring and evaluation**

- The project guide / project coordinator give suggestions towards the improvements of the synopsis.
- Based on inputs suggestions from guide, students carry out the project work.
- All the students report to their internal guides on weekly basis and discuss regarding the progress of their project work.
- Regarding project reviews and common instructions, separate circulars will be circulated among the students
- Project review phases are scheduled in the academic calendar in which timely inputs are given to students from domain experts to judge the project progress and advise the scope of improvement.
- After the reviews on completion of projects, instructions are given to write the Project Report as per the guidelines prescribed by the VTU

**Project work Evaluation:**

- Internal Evaluation: The project work and the report will be evaluated by project committee along with guide at two phases as Phase-1, Phase-2 . If the students carry out project in Public/Private sector the evaluation of the external guide will also be considered for Internal evaluation along with project guide, project committee evaluation.
- Semester End -External Evaluation: The project work and the report will be evaluated by internal and external examiners appointed by the University.
- The external examiner will be from other VTU affiliated Institutions.
- The examiners appointed by university will take presentation and demonstration followed by Viva-Voce on the project work carried out by students during 8th Semester The students need to defend their project work, the marks will be awarded for the students, which will be uploaded in University portal.

**(d) Process to assess individual and team performance**

The performance of the individual team member of the Project is assessed at the time of project presentation in reviews by considering the following criterions:

- Communication
- Confidence in the project work
- Attainment of individual scope of work
- Overall contribution for the project accomplishment

The performance of the project team is assessed by considering the following criterions:

- Knowledge of the project, member contribution towards the Project
- Coordination in consolidating work
- Time management

The assessment scheme and distribution of mark for every step is as shown in table. The internal evaluation of the project progress is done based on rubrics to assess the individual and team performance throughout the duration of project.

The Criterion for evaluation in Phase -1

- Objective of the Work
- Title of the work proposed
- Literature Survey

- d. Problem Formulation
- e. Methodology
- c. Technical skills
- d. Communication • Presentation • Documentation
- e. Team work -report

The Criterion for evaluation in Phase -2

- a. Progress of the work carried out
- b. Design and development
- c. Experimental Observation/Theoretical Modeling
- d. Result and outcome of the project
- e. Presentation /Demonstration of the project Work
- d. Project report and Handling Viva Questions

#### **(e) Quality of completed projects/working prototypes**

- The department encourages the students to take part in "Meraki" In house project exhibition, where all the students will exhibit their projects.
- Eminent personalities from industries/ institute are invited to identify the best projects
- Students are also encouraged to submit proposal to KSCST and private agency for funding. The list of projects received fund from KSCST and private funding agency

#### **(f) Evidences of papers published /Awards received by projects etc**

- The students are encouraged to publish their innovative works in to the national and international conferences, Journals etc
- Also students are motivated to participate in project exhibition organized by other institute across the state and received cash awards for innovations
- The department organizes conference to set a competitive spirit and set forum for students to present their papers

The table shown below gives list of student publication

#### **Impact Analysis of Projects:**

- The outcomes of the project have been published/presented as papers in national/international conferences and journals.
- Students have won prizes in various state level and national level project design contests.
- New innovative ideas are evolved.
- Improved Skills, Knowledge, project management skills and abilities of students.
- Able to Work in team with full spirit.
- Implementation and deployment of the project for social benefits.
- Learned ethical practice and practiced while Document preparation and presentation.

#### **2.2.4 Initiative related to industry interaction (15)**

Institute Marks : 10.00

**(a) Initiatives for industry institute interaction :**

The effectiveness of this practice can be assessed by the great response of the participants to the industry collaborated courses organized by the college.

- The department has set VLSI Lab with software procured from CG Coreal as part of curriculum requirement ,
- The expert from industry is member of Department Advisory Board, who actively participates and gives guidance to plan department activity to meet the industry need.
- Department is constantly looking forward to strengthen interaction with industries. This has been done to emphasize on:
  - Internship
  - Imparting "Contents Beyond Syllabus"
  - Student Specific Training
  - Faculty Development Programs Some of the steps taken in this regard include:-

**(b) Industry involvement in the program design and partial delivery of courses for students**

- **Certificate Courses:** The Department prepares course content with the support of Industry members and organizes certificate course to impart technical knowledge inpar with idustry with the support of Industry members.The students receive certificate on successful completion.
- **Invited lectures/Seminar:** Guest lecture/seminars are organized to impart knowledge on current trends in techiques by inviting experts from the core and IT industry.
- **Workshops : To upkeep with the technology hands on wrokshops** are conducted for the students by the technical experts from the industry to acquire and update the technical skills
- **Industrial visits:** The department arranges visit to industries to give exposure to the industrial environment and work ethics.
- **Internships : As part of curriculum** 2018 scheme Students are allowed to undergo 4 to 6 weeks internship at Research Organizations / Government Training Institutes / Public Sector Units / Reputed Academic Institutions / Reputed Industries/ Industry Oriented Courses / Online Courses between Semesters 6 and 7. The Student of 21scheme curriculum undergo 4 week internship in the intervening semester during 4th to 5th semester and 2nd to 3rd semester.
- **Online Certification Courses:** The students are motivated by the faculty members, to take up online certification of MOOC courses according to their areas of interest in NPTEL lectures, Udemy, UHV courses.

Few list of activities indicating involvement of Industry members in delivery of courses beyond syllabus is shown below

Initiative related to industry Training			
Workshop	Trends in IC design using Mentor Graphics	Vinnalan ka Application engineer Coreal Technologies	8-8-2023 to 10-08-2023
	State level project Exhibition and Competition "TECHTOPIA" in association with IETE	Prof.Shnkara Dasiga , Chief Technology office vellnesos IMCr	5/5/2023
	Trends in IC design using Mentor Graphics	Vinnalan ka Application engineer Coreal Technologies	8-8-2023 to 10-08-2023
	Connecting the dots from wired to wireless and role of antennas in it- A practical approach	Dr.Shwetha Amith Business Head ZOSH aerospace PVT.Ltd	7/10/2023
	"The future of Automation with lot and Cloud..A hand on Training Programme"	Dr.Shashikanth Reddy R & D Hear Parvam Conltek PVT.LTD. Chikkabnavara	28-04-2023 to 29-04-2023
	Application of modern to apply the knowledge	Prof.Harshitha N	19-11-2020 to 20-011-2020
	Lack of skill to robotics design	Pantec E learning , Bangalore	1-5-2021 TO 2-5-2021
	workshop on "Microcontroller Applications for innovative thinking"	Sri. Manjunath Technical Adviser, Technosoft Solutions, SIT Extension, Tumkur	21/12/2021 to 22/12/2021
	Insight about the career, placements,	Mr.Vijay Mahantesh, Cleverbit Solutions	9-05-2022 to 17-05-2022



Certificate Courses	Introduction to JAVA and its Applications	Sangeetha C Associate consultant @VLSI @VTU Extension centre bangalore	05-11-2022to 24-12=2023
	Python programming with applications with projects and solutions	Mohan Shamanna founder and Mentor indo skill bangalore	9/1/2023 to 13-1-2023
	Introduction to JAVA and its Applications	Ms. Sangeetha C, Alumina Student, Associate consultant VLSI at VTU Extention Centre, UTL Technologies Bengaluru	13/11/2021
	NSDC Certificate program on software developer	Mr. Siddalinkeshwara UTL Tecghnologies	21/12/2021 to 22/12/2021
	Enhance Technical Skills in line with the requirements of the industry	Mr. Siddalinkeshwara UTL Tecghnologies	30.03.2022
Seminar	Connecting the dots from wired to wireless and role of antennas in it- A practical approach	Dr.Shwetha Amith Business Head ZOSH aerospace PVT.Ltd	7/10/2023
	Digital awareness and Placement	Jayanatah V VP Training Rooman Technologies	13-02-2023
	Data Warehousing	Madhu J Senior Engineer London Stalk exchange group Bangalore	28-2-2023
	Global Education Awareness Program	Nagarjuna M G KSCST , Bangalore	6/6/2023
	Energy conservation and innovation in household applications	Dr.KrishnaKumar Assciate Professor,ECEDEpt, GCEM Bnagalore	19-07-23
	Inauguration of "IETE student chapter Seminar on Coputation tginkib	Dr.V LLANGO, ProF @CMRIT Dr.S Mohan Kuamr Directorate of Reseach and Innovatioj QUALITY ASSURANCE CMR University	1/12/2022
Industrial Visit	Industrial Visit to JVS Electronics	Pear Coordinator JVS Electronics	5/2/2023
	Industry readiness -TDPS	T D power systems, Dabaspet,Nelamangala	23.10.2021
	Bridging gap between academics and industrial requirement	Mr.MalayPorwal(CEO), MESON,Surat,Gujarath	25.10.2021
	Bridging gap between academics and industrial requirement	Bharath Electronics Limited, Jalahalli post, Bengalru	18.12.2021
	Industrial visit to 3N Electronics	Mr.P F Naikar,3N Electronics(CEO), Tumakuru	27.04.2022

MOUs: The department has signed MOUs with variuos industry to get support from industry in all academic activities.MoU's signed with industries to emphasize on:

- Internship
- Project workshop for students
- Industrial visits
- Students specific training
- Faculty Development Program

The institution has signed MoU UTL Technology. These industryinvolve in designing the Certificate course, depute trainers to train the faculties and students of our institution.

**(c) Impact Analysis of Industry institute interaction**

- Students picked up what they learnt at the workshops to implement their own mini project and also final year projects.
- Students get more focused growth for Easy transition into a job.
- During the industry experts visit, feedback is collected regarding the curriculum and lab facilities and incorporated wherever it is applicable.

- Students gain technical skills in the latest technologies, need less training in industry after joining the company.
- Students get a better understanding of subject contents and current trends that helps the students to attain good placements.

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

Institute Marks : 12.00

**A. Industrial training/tours for students**

The department organizes industrial visits for students to give industrial practice and enable the students to experience the practical implementation of theoretical knowledge in real world. This gives them an insight to the industrial environment and the work culture ethics in Industries.

**Objectives:**

- Industry visits bridge the gap between theoretical training and practical learning in a real-life environment.
- Industry visit provides an opportunity for active interactive learning experiences in class as well as outside the classroom environment.
- With industry visits students are able to better understand and identify their prospective areas of work
- Industry visit help enhance interpersonal skills and communication techniques and get to know the managerial skills
- Students become more aware of industry practices and regulation during industry visits
- For students pursuing professional education, industrial visits help them gain hands-on experience of how industry operations are executed.
- Students become more aware of industry practices and regulation during industry visits .
- New Learning from textbooks, lectures and other study material does not suffice for holistic, hence learning the department encourages industrial visits as a value-added learning method for students.. Practical and hands-on learning is essential for better understanding of work processes

## Industrial Visit during the year 2018-2024

Name of the Industry	Type of the Industry	Visit Date	Number of Students visited	Learning Outcome
Indian Space Research Organization, Bangalore	Public Sector	8.1.2024	75	Visited UR Rao Satellite Center and learnt methods carried out during Satellite launch
Eloquent Control System, Bangalore	Private Sector	9.1.2024	55	Training on Power system optimization
Electronics and Control Power system Pvt.Ltd	Private Sector	10.1.2024	55	Students got exposure to the manufacturing process involved in UPS Manufacturing System
Visit to Bangalore International Exhibition Center	Industry Expo Public and Private Industry	03.11.2023	70	Students gained Knowledge on Industry product and techniques used Core Electronics and allied branches

Peak Coordinator JVS Electronics Pvt Ltd,Bidadi	Private Sector	2/5/2023	14	Students got exposure to the manufacturing process involved in Protection Relays in the field of Power System
Industrial Visit to Government Film and TV Technology, Hesaraghatta	Public Sector	16/12/2022	14	Training session is given on Analysis of speech signal using Software Tools used in TV Technology
Mr.P F Naikar,3N Electronics,Tumakuru	Private Sector	27.04.2022	14	Students got Training on manufacturing of LED lights and PCB
Visit to Janapadha Lokha	Study Tour	29.12.2022	76	Students get exposure to Karnataka Heritage practices
T D power systems,Dabaspet,Nelamangala	Private Sector	23.10.2021	17	Students got Training on manufacturing of AC Generators
Bharath Electronics Limited,Jalahalli post,Bengaluru	Public Sector	18.12.2021	50	Got training on Working of Battle Fields Surveillance Radar, Lethal Eye for Underwater Target
Mr.MalayPorwal, MESON,Surat,Gujarath	Private Sector	25.10.2021	61	Students got Training on manufacturing process of Automotive Battery for any climatic Condition

Industrial Visit to BIEC	Industry Expo Public and Private Industry	30.01.2019	25	Students gained Knowledge on Industry product and techniques used Core Electronics and allied branches
Industrial Visit to BEL	Public Sector	08.11.2019	42	Students gained Knowledge on Defence Communication, RADARS, Naval System
Visit to ITI . Ltd	Public Sector	04.10.2019	60	Students have participated in project Exhibition organized by ITI Ltd

**B. Industrial /internship /summer training of more than two weeks and post training Assessment**

As partial fulfillment of the requirements of the program, the 2018 schme students undergo compulsorily internship in different industries during the semester breaks in third year .It provides an opportunity to work on real world projects to enhance their skills on cutting edge technology. This helps students to develop a network and contacts. The students enjoy the opportunity which is able to meet their particular interest. The below table gives list of students undergone internship.

Student Internship during the year 2022-23

SL.No ( <a href="http://sl.no/">http://sl.no/</a> )	USN	Name	Title of the Internship	Company Name &Place	Duration		External Guide Name with designation	Internal Guide Nmae with Designation
					From Starting Date to Ending Date	to		
1	1RI19EC001	Abhishek N M	Surface mounting technology	SEMCOM Electronics Corporation, Veershetthalli chikkabanavara-560090	19.08.2022	to	Mr. Hariprasad	Dr. Sunitha H D
2	1RI19EC002	Deep Shikha Gupta	Surface mount technology	SEMCOM Electronics Corporation, Veershetthalli chikkabanavara-560090	19.08.2022	to	Mr. Hariprasad	Dr. Sunitha H D
3	1RI19EC003	Deepanjan nath	Embedded Systems	ARDENT Computech PVT.LTD. Kolkata	19.08.2022	to	Mr. Souvik	Mr. Raghunandan G
4	1RI19EC004	Digantahalders	Evaluation of component in surface mounting technology	SEMCOM Electronics Corporation, Veershetthalli chikkabanavara-560090	19.08.2022	to	Mr. Hariprasad	Mr. Raghunandan G

5	1RI19EC006	Jubin Sinha	Embedded Systems and Robotics	ARDENT Computech PVT.LTD. Kolkata	19.08.2022 to 19.09.2022	Mr. Souvik	Prof. Parimala Gandhi G
6	1RI19EC007	Kavya h s	Surface mounting technology	SEMCOM Electronics Corporation, Veershetthihalli chikkabanavara-560090	19.08.2022 to 17.09.2022	Mr. Hariprasad	Prof. Parimala Gandhi G
7	1RI19EC008	Mannuru p narasimha	SPI & I2C communication on DSP EVM board	Electrowing Technologies Pvt,Ltd,boopasandra,Bamgalore-94	22/08/2022 to 10/08/2022	chandan	Anshu Deepak
8	1RI19EC010	Nelapati sumanth	Surface mounting technology	SEMCOM Electronics Corporation, Veershetthihalli chikkabanavara-560090	19.08.2022 to 17.09.2022	Mr. Hariprasad	Anshu Deepak
9	1RI19EC011	Pooja c	SPI & I2C communication on DSP EVM board	Electrowing Technologies Pvt,Ltd,boopasandra,Bamgalore-94	22/08/2022 to 10/08/2022	chandan	Anshu Deepak
10	1RI19EC012	Priyadarshini m s	flat pack and insertion technology	SEMCOM Electronics Corporation, Veershetthihalli chikkabanavara-560090	24/08/2023 to 14/09/2023	Mr. Ekodhar Naidu, Floor manager	Mr. Mohan kumar, Assistant professor, ECE
11	1RI19EC013	Renuka c	Embedded and iot	Technologies Global PVT. LTD, Jayanagar 4th block, bangalore-11	22/08/2022 to 24/09/2022	Sagar chakraborty	Prof B N Mohan Kumar
12	1RI19EC014	Sai kiran g	SPI & I2C communication on DSP EVM board	Electrowing Technologies Pvt,Ltd,boopasandra,Bamgalore-94	22/08/2022 to 10/8/2022	chandan	Prof B N Mohan Kumar
13	1RI19EC015	Shubhashree b	ROBOTICS	Karunadu Technologies PVT.LTD, Chikkabanavara, Bangalore-90	25-08-22 to 25-09-22	Mr. HARISH N External Guide	Mr.Chitharanjan das V
14	1RI19EC016	Sramana bhattacharya	Embedded Systems	ARDENT Computech PVT.LTD. Kolkata	19.08.2022 to 19.09.2022	Mr. Souvik	Mr.Chitharanjan das V
15	1RI19EC019	Varshitha k r	PCB ASSEMBLY AND SMT PROCESS	SEMCOM Electronics Corporation, Veershetthihalli chikkabanavara-560090	19.08.2022 to 17.09.2022	Mr. Hariprasad	Mr. Chittaranjan Das K
16	1RI19EC020	Vishnu k v	ROBOTICS	Karunadu Technologies PVT.LTD, Chikkabanavara, Bangalore-90	25-08-22 to 25-09-22	Mr. HARISH N External Guide	Mrs. Shyamala P Bhatt

17	1RI20EC400	Sajal Kanhaiya	Comparing surface mounting technology with chip on board flip chip technology	SEMCOM Electronics Corporation, Veershetthihalli chikkabanavara-560090	19.08.2022 to 17.09.2022	Mr. Hariprasad	Mrs. Shyamala P Bhatt
18	1RI20EC401	Shikha Kumari	Characterization of solder paste performance in surface mounting technology	SEMCOM Electronics Corporation, Veershetthihalli chikkabanavara-560090	19.08.2022 to 17.09.2022	Mr. Hariprasad	Mrs. Shyamala P Bhatt

C. Impact analysis of industrial training/Internship

These industrial training is an excellent learning platform for the students where they can: -

- Understand the application on the theory already learned
- Visualize real life machines and devices and able to Identify gaps in their learning
- Understand the industrial working environment and professionalism. The learning of the students are evaluated and corrective measures (if any) are taken by the departmental authorities.
- The Students gain practical knowledge that helps the students in understanding theory concepts easily and perform better in the regular courses as well as in placements related activities
- The industrial training program also helps to fill the gap in attaining CO , PO attainment
- The Internship helps students are getting placed in better companies with higher package, Also, helps the students to do industry relevant projects
- Helps to build Alumni network

D: Student Feedback on Initiative

- The feedback about the initiatives taken by the department towards arranging industrial visit and feedback on internship are obtained from the students
- The suggestions are considered in order to improve this process so that students get benefitted

3 COURSE OUTCOMES AND PROGRAM OUTCOMES (120)

Total Marks 109.00

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 17.00

<b>PSO1</b>	Ability to analyze, design, build and test analog and digital systems in the areas related to microelectronics, communication, signal processing, VLSI & Embedded systems
<b>PSO2</b>	Ability to identify and solve complex problems in electronics & communication engineering and provide efficient solutions using modern tools/algorithms working individually or in a team

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.

<b>Course Name :</b>	<b>C2 03</b>	<b>Course Year :</b>	<b>2019-2020</b>
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<b>Course Name</b>	<b>Statements</b>
C2 03.1	Understand the principles of semiconductor Physics
C2 03.2	Understand the principles and characteristics of different types of semiconductor devices
C2 03.3	Understand the fabrication process of semiconductor devices
C2 03.4	Utilize the mathematical models of semiconductor junctions and MOS transistors for circuits and systems.

<b>Course Name :</b>	<b>C2 12</b>	<b>Course Year :</b>	<b>2019-2020</b>
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<b>Course Name</b>	<b>Statements</b>
C2 12.1	Develop the mathematical model of mechanical and electrical systems.
C2 12.2	Develop transfer function for a given control system using block diagram reduction techniques and signal flow graph method.
C2 12.3	Determine the time domain specification s for first an d second order systems.
C2 12.4	Determine the stability of a system in the time domain using Routh-Hurwitz criterion and Root-locus technique.
C2 12.5	Determine the s stability of a system in the frequency domain u sing Nyquist and bode plots.

<b>Course Name :</b>	<b>C3 02</b>	<b>Course Year :</b>	<b>2020-2021</b>
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<b>Course Name</b>	<b>Statements</b>
C3 02.1	Determine response of LTI systems using time domain and DFT techniques.
C3 02.2	Compute DFT of real and complex discrete time signals
C3 02.3	Computation of DFT using FFT algorithms and linear filtering approach.
C3 02.4	Design and realize FIR and IIR digital filters

<b>Course Name :</b>	<b>C3 12</b>	<b>Course Year :</b>	<b>2020-2021</b>
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<b>Course Name</b>	<b>Statements</b>
C3 12.1	Describe the use and advantages of microwave transmission
C3 12.2	Analyze various parameters related to microwave transmission lines and waveguides
C3 12.3	Identify microwave devices for several applications



C3 12.4	Analyze various antenna parameters necessary for building a RF system
C3 12.5	Recommend various antenna configurations according to the applications

<b>Course Name :</b>	<b>C4 02</b>	<b>Course Year :</b>	<b>2021-2022</b>
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Course Name	Statements
C4 02.1	Demonstrate understanding of MOS transistor theory, CMOS fabrication flow and technology scaling.
C4 02.2	Draw the basic gates using the stick and layout diagrams with the knowledge of physical design aspects.
C4 02.3	Demonstrate ability to design Combinational, sequential and dynamic logic circuits as per the requirements
C4 02.4	Interpret Memory elements along with timing considerations
C4 02.5	Interpret testing and testability issues in VLSI Design

<b>Course Name :</b>	<b>C4 09</b>	<b>Course Year :</b>	<b>2021-2022</b>
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Course Name	Statements
C4 09.1	Describe the mobile radio propagation and cellular concept of GSM, TDMA, CDMA and LTE-4G network.
C4 09.2	"Classify and explain the three propagation mechanism such as reflection, diffraction and scattering in wireless channels."
C4 09.3	Analyze the design concept of GSM system architecture and operation.
C4 09.4	Assess the CDMA2000 channel and system operation
C4 09.5	Develop the LTE-4G network OFDM, OFDMA, SC-FDMA and uplink and down link OFDMA radio

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 : 4.00

## 1 . course name : C203

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C203.1	3 ▾	3 ▾	2 ▾	3 ▾	- ▾	- ▾	- ▾	- ▾	- ▾	- ▾	- ▾	2 ▾
C203.2	3 ▾	3 ▾	3 ▾	3 ▾	1 ▾	2 ▾	- ▾	- ▾	- ▾	- ▾	- ▾	2 ▾
C203.3	3 ▾	3 ▾	3 ▾	3 ▾	- ▾	- ▾	- ▾	- ▾	- ▾	- ▾	- ▾	2 ▾
C203.4	- ▾	2 ▾	3 ▾	3 ▾	1 ▾	- ▾	- ▾	- ▾	- ▾	- ▾	- ▾	2 ▾
<b>Average</b>	<b>3.00</b>	<b>2.75</b>	<b>2.75</b>	<b>3.00</b>	<b>1.00</b>	<b>2.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>2.00</b>

## 2 . course name : C212

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C212.1	3 ▾	1 ▾	1 ▾	- ▾	- ▾	- ▾	- ▾	- ▾	- ▾	- ▾	- ▾	- ▾
C212.2	2 ▾	2 ▾	2 ▾	- ▾	- ▾	- ▾	- ▾	- ▾	- ▾	- ▾	- ▾	- ▾
C212.3	2 ▾	3 ▾	1 ▾	- ▾	- ▾	- ▾	- ▾	- ▾	- ▾	- ▾	- ▾	- ▾
C212.4	3 ▾	1 ▾	1 ▾	- ▾	- ▾	- ▾	- ▾	- ▾	- ▾	- ▾	- ▾	- ▾
C212.5	3 ▾	1 ▾	2 ▾	- ▾	- ▾	- ▾	- ▾	- ▾	- ▾	- ▾	- ▾	- ▾
<b>Average</b>	<b>2.60</b>	<b>1.60</b>	<b>1.40</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

## 3 . course name : C302

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C302.1	3 ▾	2 ▾	- ▾	- ▾	2 ▾	- ▾	3 ▾	- ▾	- ▾	- ▾	- ▾	- ▾
C302.2	2 ▾	2 ▾	2 ▾	- ▾	2 ▾	- ▾	- ▾	- ▾	- ▾	- ▾	- ▾	- ▾
C302.3	2 ▾	2 ▾	1 ▾	1 ▾	2 ▾	- ▾	- ▾	- ▾	- ▾	- ▾	- ▾	- ▾
C302.4	3 ▾	2 ▾	2 ▾	- ▾	2 ▾	- ▾	- ▾	- ▾	- ▾	3 ▾	- ▾	- ▾
<b>Average</b>	<b>2.50</b>	<b>2.00</b>	<b>1.66</b>	<b>1.00</b>	<b>2.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

## 4 . course name : C312

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C312.1	2 ▾	1 ▾	- ▾	- ▾	- ▾	- ▾	- ▾	- ▾	- ▾	- ▾	- ▾	- ▾

C312.2	1	2	2	-	-	-	-	-	-	-	-	-
C312.3	2	1	-	-	-	-	-	-	-	-	-	-
C312.4	1	2	3	-	-	-	-	-	-	-	-	-
C312.5	1	1	1	1	1	-	-	-	-	-	-	-
<b>Average</b>	<b>1.40</b>	<b>1.40</b>	<b>2.00</b>	<b>1.00</b>	<b>1.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

## 5 . course name : C402

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C402.1	3	2	2	-	3	-	-	-	-	-	-	-
C402.2	2	3	3	-	3	-	-	-	-	-	-	-
C402.3	3	3	2	-	2	-	-	-	-	-	-	-
C402.4	3	2	2	-	2	-	-	-	-	-	-	-
C402.5	3	2	2	-	2	-	-	-	-	-	-	-
<b>Average</b>	<b>2.80</b>	<b>2.40</b>	<b>2.20</b>	<b>0.00</b>	<b>2.40</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

## 6 . course name : C409

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C409.1	2	1	1	-	-	-	-	-	-	-	-	-
C409.2	1	1	1	1	-	-	-	-	-	-	-	-
C409.3	1	1	1	1	-	-	-	-	-	-	-	1
C409.4	3	1	-	1	-	-	-	-	-	-	-	1
C409.5	3	1	1	-	-	-	-	-	-	-	-	-
<b>Average</b>	<b>2.00</b>	<b>1.00</b>	<b>1.00</b>	<b>1.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>1.00</b>

**1 . Course Name : C203**

Course	PSO1	PSO2
C203.1	2    ▾	2    ▾
C203.2	1    ▾	2    ▾
C203.3	1    ▾	2    ▾
C203.4	1    ▾	2    ▾
<b>Average</b>	<b>1.25</b>	<b>2.00</b>

**2 . Course Name : C212**

Course	PSO1	PSO2
C212.1	1    ▾	2    ▾
C212.2	2    ▾	2    ▾
C212.3	2    ▾	2    ▾
C212.4	1    ▾	1    ▾
C212.5	2    ▾	2    ▾
<b>Average</b>	<b>1.60</b>	<b>1.80</b>

**3 . Course Name : C302**

Course	PSO1	PSO2
C302.1	2    ▾	-    ▾
C302.2	1    ▾	-    ▾
C302.3	1    ▾	-    ▾
C302.4	2    ▾	-    ▾
<b>Average</b>	<b>1.50</b>	<b>0.00</b>

**4 . Course Name : C312**

Course	PSO1	PSO2
C312.1	-    ▾	-    ▾
C312.2	-    ▾	-    ▾

C312.3	-	▼	-	▼
C312.4	-	▼	-	▼
C312.5	1	▼	1	▼
<b>Average</b>	<b>1.00</b>		<b>1.00</b>	

**5 . Course Name : C402**

Course	PSO1	PSO2		
C402.1	3	▼	3	▼
C402.2	3	▼	2	▼
C402.3	3	▼	2	▼
C402.4	3	▼	3	▼
C402.5	2	▼	-	▼
<b>Average</b>	<b>2.80</b>		<b>2.50</b>	

**6 . Course Name : C409**

Course	PSO1	PSO2		
C409.1	1	▼	1	▼
C409.2	1	▼	1	▼
C409.3	1	▼	1	▼
C409.4	1	▼	1	▼
C409.5	1	▼	1	▼
<b>Average</b>	<b>1.00</b>		<b>1.00</b>	

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

Institute Marks : 8.00

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C101	3	3	3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	3
C102	3	3	3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C103	3	2.25	1.666	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	2
C104	2	2	3	2	PO5	PO6	PO7	PO8	PO9	PO10	PO11	2
C105	3	1	1	PO4	3	1	3	PO8	PO9	1	PO11	1

C106	3	3	3	PO4	PO5	PO6	PO7	2	2	PO10	PO11	PO12
C107	2.25	2.25	PO3	PO4	2.67	PO6	PO7	PO8	1	1	PO11	PO12
C108	PO1	PO2	1	PO4	PO5	2.5	PO7	PO8	1.67	2.6	PO11	1.4
C109	3	3	3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	2
C110	3	2.8	2.6	1	PO5	PO6	PO7	3	3	PO10	1	PO12
C111	3	3	PO3	PO4	3	1	PO7	PO8	PO9	3	PO11	2.33
C112	3	3	3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	2
C113	3	3	PO3	PO4	3	1	PO7	PO8	PO9	3	PO11	2.33
C114	3	2.8	2.6	1	PO5	PO6	PO7	3	3	PO10	1	2
C115	3	3	3	PO4	PO5	PO6	PO7	2	2	PO10	PO11	PO12
C116	PO1	PO2	1	PO4	PO5	2.5	PO7	PO8	1.67	2.6	PO11	1.4
C201	3	2.2	2	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	2
C202	3	3	3	3	PO5	PO6	PO7	PO8	PO9	PO10	PO11	3
C203	3	2.75	2.75	3	1	2	PO7	PO8	PO9	PO10	PO11	2
C204	3	2.2	2	2	PO5	PO6	PO7	PO8	PO9	PO10	PO11	2
C205	2.8	2	2	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	1
C206	2	2	2	2.5	2	PO6	PO7	PO8	PO9	PO10	PO11	2
C207	2.25	2.75	2	PO4	2.75	PO6	PO7	PO8	PO9	PO10	PO11	2.25
C208	2.25	2.75	2	2	2.75	PO6	PO7	PO8	PO9	PO10	PO11	2.25
C209	PO1	PO2	PO3	PO4	PO5	2	PO7	1	PO9	3	PO11	1
C210	3	2.2	2	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	2
C211	1.4	2	1	1.8	1.2	PO6	PO7	PO8	PO9	PO10	PO11	1
C212	2.6	1.6	1.4	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C213	3	2.16	2	2.16	2	PO6	PO7	PO8	PO9	PO10	PO11	2
C214	2	2	2	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C215	3	3	2.2	2.2	2.8	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C216	2.25	2.75	2	1	2.75	PO6	PO7	PO8	PO9	PO10	PO11	2.25
C217	2	3	2	3	PO5	PO6	PO7	PO8	PO9	PO10	PO11	2
C218	PO1	PO2	PO3	PO4	PO5	2	2	2	2	PO10	PO11	1
C301	PO1	PO2	PO3	PO4	PO5	PO6	PO7	2	2	1.4	2.6	1

C302	2.5	2	1.67	1	2	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C303	3	1.75	2	2	1	PO6	PO7	PO8	PO9	PO10	PO11	2
C304	1.8	2.2	2	PO4	PO5	PO6	PO7	1	1	PO10	PO11	1
C305	1	1	1	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C306	1.2	1.4	1.5	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	1
C307	2.25	2.5	2.75	PO4	3	PO6	PO7	PO8	PO9	PO10	PO11	1.67
C308	2	2.5	2.5	PO4	2.6	PO6	PO7	PO8	PO9	PO10	PO11	1
C309	2	2	2	PO4	PO5	2	2	PO8	PO9	PO10	PO11	2
C310	1.75	1.5	1.25	1.25	PO5	PO6	PO7	PO8	PO9	PO10	PO11	2
C311	1.8	2.2	2	1	PO5	PO6	PO7	PO8	PO9	PO10	PO11	1
C312	1.4	1.4	2	1	1	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C313	3	2.33	2	PO4	3	PO6	PO7	PO8	PO9	PO10	PO11	2.33
C314	2.4	1.4	1.2	1	2	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C315	1.75	1.5	2	PO4	2	PO6	PO7	1	1	1	PO11	1
C316	2	2	2	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	2
C317	3	3	3	3	2.67	3	2	3	3	2	2	2
C401	1.8	1.8	2	1.4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C402	2.8	2.4	2.2	PO4	2.4	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C403	3	3	3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C404	3	3	PO3	3	PO5	PO6	PO7	PO8	PO9	PO10	PO11	2
C405A	3	3	3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	3
C405B	3	2.3	2	2.3	2	3	3	3	PO9	2	3	2
C406	1.8	1.8	2	1.4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C407	2	2	2	2	2	PO6	PO7	PO8	2	2	2	PO12
C408	3	3	3	3	2.67	3	2	3	3	2	2	2
C409	2	1	1	1	PO5	PO6	PO7	PO8	PO9	PO10	PO11	1
C410	2	1.8	1.6	1.8	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C411	3	3	3	3	2.67	3	2	3	3	2	2	2
C412	3	3	3	3	2	2	PO7	PO8	2	2	PO11	2
C413	3	3	3	PO4	3	PO6	PO7	2	2	2	PO11	2

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

Course	PSO1	PSO2
C101	2	2
C102	PSO1	3
C103	2	2
C104	2	2
C105	2	2
C106	PSO1	PSO2
C107	PSO1	1
C108	PSO1	PSO2
C109	2	2
C110	PSO1	PSO2
C111	PSO1	1
C112	2	2
C113	3	PSO2
C114	PSO1	PSO2
C115	PSO1	PSO2
C116	PSO1	PSO2
C201	1	1
C202	2.25	3
C203	1.25	2
C204	1	2
C205	2.2	PSO2
C206	2	PSO2
C207	2.25	2.5
C208	2.25	2.5
C209	PSO1	1
C210	2	1.6
C211	1	1.4



C212	1.6	1.8
C213	2	2
C214	2	PSO2
C215	PSO1	PSO2
C216	2.25	2.5
C217	2	PSO2
C218	PSO1	1
C301	PSO1	PSO2
C302	1.5	PSO2
C303	1	PSO2
C304	1	PSO2
C305	PSO1	PSO2
C306	1	1
C307	2.25	2
C308	2.25	2.2
C309	2	2
C310	PSO1	2
C311	1	1
C312	1	1
C313	2.6	3
C314	PSO1	1.62
C315	1.25	PSO2
C316	2	PSO2
C317	2	2.2
C401	1.8	1.8
C402	2	PSO2
C403	PSO1	PSO2
C404	3	PSO2
C405A	2	2
C405B	2	2

C406	1.8	1.8
C407	2	2
C408	2	2.2
C409	1	1
C410	1.8	1.8
C411	2	2.2
C412	2	2
C413	1.8	1.8

**3.2 Attainment of Course Outcomes (50)**

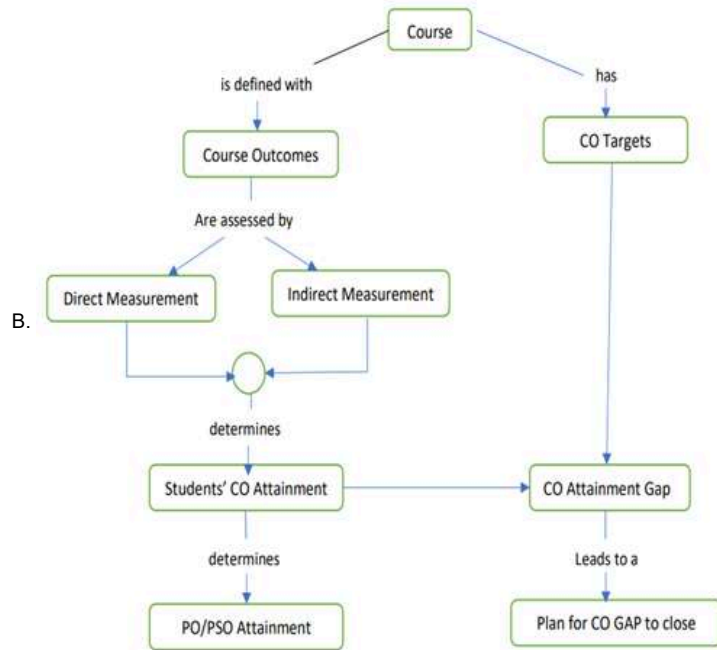
Total Marks 44.00

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

Institute Marks : 9.00

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

#### A. 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.

#### A. Steps in CO computation:

1. The course outcomes are mapped to the program outcomes with correlations level 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
4. Student course satisfaction survey – course exit survey are taken by faculty handling the course on completion of the course to assess the learning levels.

5.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.

#### B. 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	<p>The assessment tool which is held thrice a semester one at the end of 6, 10 and 14 weeks of each semester.</p> <p>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.</p> <p>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.</p> <p>On approval of committee the question papers are printed for IA Conduction.</p> <p>The quality of evaluation is verified by committee post evaluation to check the attainment levels.</p>
Self Learning Assessment	<p>Assignment : Assignments can be given as answer from Open book, quizzes, Seminars, Survey based Article evaluations, etc.</p> <p>The course coordinator will fix any of the above corresponding to the course outcomes.</p> <p>All the Assignment questions/quiz/seminar are mapped to CO and are evaluated for assessment .</p> <p><b>Quiz</b></p> <p>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.</p> <p><b>Seminar</b></p> <p>It should be an individual student seminar. Seminar topics are well planned as per the course outcomes of the concerned</p> <p><b>Survey based Article Evaluation</b></p> <p>The topic will be given to student to prepare survey based case studies as discussed by course coordinator</p>

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 Course	
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 /Internship	
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:**

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

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

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.

#### **C. 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.

#### **D. 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

- 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
- To pass in Laboratory/project/Miniproject/Internship/Seminar Examination minimum of 50% marks score in Semester end examination, 40 % Score in Continuous Internal evaluation.
- 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  $\geq$  40% of max marks allocated to CO

Level 2 : 50% Students scoring  $\geq$  40% of max marks allocated to CO

Level 1 : 40 % Students scoring  $\geq$  40% of max marks allocated to CO

Level 0 : 39 % Students scoring  $\leq$  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 : 35.00

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.

- a. Enter maximum marks for each question and its corresponding CO in the relevant columns
  - b. 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.
  - c. The total marks are computed and stored in sheet specified as IA in the corresponding column
  - d. Compute the "Number of students attempted" the questions for each question.
  - e. Compute the "Number of students who score  $\geq$  competence(c) % marks" for each question
  - f Find the Percentage of students who scores  $\geq$  competence % for each question
- % of students who got more than C % of marks =  $\frac{\text{No. of students who got more than C\% of marks}}{\text{No. of students attempted the Question}}$

- g. Compute the average percentage of students who got more than C % of marks for each CO
- h. Compute the CO attainment for each CIE using the criterion as stated in step i.
- i. CO Attainment Level =
  - 3, if (the avg. % of students who got  $\geq$ C% for each CO )  $\geq$  60 %
  - 2, if (the avg. % of students who got  $\geq$ C% for each CO )  $\geq$ 50%
  - 1, if (the avg. % of students who got  $\geq$ C% for each CO )  $\geq$ 40%
  - 0, if (the avg. % of students who got  $\geq$ 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.

- j. 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.

Step6: 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

$$\text{Direct CO Attainment} = 60\% \text{ of CIE} + 40\% \text{ of SEE}$$



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  $\geq$  60%  
 = 2 if 50%  $\leq$  final Attainment Score  $<$  60%  
 = 1 if 40%  $\leq$  final Attainment Score  $<$  50%  
 = 0 if final Attainment Score  $<$  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

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

- The average mark of external exam of each course is determined.
- 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:**

- Overall CO attainment is calculated by assigning a weightage of 60% to external theory exams and 40% to internal assessment.
- CO attainment target level is chosen by the expert committee.
- If the targets are not achieved by a course, the department carries out various gap analysis/remedial techniques like
  - Remedial Classes for weak students
  - Tutorials
  - Preparation of question banks with previous year university questions.

**3.3 Attainment of Program Outcomes and Program Specific Outcomes (50)**

Total Marks 48.00

**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 : 8.00

**PO Assessment Tools**

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

**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

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

**Direct assessment Process**

- The CO attainment of all courses contributing to the Program Outcomes is tabulated.
- PO attainment for each Program Outcome is calculated based on the CO-PO mapping done in the CO-PO matrix (Table 3.1.2.1).
- 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**

- The above mentioned surveys are conducted for all the courses and based on the results, attainment level of 1, 2 or 3 is fixed.
- 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 program level course-PO matrix (Table 3.1.3.1) are fixed as the target value for Program Outcomes.

**PSO Assessment Tools****Direct assessment Process**

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

- **Program Exit Survey:** Feedback about the course is collected every year from all final year students
- **Employers Feedback:** Feedback about the passed out students is collected from their respective employers.
- **Alumni survey questionnaire:** Alumni meets are conducted every year and feedbacks are taken from students about the course and programme.

**Indirect Assessment Process**

- The above mentioned surveys are conducted for all the courses and based on the results, attainment level of 1,2 or 3 is fixed.
- The average of these PSO attainments provides 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 program level course-PSO matrix (Table 3.1.3.2) 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	2.75	2.2	2.01	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	2.01
C102	2.07	1.92	1.8	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C103	2.41	1.83	1.21	PO4	PO5	PO6	PO7	PO8	PO9	PO10	1.62	1.62
C104	1.57	1.57	1.95	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	1.57
C105	2.16	0.6	0.6	PO4	1.02	0.72	1.2	PO8	PO9	0.72	PO11	0.72
C106	2.21	2.21	2.21	PO4	PO5	PO6	PO7	1.48	1.48	PO10	PO11	PO12
C107	2.02	2.02	PO3	PO4	2.26	PO6	PO7	PO8	0.88	0.88	PO11	PO12
C108	PO1	PO2	0.54	PO4	PO5	1.35	PO7	PO8	0.93	1.41	PO11	0.78
C109	2.72	1.98	1.28	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	1.81
C110	2.07	1.92	1.8	0.69	PO5	PO6	PO7	2.34	2.34	PO10	0.69	1.38
C111	1.55	1.39	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C112	2.38	1.74	1.13	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	1.58
C113	2.87	2.87	PO3	PO4	2.87	0.96	PO7	PO8	PO9	2.87	PO11	2.23
C114	2.21	2.21	2.21	PO4	PO5	PO6	PO7	1.48	1.48	PO10	PO11	PO12
C115	2.22	2.22	PO3	PO4	PO5	PO6	PO7	PO8	0.99	0.99	PO11	PO12
C116	PO1	PO2	0.54	PO4	PO5	1.35	PO7	PO8	0.93	1.41	PO11	0.78
C201	2.28	1.65	1.53	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	1.53
C202	1.97	1.97	1.42	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	1.97
C203	1.56	1.42	1.41	1.62	0.54	1.14	PO7	PO8	PO9	PO10	PO11	1.03
C204	2.7	2	1.74	1.71	PO5	PO6	PO7	PO8	PO9	PO10	PO11	1.8
C205	2.19	1.59	1.43	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	0.78
C206	1.3	1.23	1.08	1.27	1.31	PO6	PO7	PO8	PO9	PO10	PO11	1.3
C207	2.18	2.67	1.94	PO4	2.67	PO6	PO7	PO8	PO9	PO10	PO11	2.18
C208	2.18	2.67	1.94	1.94	2.67	PO6	PO7	PO8	PO9	PO10	PO11	2.17
C209	PO1	PO2	PO3	PO4	PO5	2.4	PO7	2.57	PO9	2.48	PO11	2.55

C210	2.34	1.71	1.56	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	1.56
C211	2.34	2.55	2.58	1.56	1.74	PO6	PO7	PO8	PO9	PO10	PO11	1.74
C212	2.61	1.61	1.41	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C213	2.67	1.77	1.77	1.77	1.77	PO6	PO7	PO8	PO9	PO10	2.7	1.77
C214	1.56	1.56	1.56	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C215	2.58	2.58	2.28	2.29	2.37	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C216	2.23	2.72	1.98	0.99	2.72	PO6	PO7	PO8	PO9	PO10	PO11	1.24
C217	2.25	2.22	2.19	2.16	PO5	PO6	PO7	PO8	PO9	PO10	PO11	2.1
C218	PO1	PO2	PO3	PO4	PO5	1.91	1.94	1.98	PO9	PO10	PO11	2.16
C301	PO1	PO2	PO3	PO4	PO5	PO6	PO7	1.5	1.74	1.77	1.8	1.95
C302	1.84	1.47	1.2	0.71	1.47	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C303	1.85	1.06	1.19	1.23	0.51	PO6	PO7	PO8	PO9	PO10	PO11	1.23
C304	1.36	1.67	1.49	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C305	0.84	0.84	0.84	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C306	0.55	0.72	0.85	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	1.01
C307	2.16	2.41	2.64	PO4	2.88	PO6	PO7	PO8	PO9	PO10	PO11	1.6
C308	1.54	2.07	2.11	PO4	2.06	PO6	PO7	PO8	PO9	PO10	PO11	2.12
C309	2.34	2.34	2.34	PO4	PO5	2.25	2.25	PO8	PO9	PO10	PO11	2.4
C310	1.62	1.4	1.16	1.16	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C311	1.2	1.8	1.8	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C312	1.02	1.02	1.41	0.91	0.95	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C313	2.7	2.12	1.89	PO4	2.84	PO6	PO7	PO8	PO9	PO10	PO11	2.12
C314	2.01	1.17	1.01	0.84	1.67	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C315	1.5	1.5	PO3	PO4	1.99	PO6	PO7	1	1	1	PO11	1
C316	1.77	1.77	2.07	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	2.09
C317	2.68	2.68	2.68	2.68	2.68	2.38	2.69	1.79	2.68	2.69	1.79	2.68
C401	1.68	1.68	1.86	1.31	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C402	2.68	2.29	2.11	PO4	2.31	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C403	1.24	1.28	1.28	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C404	1.97	1.97	PO3	1.97	PO5	PO6	PO7	PO8	PO9	PO10	PO11	1.31
C405A	2.25	2.28	2.34	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	1.71
C405B	2.37	2.05	1.89	2.05	PO5	PO6	PO7	PO8	PO9	PO10	PO11	1.89

C406	1.68	1.68	1.86	1.31	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C407	1.62	1.62	1.62	1.62	1.62	PO6	PO7	PO8	1.62	1.62	1.62	PO12
C408	2.2	2.2	2.2	2.2	1.96	2.21	1.47	2.2	2.2	1.47	1.47	1.47
C409	1.93	0.96	0.95	0.95	PO5	PO6	PO7	PO8	PO9	PO10	PO11	0.99
C410	2.34	1.89	2.44	2.05	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C411	2.8	2.8	2.8	2.8	2.49	2.81	1.87	2.8	2.8	1.87	1.87	1.87
C412	2.37	2.37	2.37	2.31	1.58	1.58	PO7	PO8	1.58	1.58	PO11	1.58
C413	2.59	2.59	2.59	PO4	2.6	PO6	PO7	1.73	1.73	1.73	PO11	1.73

**PO Attainment Level**

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO Attainment	2.10	1.98	1.83	1.74	2.04	1.81	1.99	2.00	1.78	1.78	1.82	1.79
Direct Attainment	2.05	1.87	1.72	1.62	1.98	1.70	1.90	1.90	1.63	1.63	1.70	1.65
InDirect Attainment	2.3	2.4	2.25	2.21	2.28	2.25	2.34	2.38	2.38	2.38	2.3	2.36

**PSO Attainment**

Course	PSO1	PSO2
C101	1.1	1.83
C102	PSO1	PSO2
C103	1.64	1.15
C104	1.57	1.57
C105	1.44	1.44
C106	PSO1	PSO2
C107	PSO1	0.84
C108	PSO1	PSO2
C109	1.63	1.41
C110	PSO1	PSO2
C111	PSO1	0.76
C112	1.42	1.25
C113	2.87	PSO2
C114	PSO1	PSO2
C115	PSO1	PSO2

C116	PSO1	PSO2
C201	0.75	0.75
C202	1.55	1.97
C203	0.66	1.03
C204	0.9	1.8
C205	1.72	PSO2
C206	1.3	PSO2
C207	2.18	2.42
C208	2.18	PSO2
C209	PSO1	PSO2
C210	1.56	1.23
C211	1.95	1.5
C212	1.61	1.8
C213	1.79	1.73
C214	1.56	PSO2
C215	PSO1	PSO2
C216	2.23	PSO2
C217	1.95	PSO2
C218	PSO1	PSO2
C301	PSO1	PSO2
C302	1.11	PSO2
C303	0.6	PSO2
C304	PSO1	PSO2
C305	PSO1	PSO2
C306	0.69	0.18
C307	2.16	1.92
C308	1.92	1.59
C309	2.28	2.28
C310	0.93	0.93
C311	PSO1	0.51
C312	1.08	0.96
C313	2.39	2.7



C314	PSO1	1.34
C315	1	PSO2
C316	2.09	PSO2
C317	1.79	1.79
C401	1.68	1.68
C402	1.92	PSO2
C403	PSO1	PSO2
C404	1.97	PSO2
C405A	PSO1	PSO2
C405B	1.89	1.89
C406	1.68	1.68
C407	1.62	1.62
C408	1.47	1.62
C409	0.96	0.96
C410	PSO1	1.87
C411	1.87	2.06
C412	1.58	1.58
C413	1.56	1.56

**PSO Attainment Level**

Course	PSO1	PSO2
CO Attainment	1.73	1.63
Direct Attainment	1.60	1.49
InDirect Attainment	2.25	2.21

4 STUDENTS' PERFORMANCE (150)

Total Marks 108.07

**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)	58	60	60	11	17	15	21
Number of students admitted in 2nd year in the same batch via lateral entry (N2)	5	2	3	2	3	6	1
Separate division students, If applicable (N3)	0	0	0	0	0	0	0
Total number of students admitted in the programme(N1 + N2 + N3)	63	62	63	13	20	21	22

**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)	63	0	0	0	0
2022-23 (CAYm1)	62	31	0	0	0
2021-22 (CAYm2)	63	27	22	0	0
2020-21 (CAYm3)	13	1	1	1	0
2019-20 (LYG)	20	10	5	5	5
2018-19 (LYGm1)	21	11	5	5	5
2017-18 (LYGm2)	22	10	5	5	5

**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)	63	0	0	0	0
2022-23 (CAYm1)	62	55	0	0	0
2021-22 (CAYm2)	63	60	54	0	0
2020-21 (CAYm3)	13	10	10	10	0
2019-20 (LYG)	20	16	16	14	13
2018-19 (LYGm1)	21	14	14	14	9
2017-18 (LYGm2)	22	21	17	17	17

**4.1 Enrolment Ratio (20)**

Total Marks 20.00

Institute Marks : 20.00

	N (From Table 4.1)	N1 (From Table 4.1)	Enrollment Ratio [(N1/N)*100]
2023-24 (CAY)	60	58	96.67
2022-23 (CAYm1)	60	60	100.00
2021-22 (CAYm2)	60	60	100.00

Average [(ER1 + ER2 + ER3) / 3] : 98.89

Assessment : 20.00

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

Total Marks 15.25

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

Institute Marks : 6.00

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	20.00	21.00	22.00
Y Number of students who have graduated without backlogs in the stipulated period	5.00	5.00	5.00
Success Index [ SI = Y / X ]	0.25	0.24	0.23

Average SI [ (SI1 + SI2 + SI3) / 3 ] : 0.24

Assessment [25 \* Average SI] : 6.00

#### 4.2.2 Success rate in stipulated period (15)

Institute Marks : 9.25

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	20.00	21.00	22.00
Y Number of students who have graduated in the stipulated period	13.00	9.00	17.00
Success Index [ SI = Y / X ]	0.65	0.43	0.77

Average SI[ ( SI1 + SI2 + SI3) / 3 ]: 0.62

Assessment [15 \* Average SI] : 9.25

**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 10.03

Institute Marks : 10.03

Academic Performance	CAYm3 (2020-21)	LYG (2019-20)	LYGm1 (2018-19)
Mean of CGPA or mean percentage of all successful students(X)	6.81	6.93	7.19
Total number of successful students(Y)	10.00	14.00	14.00
Totalnumber of students appeared in the examination(Z)	10.00	16.00	14.00
API [ X*(Y/Z) ]:	6.81	6.06	7.19

Average API [ (AP1 + AP2 + AP3)/3 ] : 6.69

Assessment [1.5 \* AverageAPI] : 10.03

**4.4 Academic Performance in Second Year (15)**

Total Marks 9.52

Institute Marks : 9.52

<b>Academic Performance</b>	<b>CAYm2 (2021-22)</b>	<b>CAYm3 (2020-21)</b>	<b>LYG (2019-20)</b>
Mean of CGPA or mean percentage of all successful students(X)	7.10	7.50	7.20
Total number of successful students (Y)	55.00	10.00	16.00
Total number of students appeared in the examination (Z)	58.00	12.00	19.00
API [ X * (Y/Z) ]	6.73	6.25	6.06

Average API [ (AP1 + AP2 + AP3)/3 ] : 6.35

Assessment [ 1.5 \* AverageAPI ] : 9.52

**4.5 Placement, Higher Studies and Entrepreneurship (40)**

Total Marks 36.27

Institute Marks : 36.27

Item	LYG (2019-20)	LYGm1 (2018-19)	LYGm2 (2017-18)
Total No of Final Year Students(N)	14.00	14.00	17.00
No of students placed in the companies or government sector(X)	10.00	9.00	16.00
No of students admitted to higher studies with valid qualifying scores(GATE or equivalent State or National Level tests, GRE, GMAT etc.) (Y)	2.00	2.00	1.00
No of students turned entrepreneur in engineering/technology (Z)	1.00	0.00	0.00
x + y + z =	13.00	11.00	17.00
Placement Index [ (X+Y+Z)/N ] :	0.93	0.79	1.00

Average Placement [ (P1 + P2 + P3)/3 ] : 0.91

Assessment [ 40 \* Average Placement ] : 36.27

**Program Name :****Assessment Year Name : CAYm1**

S.No	Student Name	Enrollment No	Employee Name	Appointment No
1	ABHISKEK NM	1RI19EC001	SOLAR EDGE TECHNOLOGIES INDIA PVT LTD	0314EB8C
2	DEEP SHIKHA GUPTA	1RI19EC002	CAREER LABS	2023
3	DIGANTA HALDER	1RI19EC004	CAREER LABS	2023
4	KAVYA H S	1RI19EC007	BEL INTERN	837663
5	MANNURU PENCHALA NARASIMHA	1RI19EC008	DEXCEL ELECTRONICS DESIGN PVT LTD	055/02012024
6	NELAPTI SUMANTH	1RI19EC010	BEL INTERN	837649
7	POOJA C	1RI19EC011	BEL INTERN	837655
8	SAI KIRAN G	1RI19EC014	WT MICRO ELECTRONICS INDIA PVT LTD	2023
9	VARSHITHA K R	1RI19EC019	BEL INTERN	837245
10	SAJAL KANHAIYA JAGTAP	1RI20EC400	BYJU'S	2023
11	PRIYADARSHINI M	1RI19EC012	MBA-JAIN UNIVERSITY	2024
12	HARSHITH G	1RI19EC005	ACE VENTURES-ENTREPRENEUR	2022
13	SHIKHA KUMARI	1RI20EC401	PG DIPLOMA	2023

**Assessment Year Name : CAYm2**

S.No	Student Name	Enrollment No	Employee Name	Appointment No
1	ABHISHEK GOWDA D	1RI18EC001	GENIE BIKEZ-FORDON TECHNOLOGIES PVT LTD	2022
2	AMIT KUMAR YADAV	1RI18EC002	TV TODAY NETWORK	2023
3	BHOOMIKA J	1RI18EC004	NO BROKER Z TECHNOLOGIES SOLUTIONS PVT LTD	2023
4	KIRAN CB	1RI18EC006	WIPRO	2022
5	MOHAN M	1RI18EC008	INFINITE COMPUTER SOLUTIONS	1030273
6	SAI PRASHANTH	1RI18EC012	CITRIX SYSTEMS	2022
7	SANJAY K S	1RI18EC014	PENTAGON SPACE PVT LTD	2022
8	SHIV KUMAR D N	1RI18EC015	EXAM ROOM.AI	2023
9	TEJASWINI P	1RI18EC016	CITRIX SYSTEMS	2022
10	SAIKAT BARMAN	1RI18EC013	MTECH	2023
11	VIRESH HIREMATH	1RI18EC017	MS-GERMANY	2023

**Assessment Year Name : CAYm3**

S.No	Student Name	Enrollment No	Employee Name	Appointment No
1	ADARSH M P	1RI17EC001	TATA CONSULTANCY SERVICES	TCSL/DT20207215951
2	AISWARYA S	1RI17EC002	THIS-TORRY HARRIS INTREGATED SOLUTIONS	2021
3	AJAY K S	1RI17EC003	TATA ELXSI	2021
4	AMITH M Y	1RI17EC005	KPMG GLOBAL SERVICES PVT LTD	2022
5	AMARENDRA TRIPATHI	1RI17EC006	NTT DATA SERVICES	2022
6	ANURADHA LAKRA	1RI17EC007	TECH MAHINDRA	2021
7	ASHA L	1RI17EC008	GENPACT	ITO046661-4429862
8	BHARATH V	1RI17EC009	L & T	LTI/HR/EN1/T0036746
9	GREESHMA V	1RI17EC011	VALTECH	T0400
10	MOHITH KUMAR SINGH	1RI17EC014	NEW GEN SOFTWARE TECHNOLOGIES LTD	DC/2022-23/004365
11	PALLAVI M R	1RI17EC015	NTT DATA SERVICES	16711716
12	PRIYANKA NAGENDRA	1RI17EC018	SMART BRAINS	SB/BEN/AP/017
13	SAMADRITA ROY CHOUDHARY	1RI17EC021	CAPGEMINI, MS-CALIFORNIA	2021, 2024
14	SOWMYA G R	1RI17EC023	CAPGEMINI	5146410/1033649
15	VANI K	1RI17EC025	IBM	2022
16	VARSHA BIRADAR	1RI17EC026	SMART BRAINS	SB/BEN/AP/026
17	VISHWAS GOWDA H R	1RI17EC027	MPHASIS	RH8797855/264799

**4.6 Professional Activities (20)**

Total Marks 17.00



**4.6.1 Professional societies/ chapters and organizing engineering events (5)****Student Chapter:**

1. IETE(Institute for Electronics & Telecommunication Engineers), started in the year 2022

2. ISTE(Indian Society for Technical Education)

Activities organized in association with IETE:

sno	Title	Dates conducted	Resource persons
1	Seminar on “5G and Thinking towards 6G & Final year Project Demonstration”	20/06/2022	Prof.. C. Murali IETE distiguished Fellow, Former Vice President, IETE
2	Seminar on “Career Awareness-What Next?” on	4/11/2022	Dr.Ravishankar.C.V Vice-Chairman,IETE & Prof.HoD, dept of ECE, Sambhram IT
3	IETE student chapter Inaugural	1/12/2022	
4	Seminar On “Emerging areas to focus on Project development and Implementation”	1/12/2022	Dr.S Mohan Kumar, Directorate of research & Innovation, Quality assurance, CMR Uniiiversity
5	Seminar on “Computational thinking”	1/12/2022	Dr. V Ilango Professor, CMRIT
6	Certification Course on “Introduction to JAVA and its Applications”	5/11/2022 to 24/12/2022	Ms.Sangeetha, engineer, UTL Technologies, Alumni of ECE
7	Certification Course on “Python Programming with application projects and solutions”	9/1/2023 to 13/1/2023	Mohan Shammanna founder & Mentor, Indoskills
8	Telecom network synchronization	21/2/2023	Ms.Shwetha SS, software engineer, Avaya, Bengaluru
9	SDP on embedded system design and IoT	20/4/2023 to 21/4/2023	Dr.Srinivas Shetty, SST technologies, Bangalore
10	State Level project exhibbition & Competition-"TECHTOPIA 2k23"	5/5/2023	keynote address: Prof.Shankar Dasiga, CTO,Wellnesys Inc, Atlanta,USA
11	Personality development and resume building	30/5/2023	Mr.Mohammed Habeeb, Technical director, Parvam Cosul tech pvt limited
12	Awareness on "Intellectual Property Rights"	6/12/2023	Mr.Nagarjun M G Project associate, co-ordinator, KIRAN IPR programme KSCST,IISc
13	2nd state level project exhibbition "TECHTOPIA 2k24"	3/5/2024	Association with IETE

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

**Department News Letter: "VIDYUNMAANA"****Volumes & Issues:**

Academic year	Title	Editor	Cheif Editor	Student co-ordinators	Volume, Issue
2023-24	VIDYUNMAANA	Mrs.Anshu Deepak	Dr.Sunitha H D	Abhishek M(1RI20EC001) Anand T(1RI21EC006)	Vol 8, Issue 1
2022-23	VIDYUNMAANA	Mrs.Anshu Deepak	Dr.Sunitha H D	Abhshek M(1RI20EC001) Anand T(1RI21EC006)	Vol 7, issue 2
2022-23	VIDYUNMAANA	Mrs.Anshu Deepak	Dr.Sunitha H D	Saikiran G (1RI19EC014) Priyadarshini M S (1RI19EC012)	Vol 7, Issue 1
2021-22	VIDYUNMAANA	Mrs.Anshu Deepak	Dr.Sunitha H D	Diganta Halder(1RI19EC004) Saikiran G(1RI19EC014)	Vol 6, issue 2
2021-22	VIDYUNMAANA	Mr.Premsagar H	Dr.Sunitha H D	Adarsh M P(1RI17EC001) Diganta Halder(1RI19EC004)	Vol 6, issue 1
2020-21	VIDYUNMAANA	Mr.Premsagar H	Dr.Sunitha H D	Saikiran G( 1RI19EC014) Mohan M(1RI18EC008)	Vol 5, Issue 2
2020-21	VIDYUNMAANA	Mr.Premsagar H	Dr.Sunitha H D	Pooja R(1RI16EC012) Adarsh M P(1RI19EC001)	Vol 5, Issue 1

**4.6.3 Participation in inter-institute events by students of the program of study (10)**

Institute Marks : 8.00

Table:List of awards received by the students of the department:

Sno	Name of the students	Event	Month	Organizers	Award
<b>2023-2024</b>					
1	Charan G (1R121EC016)	Ideathon- PRAUDYOGIK- 2k24	5/2/2024 to 10/2/2024	Dept of CSE, RRIT	2nd prize
2	Aman kumar Gupta(1R121EC005), Krishnraj patel(1R121EC034), P Suhas(1R121EC046), Niraj sharma(1R121EC043))	Idea pitching competition PRAUDYOGIK- 2k24	5/2/2024	Dept of CSE, RRIT	Consolation prize
3	Manohar Joshi Nandibevur (1R120EC007)	Circuit Debugging	22/12/2023	“OXYIGNITE-2K23”, Oxford college of Engineering	2 <sup>nd</sup> prize, cash prize of Rs.2000/-
4	Abhishek M (1R120EC001)	Short film	22/12/2023	“OXYIGNITE-2K23”, Oxford college of Engineering	1 <sup>st</sup> prize Rs.3000/ cash prize
5	Abhishek P R (1R122EC001)	“Dollu Kunita”- district level state folk dance competition	2/12/2023	Department of youth empowerment & sports, Govt of Karnataka	1 <sup>st</sup> prize
6	Savalam Navvena(1R120EC013) Sinchana(1R120EC014) Sahana Ithli(1R120EC012) Harshith G(1R119EC005),	Techofest	2/12/2023 to 3/12/2023	Amrutha Institute of Engineering & Management Sciences	2 <sup>nd</sup> prize, Cash prize of Rs.10000/-
<b>2022-2023</b>					
7	Sai kiran G(1R119EC014), Varshitha, K.R(1R119EC019) Deep shikha (1R119EC002)	State level TechFest	May 2023	East point college of Engineering and Technology	2 <sup>nd</sup> prize
8	Hemanth Reddy(1R120EC009), Bhimavaram Vinod(1R120EC004), Harshith G(1R119EC005), Rahul PH(1R121EC402)	TECHNIKA 2k23	3/7/2023	Akshaya Institute of Technology, Tumakuru	Best Mini project
9	Vishnu(1R119EC020), Abhishek N M(1R119EC001), Shubhashree(1R119EC015)	Project funding	February 2023	KSCST	Rs.5000/-
10	Shradha kalyanimath(1R121EC055) Aman kumar gupta(1R121EC005)	NPTEL course on “Analog Circuits”	March 2023	NPTEL	Certified
11	Saikiran G(1R119EC014)	PARAKH	2023	AICTE	Rated- 5
12	20 students(2021 BATCH)	Course on “Universal Human Values”	2023	AICTE	Certified

13	25 students(2021 BATCH)	Course of "Soft skills & personality development"	2023	NPTEL	Certified with Elite scores
14	Shradha S Kalyanimath(1RI21EC055)	course on "Entrepreneurship I: Laying the foundation", 2023	2023	INFOSYS	Certified
15	Aman Kumar Gupta(1RI21EC005)	career Edge-Young Professional course	2023	TCS Ion	certificate of achievement
16	19 students(2021 BATCH)	Course on "Embedded for Beginners",	July 2023	National Institute of Electronics & Information Technology (NIELIT), Calicut	Certified
17	Anjali P	Chess	March 2023	Kalataranga 2k22	2nd prize
<b>2021-2022</b>					
18	Yeshwanth kumar (1RI16EC033), Chetan PC (1RI16EC003) & Naksha	project titled "Brain tumor detection using Image segmentation and machine learning techniques.	May 2022	RRIT Alumni Association	Best project award cash prize of Rs.1000,
19	Yeshwanth Kumar(1RI16EC033)	paper titled" Brain tumour detection at an early stage using image segmentation techniques", Aug 2022	August 2022	ICRTEM 2022(International Conference)	Best Paper award -

**Table: Papers published by the students**

Sl.No	Title of the Paper	Author Name	Journal /Conference Name	ISSN/ISBN	Date of publication
1	Natural Disaster Detection System with Personalized Notification System	Dr. Sunitha H D,Amit Kumar Yadav, Saikat Barman, Viresh K Hiremath, Rambati Reang	IC R T E M – 2 2	ISBN : 978-93-92105-01-2	25-26 August 2022
2	Design and Implementation of Wireless Black Box for Vehicle Tracking and Accident Alert System Using Arduino and GPS Module	Dr. Shivashanka,rAbhishek Gowda D, Sai Prashanth S, Tejaswini P	IC R T E M – 2 2	ISBN : 978-93-92105-01-2	25-26 August 2022
3	Solar Based Energy Efficient Street Lights	Prof. Shyamala P,Sai Kiran G, Varshitha K R, Deep Shikha Gupta	IC R T E M – 2 2	ISBN : 978-93-92105-01-2	25-26 August 2022
4	Smart Gardening and Hydropower Generation	Prof. Shadakshari,Mannuru Penchala Narasimha, Nelapati Sumanth, Pooja C, Priyadarshini M S	IC R T E M – 2 2	ISBN : 978-93-92105-01-2	25-26 August 2022

5	Smart Water Management System	Prof. Malleth B Y,Diganta Halder, Shikha Kumari, Kavya H S, Sajal Kahaiya Jagtap	IC R T E M – 2 2	ISBN : 978-93-92105-01-2	25-26 August 2022
6	Air Quailty Sensing and Monitoring	Prof. Shyamala P,Sanjay KS, Bhoomika J, Akhil M	IC R T E M – 2 2	ISBN : 978-93-92105-01-2	25-26 August 2022
7	Smart Reminder	Prof. B N Mohan Kumar , Mr. Abhishek N.M, Ms. Renuka C, Ms. Shubhashree B , Mr. Vishnu K V	IC R T E M – 2 2	ISBN : 978-93-92105-01-2	25-26 August 2022
8	Internet of Things Enabled Power Theft Detection and Smart Meter Monitoring System	Prof. Anshu Deepak,Sushmitha S R, 3Suma R, Hariram G, Aman Kumar Singh	IC R T E M – 2 2	ISBN : 978-93-92105-01-2	25-26 August 2022
9	Women Safety Device Night-Patrolling Robot	Dr. Mohan kumar B N,Rahul D, 3 Shankramma Mallanagouda Patila, 4 Puja Mallanagouda Patila, 5 Bhanu Prakash S	IC R T E M – 2 2	ISBN : 978-93-92105-01-2	25-26 August 2022
10	Early Stage Brain Tumor Detection Using Image Segmentation & Machine Learning Techniques	Yeshwanth Kumar, 2 Dr.Sunitha H D, 3 Chethan P C, 4 Naksha	IC R T E M – 2 2	ISBN : 978-93-92105-01-2	25-26 August 2022

**STUDENT PUBLICATION AY:2021-2022**

11	Automatic Fire Detecting And Fire Fighting Robot	B N Mohan Kumar Abhishek Gowda D, Mohan M, Sai Prashanth S, Tejaswini	IC R T E M – 2 1	ISBN:978-93-92105-00-5	20-21 August 2021
12	Cost-Efficient Arduino Based Automated Washroom Sanitizing System	Aishwarya S,Dr. Sunitha H D,Amerendra Tripathi,Anuradha Lakra, Prabha K	IC R T E M – 2 1	ISBN:978-93-92105-00-5	20-21 August 2021
13	Comoflauge Based Emergency Vehicles Priority With Intelligent Traffic Control Using Movable Road Dividers	Greeshma V, Shruthi A.S, Yashaswini G, Ramya B, Anshu Deepak	IC R T E M – 2 1	ISBN:978-93-92105-00-5	20-21 August 2021
14	Design And Implementations Of Humming Bird Cryptographic Algorithm Using Fpga	Prof.Mohan Kumar BN, N Nandeesh Reddy, Divya KH, Alangir Badsha, Kishore S, D	IC R T E M – 2 1	ISBN:978-93-92105-00-5	20-21 August 2021
15	Smart Indoor Vertical Farming Using Iot	Parimala Gandhi G , Sushma V ,Monika H , Chithra C , Ullas K S	IC R T E M – 2 1	ISBN:978-93-92105-00-5	20-21 August 2021
16	Cyber Crime	Prof.Anshu Deepak, Greeshma V	IC R T E M – 2 1	ISBN:978-93-92105-00-5	20-21 August 2021
17	Design Of Single Axis Solar Tracker	Amit kumar Yadav,Saikat Barman,Viresh Hiremath, Rambati Reang,Prof. Anshu Deepak	IC R T E M – 2 1	ISBN:978-93-92105-00-5	20-21 August 2021
18	Wireless Sensors Network For Environmental Radiation Monitoring Using Iot	Pallavi M R , Dr. Sunitha H D , Samadrita Roy Chowdhury ,Priyanka Nagendra Shindogi , Varsha Biradar	IC R T E M – 2 1	ISBN:978-93-92105-00-5	20-21 August 2021
19	Cost Efficient Solar Based Multipurpose Crop Cutting Machine	Shyamala P ,Amith M Y ,Bharath V ,Vishwas Gowda H R	IC R T E M – 2 1	ISBN:978-93-92105-00-5	20-21 August 2021
20	Intelligent Covid-19 Pandemic Bus Service With Safety Measures	Parimala Gandhi G , Joy Bhowmik, Adarsha M P ,Ajay K S	IC R T E M – 2 1	ISBN:978-93-92105-00-5	20-21 August 2021
21	Brain Tumor Detection From Mri Images Using Matlab Code	Kiran C B , Shiva kumar D N, Madhu kumar M, Celeste T , Divya T M	IC R T E M – 2 1	ISBN:978-93-92105-00-5	20-21 August 2021

**STUDENT PUBLICATION AY:2020-2021**

22	Design and Implementation of Real Time Monitoring of Aquaponic System Using Atmega328p,IOT and Proteus Design Tool	Dr Sunitha H D ,Niranjan L, Nithu Shree J,Pranathi V,Aravindh A D	International Journal of Research and Analytical reviews(IJRAR)	E-ISSN 2348-1269,P-ISSN 2349-5138	volume 7,issue 3,Aug 2020
23	Universal Egg Incubation System for Hatching using Atmega328P,Proteus Design Tool and IoT	Dr Sunitha H D ,Niranjan L, Bhanuprakasha Rajesh D P,Pooja R,Supriya B k	International Journal of Research and Analytical reviews(IJRAR)	E-ISSN 2348-1269,P-ISSN 2349-5138	volume 7,issue 3,Aug 2020
24	Novel approach to Smart power generation in Smart vehicle.	Parimala Gandhi G ,Mohan Kumar B N,S Shreyas Nadig, Anushree s, Yeshaswini D,Ramya Shree N	Sambodhi -UGC Care Journal	ISSN:2249-6661	vol-43,No.04 July-Sep 2020

**Table: Participation in sports events-Intercollege**

Event	Dates	Venue	List of participants
<b>Academic year 2023-24</b>			
VTU intercollegiate Kabaddi tournament	19 <sup>th</sup> & 20 <sup>th</sup> February 2024	BMS Institute of Technology, Bangalore	1. Basangouda D N (1RI21EC008) 2. Srivardhan P(1RI21EC056) 3. Kishore Kumar(1RI21EC033) 4. Gopi Krishna(1RI21EC022)
VTU Inter collegiate men volleyball tournament	8 <sup>th</sup> & 9 <sup>th</sup> February 2024	R L Jalappa Institute of Technology, Doddaballapur	1.Basangouda D N (1RI21EC008) 2. Srivardhan P(1RI21EC056) 3. Darshan K(1RI21EC018)
Torpedos Valley edition 2	11 <sup>th</sup> & 12 <sup>th</sup> January 2024	Atria Institute of Technology, Bangalore	1.Basangouda D N (1RI21EC008) 2. Darshan K(1RI21EC018)
<b>Academic Year 2022-23</b>			
VTU volleyball north division tournament	17 <sup>th</sup> and 18 <sup>th</sup> Nov 2022	Sri Krishna Institute of Technology, Bangalore	1. Basangouda D N (1RI21EC008) 2. Darshan K(1RI21EC018) 3.Sanjay S(1RI21EC054)
VTU North division Kabaddi tournament	4 <sup>th</sup> Nov 2022 to 5 <sup>th</sup> Nov 2022	Nagarjuna Institute Kishore of Technology, Chikkaballapur	1. Nandeesh U(1RI21EC040) 2. Kishore Kumar(1RI21EC033) 3. Gopi Krishna(1RI21EC022)
Kho-Kho Tournament	17 June 2022	Acharya Institute of Technology, Bangalore	1. Naveen C(1RI18EC009) 2. Adarsh H(1RI21EC003) 3. Gopi Krishna(1RI21EC022)
<b>Academic year 2021-22</b>			
Kabaddi tournament	15 <sup>th</sup> Dec 2021	Dr. T Thimmaiah Institute of Technology, KGF Tournament, KGF	1.SaiPrashanth S(1RI18EC012) 2. Naveen C(1RI18EC009) 3. Abhishek Gowda D(1RI18EC001)

5 FACULTY INFORMATION AND CONTRIBUTIONS (200)

Total Marks 158.93

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.Sunitha H D	BGLPS9269K	ME/M. Tech and PhD	07/07/2018	VLSI	10	2	0	Professor	01/08/2019	07/08/2017	Regular	Yes		Yes
Dr.Shivashankar	AWQPS7640Q	ME/M. Tech and PhD	05/05/2015	wireless communication	7	11	0	Associate Professor		01/08/2023	Regular	Yes		No
G Parimala Gandhi	ANXPG9945L	M.E/M.Tech	06/08/2007	Embedded System	6	0	0	Assistant Professor		29/07/2013	Regular	Yes		No
Dr.Mohan Kumar B N	AVMPM2696P	ME/M. Tech and PhD	13/04/2023	VLSI	10	0	1	Associate Professor	06/06/2023	22/08/2012	Regular	Yes		No
Anshu Deepak	ACHPD3915A	M.E/M.Tech	04/10/2010	Digital Electronics & Communication	5	0	0	Assistant Professor		16/08/2010	Regular	Yes		No
Shyamala P	AKIPP1467A	M.E/M.Tech	21/01/2017	Bio-Medical signal processing	5	0	0	Assistant Professor		12/10/2020	Regular	Yes		No
Raghunandan G	BBNPR4438Q	M.E/M.Tech	09/04/2012	Digital Electronics & Communication systems	0	0	0	Assistant Professor		05/07/2022	Regular	Yes		No
PremSagar H	CKTPP9166R	M.E/M.Tech	08/02/2020	Digital Electronics	2	0	0	Assistant Professor		03/05/2014	Regular	Yes		No
Charutha M V	BQFPC7641P	M.E/M.Tech	08/02/2020	Signal Processing	2	0	0	Assistant Professor		12/10/2020	Regular	Yes		No
Dr.Rasmi A	AJFPR3038R	ME/M. Tech and PhD	27/08/2019	Digital Image Processing	2	0	0	Associate Professor		05/08/2022	Regular	No	31/07/2023	No
Chitharanjan Das V	AGWPV4806D	M.E/M.Tech	17/04/2010	VLSI Design	2	0	0	Assistant Professor		22/03/2021	Regular	Yes		No
Divya T M	AWCPM6538R	M.E/M.Tech	05/04/2013	Digital Communication & Networking	2	0	0	Assistant Professor		27/08/2020	Regular	No	26/07/2022	No
Sugnyani Patil	PKWPP4866R	M.E/M.Tech	03/05/2014	Digital Communication	2	0	0	Assistant Professor		24/02/2020	Regular	No	26/07/2022	No
CH V Nagajyothi	AIFPC9806P	M.E/M.Tech	31/03/2009	Digital systems & Computer Electronics	0	0	0	Assistant Professor		03/07/2023	Regular	Yes		No

Ashok K N	BEAPA1489N	M.E/M.Tech	09/05/2015	Digital Electronics & Communication	2	0	0	Assistant Professor		05/04/2021	Regular	No	26/07/2022	No
Mallesha B Y	ANBPM8813H	M.E/M.Tech	21/12/2018	VLSI	2	0	0	Assistant Professor		04/08/2021	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

BACHELOR OF ENGINEERING(BE)						
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	5	60	2	60	3
3rd Year	60	2	60	3	60	2
4th Year	60	3	60	2	60	3
<b>Sub-Total</b>	<b>180</b>	<b>10</b>	<b>180</b>	<b>7</b>	<b>180</b>	<b>8</b>
<b>Total</b>	<b>190</b>		<b>187</b>		<b>188</b>	
Grand Total	<input type="text" value="190"/>		<input type="text" value="187"/>		<input type="text" value="188"/>	

# PG

No. of PG Programs in the Department

Grand Total	<input type="text"/>	<input type="text"/>	<input type="text"/>
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# SFR

No. of UG Programs in the Department

No. of PG Programs in the Department

Description	CAY(2023-24)		CAYm1 (2022-23)		CAYm2 (2021-22)	
Total No. of Students in the Department(S)	<input type="text" value="190"/>	<b>Sum total of all (UG+PG) students</b>	<input type="text" value="187"/>	<b>Sum total of all (UG+PG) students</b>	<input type="text" value="188"/>	<b>Sum total of all (UG+PG) students</b>
No. of Faculty in the Department(F)	<input type="text" value="11"/>	<b>F1</b>	<input type="text" value="11"/>	<b>F2</b>	<input type="text" value="12"/>	<b>F3</b>
Student Faculty Ratio(SFR)	<input type="text" value="17.27"/>	<b>SFR1=S1/F1</b>	<input type="text" value="17.00"/>	<b>SFR2=S2/F2</b>	<input type="text" value="15.67"/>	<b>SFR3=S3/F3</b>
Average SFR	<input type="text" value="16.65"/>	<b>SFR=(SFR1+SFR2+SFR3)/3</b>				
<b>F=Total Number of Faculty Members in the Department (excluding first year faculty)</b>						

**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)	11	0
CAYm1(2022-23)	11	0
CAYm2(2021-22)	12	0

Average SFR for three assessment years : 16.65

Assessment SFR : 18

### 5.2 Faculty Cadre Proportion (25)

Total Marks 24.00

Institute Marks : 24.00

Year	Professors		Associate Professors		Assistant Professors	
	Required F1	Available	Required F2	Available	Required F3	Available
CAY(2023-24)	1.00	1.00	2.00	2.00	6.00	8.00
CAYm1(2022-23)	1.00	1.00	2.00	1.00	6.00	9.00
CAYm2(2021-22)	1.00	1.00	2.00	0.00	6.00	11.00
Average Numbers	1.00	1.00	2.00	1.00	6.00	9.33

Cadre Ratio Marks [ (AF1 / RF1) + [(AF2 / RF2) \* 0.6] + [ (AF3 / RF3) \* 0.4] ] \* 12.5 : 24.00

### 5.3 Faculty Qualification (25)

Total Marks 15.93

Institute Marks : 15.93

	X	Y	F	$FQ = 2.5 \times [(10X + 4Y) / F]$
2023-24(CAY)	3	8	9.00	17.22
2022-23(CAYm1)	2	9	9.00	15.56
2021-22(CAYm2)	1	11	9.00	15.00

Average Assessment : 15.93

#### 5.4 Faculty Retention (25)

Total Marks 25.00

Institute Marks : 25.00

Description	2022-23	2023-24
No of Faculty Retained	9	8
Total No of Faculty	9	9
% of Faculty Retained	100	89

Average : 94.00

Assessment Marks : 25.00

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

Total Marks 16.00



- To enrich learning, methods like participative learning, experimental learning, experiential learning, seminar presentation, quizzes, case-studies, mini project, internship, and projects are adopted. Remedial classes are conducted for slow learners.

**To facilitate learner-centric environment, pedagogies like:**

- Participative/ Collaborative learning,
- Problem-solving Methodologies
- Conventional Chalk and talk method
- Power Point / Keynote presentation
- E-learning/e-Shikshana by VTU
- ICT (Information Communications Technology) tools initiatives
- Seminars/Technical Reports/Case studies
- Mini / Major projects
- Simulations and experimental exercises
- Field surveys

are being used by the faculty.

- ICT tools and online resources such as NPTEL lecture videos, MOOC platform, virtual labs are effectively utilized for better learning and outcomes.

**Experiential learning:**

- Students centric learning is adopted in laboratory classes where students apply theoretical concepts learned.
- Projects, Mini Projects, Technical seminar and Workshop, visit to industries, workshop on current trend in topics gives an exposure to the latest research trend in the technical area.

**Participative learning:**

- Participating and exhibiting at inter-college, state level project competitions and technical fests.
- Peer learning, Students presentation in class, Technical Seminars. Attending workshops, conferences, hackathons, Invited talks by experts and alumni from the industry and academia.
- Inculcate societal values, AICTE Activity point program as integrated in the curriculum,
- Participation in conference, Technical Paper writing, plagiarism check to ensure students to maintain research ethics.
- Placement training programs like aptitude skills, personality development, spoken English classes and communication sessions supports student to face recruiters.

**Problem-solving methodology:**

- Teaching pedagogy is integrated with presentation from students to enrich presentation and problem solving skills.
- Assignments of higher level thinking to aid self-learning abilities of the students
- Quizzes are conducted to instill the analytical skills and problem-solving skills.
- Through a structured mechanism the students are motivated to find out the solutions for real time problems via case studies, hackathons, and field/industrial projects.
- Field visits, In-plant trainings have been organized to make the students acquaint with industry standards and work ethics.
- Tutorial classes are conducted with collaborative learning for the students to improve their problem-solving ability.
- Technical quizzes and assignments at the end of each module of the courses make the students to develop lateral thinking.

**Collaborative Learning:**

- students make a group, and they discuss within the group the activities, and work together to achieve them. This improves their capability to work in a team.
- Organizing events/activities through IETE student chapter enhances their team building capability and knowledge sharing on the professional forum.

**ICT Tools:**

- In order to make the teaching-learning more effective, all classrooms are ICT enabled. Faculty members use ICT-enabled tools in addition to traditional chalk and talk method.
- Smart boards in classrooms & seminar halls are used for conduction of regular classes, conference, webinars/ Guest lecturers.
- Online platform such as Microsoft teams, Google Meet, Google Classroom, Zoom are used by the faculty to facilitate blended learning,
- Free Wi-Fi facility.
- The college library has a good collection of E-Books and an INFLIBNET -NLIST facility.
- The students are given e-notes, and the submission of assignments and seminar presentations are done offline/ online.

- Live lectures are beamed as per a regular schedule published by VTU e-Learning Centre across the V-SAT connectivity (EDUSAT) in the year 2018-2020 Institute has subscribed for online database which includes journals and transaction papers from Del-net, VTU-Consortium, IEEE-IEL online, Springer, Elsevier- Science Direct, Taylor& Francis etc.
- Students and faculty use V-lab which is an initiative of MHRD that provides remote learning access for students to enhance learning skill.



Figure 5.5.1: ICT Class Room with LCD Projector and Smart Board.

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

Total Marks 15.00

Institute Marks : 15.00

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Name of the faculty	Max 5 Per Faculty		
	2022-23 (CAYm1)	2021-22 (CAYm2)	2020-21 (CAYm3)
Dr. Sunitha H D	5.00	5.00	5.00
Dr. Shivashankar	0.00	0.00	0.00
Dr. Mohan Kumar B N	5.00	5.00	5.00
G Parimala Gandhi	5.00	5.00	5.00
Anshu Deepak	4.00	3.00	4.00
Shyamala P	3.00	5.00	2.00
Raghunandan G	2.00	0.00	0.00
Chitharanjan Das	2.00	3.00	0.00
Premasagar H	2.00	2.00	2.00
Charutha M V	2.00	2.00	2.00
C H V Nagajyouthi	0.00	0.00	0.00
Ashok K N	2.00	2.00	2.00
Mallesha B Y	2.00	3.00	2.00
Dr. Rasmi A	4.00	0.00	0.00
Divya T M	2.00	2.00	2.00
Sugnyani Patil	2.00	2.00	0.00
Sum	42.00	39.00	31.00
RF = Number of Faculty required to comply with 20:1 Student Faculty Ratioas per 5.1	9.50	9.35	9.40
Assessment [3*(Sum / 0.5RF)]	26.53	25.03	19.79

Average assessment over 3 years: 23.78

**5.7 Research and Development (30)**

Total Marks 18.00



**5.7.1 Academic Research (10)**

Academic research includes research paper publications, Ph.D. guidance, and faculty receiving Ph.D. during the assessment period.

Number of quality publications in refereed/SCI Journals, citations, Books/Book Chapters etc.

Table .5.7.1 Publication Details Journals/Conference/Book

### FACULTY RESEARCH PUBLICATIONS

#### Academic Year 2023-2024

Sl.No	Title of the Paper	Author Name	Journal /Conference Name	Month of publication	UGC/scopus
1	A dense cascaded network model for outlier prediction and segmentation of cardiac images	Dr.Sunitha H D & Dr.Rasmi N	Computer Networks	Feb-24	Scopus
2	Headlight Range Estimation for Autonomous Vehicle Using Deep Learning Networks	Dr.Sunitha H D	IEEEExplore	Nov-23	scopus
3	A Smart Biomedical Healthcare System to Detect Stress using Internet of Medical Things, Machine Learning and Artificial Intelligence	Dr.Shivashankara	International Journal of Intelligent Systems and Applications in Engineering	Oct-23	scopus
4	WIRELESS SENSOR NETWORK ROUTING PROTOCOLS,CHALLENGING ISSUES AND PERFORMANCE COMPARISON	Dr.Mohan Kumar B N	Journal of Theoretical and Applied Information Technology	Oct-23	scopus
5	Skin Cancer Detection and Classification System by Applying Image Processing and Machine Learning Techniques	Dr.Rasmi N	Optical Memory and Neural Networks	Sep-23	Scopus

#### Academic Year :2022-2023

6	Secure intrusion detection system routing protocol for mobile ad-hoc network.	Dr Shivashankar, Rajendra Prasad P	Global transitions proceedings	Nov. 2022	scopus
7	An Improved Multipath Energy Aware On-Demand Routing Protocol for MANETs	Dr Shivashankar, Rajendra Prasad P	Journal of Communications	Sep-22	scopus
8	Design and Performance Analysis of High Throughput and Low Power RNS-Based FIR Filter Design on FPGA	B N Mohan Kumar,Rangaraju H G	International Journal of e-Collaboration	Nov-22	scopus
9	Lifetime ratio improvement in relay nodes using CWSN for cooperative wireless sense networks	Mohan Kumar BN	ICCCI, IEEEExplore	Jul-23	Scopus
10	System C modeling of burst generator	Dr.Sunitha H D, Shyamala P	ICRTEM 22	Aug-22	International conference
11	Wireless Sensor Network Routing Protocols, Challenging Issues and Performance Comparison	Dr.Shivashankar	Journal of Theoretical and Applied Information Technology	Jul-23	scopus

#### Academic Year :2021-2022

12	Design and Implementation of Pervasive DA Based FIR filter and feeded register based multiplier for software defined radio networks	B N Mohan Kumar,Rangaraju H G	International Journal of Pervasive Computing and Communications	Jan-22	scopus
13	Implementation of Five Level Multilevel Inverter with Reduced Leakage Current.	Prof.Geetha k	IEEE Xplore	Jun-22	scopus
14	Arduino Based Patient Health Monitoring System	Prof.Shadakshari, Prof. Charutha M V, Prof. Shyamala P	IC R T E M – 2 1	Aug-21	International conference
15	Medical Image De-Noising Using Machine Learning Technique	Prof.Charutha M V ,Shadakshari , Shyamala P Bhat	IC R T E M – 2 1	Aug-21	International conference
16	Disk-Based Real-Time Applications For Power Consumption	Prof.B N Mohan Kuma, prof.Divya T M,	IC R T E M – 2 1	Aug-21	International conference
17	Image Segmentation Of White Blood Cells Using K Means And Gram-Schmidt Organisational Algorithm	Prof.Chitharanjan das V, Dr. Puttamade Gowda J	IC R T E M – 2 1	Aug-21	International conference
18	Trash Can Monitoring System In The Smart Cities	Shyamala P , Charutha .M.V	IC R T E M – 2 1	Aug-21	International conference
19	Smart Notice Board Using Iot (Internet Of Thing)	Prof.Ashok K N ,Anil Kumar	IC R T E M – 2 1	Aug-21	International conference
20	Review on X2 & S1 handover in LTE Networks	Prof.Divya M	IC R T E M – 2 1	Aug-21	International conference
21	EEG data processing for Emotion detection using DTCWT and FFNN Architecture Design	Dr.Mangala Gowri S G, Dr.Sunitha H D,	IC R T E M – 2 1	Aug-21	International conference
22	Design and Implementation of a Vehicle to Vehicle Communication System Using Li-Fi Technology	Prof. Sugnani Patil, Prof. Mohan Kumar	IC R T E M – 2 1	Aug-21	International conference
23	Longitudinal Stability Analysis of an Aircraft using RBFANN	Prof. G parimala Gandhi,Dr. Nagaraj	IC R T E M – 2 1	Aug-21	International conference
24	Women Empowerment in India: Issues & Challenges	Namratha Murthy, Dr.Sunitha H D,	IC R T E M – 2 1	Aug-21	International conference
<b>Academic Year :2020-2021</b>					
25	Array Multiplier and CIA based FIR Filter for DSP applications	B N Mohan Kumar,Rangaraju H G	International research Journal on Advanced Science HUB	Jan-21	scopus
26	Performance Analysis of Smart traffic Control System Using Image Processing	Shwetha N,Niranjan L, Sangeetha N,Anshu Deepak	International Journal of Research and Analytical reviews(IJRAR)	Aug-20	scopus
27	Smart and Seured Assistance for Visually Impaired Person	Shadakshari,Charutha M V	Journal of Interdisciplinary Cycle Research	Jun-21	scopus
28	Cold Chain Logistics Solution Using IoT Services	Sunitha H D, Dinesh Naik	Journal of Huazhong University of Science and Technology	Jun-21	scopus
29	EEG Signal Classification using Dual Tree Wavelets	Sunitha H D, Mangala Gowri S G	Sambodhi -UGC Care Journal	Dec-20	ugc

30	Performance Analysis of Low energy and high -speed DA-RNS based FIR filter design for SDR Application on FPGA	Mohan Kumar B N Rangaraju H G	International Journal of Circuits, Systems and Signal processing	Aug-21	scopus
31	Design and Implementation of high - speed and low -power consumption Moore-based loopback adder on FPGA	Mohan Kumar B N ,Rangaraju H G	International Journal of Intelligent Unmanned Systems	Jan-21	scopus
32	RFID Based Smart Car Parking System Using IOT	Sunitha H D, Mangala Gowri S G	Wesleyan journal of Research	Jun-21	ugc
33	Feature Classification of EEG Signals using Neural Networks	Sunitha H D, Mangala Gowri S G	Kala Sarovar	Jan-21	ugc
34	Dual Tree Wavelet transformation using Wavelet Filters	Sunitha H D, Mangala Gowri S G	Shodhsamhitha	Apr-21	ugc
35	Novel approach to smart power generation in smart vehicle	Parimala gandhi g, mohan kumar b n	Sambodhi -UGC Care Journal		ugc
36	A Review on Low Noise Amplifier in Biomedical Applications	Sunitha H D, Sugnyani Patil, Shyamala P	Journal of Huazhong University of Science and Technology	Jul-21	ugc

#### BOOKS/BOOK CHAPTERS PUBLISHED

Slno	Title of the book/chapter	Author	Publisher	ISBN	Month of publication	Book/book chapter
1	Introduction to Computer Communication Networks	Dr.Shivashankara	Scientific International Publishing House	978-93-5757-657-4	July 23	Book
2	Electronic Devices and Integrated Circuits	Dr.Mohan Kumar B N	Scientific International Publishing House	978-93-5757-464-8	Sep-23	Book
3	Fundamentals of Python Programming	Mrs.Parimala Gandhi G		9789357577380	Oct-23	Book
4	Design and Optimization of LDMOS Transistor Using Doped Silicon Pockets in Buried Oxide	H D Sunitha, N Keshaveni	BP International	978-93-5547-989-1	Dec-22	Book chapter

Table .5.7.2: International conferences organized

Sl. No.	Name of the Conference	Year	Details of the Conference.
1	1 <sup>st</sup> International Conference on Research Trends in Engineering and Management (ICRTEM)-2021	Aug 2021	Institute For Engineering Research and Publication (IFERP)

2	2 <sup>nd</sup> International Conference on Research Trends in Engineering and Management (ICRTEM) 25 <sup>th</sup> - 26 <sup>th</sup> August 2022	Aug 2022	Institute For Engineering Research and Publication (IFERP) ISBN : 978-93-92105-01-2
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Table 5.7.3: Ph.D. Guidance- VTU Research Centre- Department of ECE

Sl.No.	Research Guide Name	Name of Research Scholar	Title of Research topic	University & Year of Registration	Status
1	Dr. Sunitha H D	Mr. Prem Sagar H	Early detection of solanaceae family crops diseases and monitoring green house through embedded sensing using hybrid artificial networks	VTU, Dec 2021	Writing course work
2	Dr. Sunitha H D	Mr. Shashi Kiran S	An improved system for video retrieval from large video set through image key frame using machine learning concepts	VTU, Dec 2021	Completed course work
3	Dr. Shivashankar	Mr. Raghunandan G	Enhancement of Security System for IoT using analytical methods with limited resources	VTU-2023	Taking Course Work
4	Dr. Shivashankar	Mrs. Sarala T	Design and implementation of AI and ML based next generation Communication Networks	VTU-2023	Taking Course Work

Table .5.7.4: Faculty Pursuing Ph.D(external research centres)

Sl. No.	Research Scholar Name	Research Topic	University	Guide Details	Date of Registration & Status
1	Prof. Parimala Gandhi G	Fault tolerant reconfigurable flight controller using neuro-fuzzy augmentation	VTU	Dr.Nagaraj R	28th March 2012 Thesis submission
2	Dr. Mohan Kumar B N	Optimization and performance analysis of FIR filter design	VTU	Dr. Rangaraju H G	Jan-2016 Awarded in 2023
3	Prof.Mallesha B Y	Wireless Sensor networks	MGR Research University	Dr. Anand S	2022 Started the Course work
4	Prof. Chitharanjan das	Image segmentation of WBC	Rabindranath Tagore University, Bhopal	Dr.Veeresh Patil	2021, Completed course work

## 5.7.2 Sponsored Research (5)

Institute Marks : 0.00

**2022-23 (CAYm1)**

Project Title	Duration	Funding Agency	Amount
Design of Intelligent Adaptive Headlight System for Automobiles	1 year	KSCST, Govt. of Karnataka	5000.00
Automated water leakage detection, controlling and monitoring system using wireless sensor networks for the improvement of water network management	1 year	REALM and CANARA Corporation	20000.00
Automatic solar powered street lights and GPS operated system to detect and identify traffic rules violation in toll roads and highways	1 year	REALM and CANARA Corporation	20000.00
Rain sensing automatic car wiper	1 year	REALM and CANARA Corporation	20000.00
Enhancing the livelihood of formers using IoT based monitoring and environment control system for indoor cultivation of mushroom	1 year	REALM and CANARA Corporation	20000.00
			Total Amount(X): 85000.00

**2021-22 (CAYm2)**

Project Title	Duration	Funding Agency	Amount
Assistive device for physically challenged persons using voice controlled intelligent robotic arm	1 year	REALM	20000.00
Giving voice to vulnerable children ML Analysis of speech detects anxiety and depression in early childhood.	1 year	REALM	20000.00
Sign language to text speech translation in real time using convolutional neural network	1 year	REALM	20000.00
Defect detection for forged metal parts by image processing	1 year	REALM	20000.00
Wearable smart multimeter equipped with AR glassed based on IoT platform	1 year	REALM	20000.00
			Total Amount(Y): 100000.00

**2020-21 (CAYm3)**

Project Title	Duration	Funding Agency	Amount
Design and implementation of real time monitoring of aquaponic system using ATMEGA 328P IoT using proteus design tool.	1 year	Canara Steel Corporation	20000.00
Universal ECG incubation system for hatching using ATMEGA 328P controller IoT and proteus design tool	1 year	Canara Steel Corporation	20000.00
Self power generation in smart vehicle.	1 year	Canara Steel Corporation	20000.00
			Total Amount(Z): 60000.00

Cumulative Amount(X + Y + Z) = 245000.00

**5.7.3 Development Activities (10)**

1. Research laboratories: ECE VTU -Research Center -approved from the year-2021.
2. Research laboratory is set up in order to enhance the knowledge and skill set of students:

**Table .5.7.5: Details of Research Lab**

Sl. No.	Research Laboratories	Facilities Available
1	VLSI LAB & HDL lab	<ul style="list-style-type: none"> <li>• Licensed tool(front end &amp; Back end)- Mentor Graphics for VLSI</li> <li>• Licensed XILINX Vivado tool</li> <li>• 30 systems with 16GB RAM &amp; 512 hard disk</li> <li>• Server</li> </ul>

**Table B.5.7.6: Instructional materials**

Sl. No.	Scheme	Subjects	Availability of manual
1	2015	AEC LAB, Digital Electronics Lab, LIC and Communication Lab, Microprocessor Lab, HDL Lab, DSP Lab, Embedded controller Lab, Computer Network Lab, Advance Communication Lab, VLSI Lab.	Soft Copy as well as Hard Copy are available
2	2018	Electronics devices and Instrumentation Laboratory, Digital System Design Lab, Microcontroller lab, Analog Circuit lab, DSP Lab, Verilog lab, Embedded System lab, Communication lab, Computer Network lab, VLSI lab.	Soft Copy as well as Hard Copy are available
3	2021	Analog and Digital Electronics Lab, Logic Design lab, LIC lab, AEC lab, Communication Laboratory-I, Communication Lab-II, VLSI Laboratory, Data structures using C++	Soft Copy as well as Hard Copy are available
4	2022	Analog & digital lab, MATLAB, Communication lab, Data structures using C++	Soft Copy as well as Hard Copy are available

**Table B.5.7.7: Product development**

Sl. No.	Product Title	Product Description	Students Name/ Faculty Name	Year
1.	AUTOMATIC VEHICLE SPEED CONTROLLER AND AVOIDING ACCIDENT IN EXPRESSWAY/HIGHWAY	Vehicle speed controller	1. Abhishek M(1RI20EC001) 2. Manohar Joshi Nandibevur(1RI20EC007) 3. Niketan (1RI20EC008)	2023-2024 funded by KSCST
2.	INTELLIGENT ADAPTIVE HEADLIGHT SYSTEM FOR AUTOMOBILES	The intelligent adaptive lighting system improves driving safety and overall driving experience in low-light settings by continuously analysing sensor input and making realtime modifications. The intelligent adaptive headlight systems issue statement is to solve the constraints of traditional headlights in providing adequate illumination during nighttime driving.	1. Vishnu KV(1RI19EC001) 2. Shubhashree(1RI19EC015) 3. Abhishek NM(1RI19EC001)	2022-2023 Funded by KSCST



3.	Vaccine Storage unit in remote areas using Peltier effect and solar energy	Conventional cooling systems such as those used in refrigerators utilize a compressor and a working fluid to transfer heat. Thermal energy is absorbed and released as the working fluid undergoes expansion and compression and changes phase from liquid to vapor and back, respectively. The objectives of this study are design and develop a working thermoelectric refrigerator interior cooling volume of that utilizes the Peltier effect to refrigerate and maintain a selected temperature from 5 °C to 25 °C.	1. Kiran C B (IRI18EC006) 2. Sanjay k S (IRI18EC014) 3. Shiva Kumar D N( IRI 18EC015) 4. Naveen C(IRI18EC009) Guide: Prof. Chitharanjan Das V	2021-22
4.	Camouflage based emergency Vehicles priority with Intelligent traffic control using movable road dividers	Abstract— The main aim of this project is reducing the traffic congestion in our daily life. Road Divider is generically used for dividing the Road for on-going and incoming traffic. This helps keeping the flow of traffic; generally, there is equal width of lanes for both on-going and incoming traffic.	1. Greeshma V.(IRI17EC011), 2. Shruthi A S., (IRI15EC043) 3. Yashaswini G(IRI16EC031), 4. Ramya B,(IRI15EC035) Guide: Prof.Anshu Deepak	2020-21
5.	Universal egg Incubation system for hatching using ATMEG 328 P Controller, IOT and Proteus design tool	Poultry is one of the birds farming methods wherein theyield in the form of chicken eggs are harvested whoseyield can be enhanced by integrating traditional methods(as against growing eggs in labs) and technology. Themost crucial part of this is to have the right incubator toensure the health of the eggs are fine for consumption.Natural ways of incubation could never be met until thetechnological aspect was integrated	1. Bhanu Prakasha S(IRI16EC004) 2. Pooja R(IRI16EC020) 3. Rajesh D(IRI16EC024) 4. Supritha(IRI16EC027) Guides: Dr. Sunitha H D Prof. Niranjana L	2019-20

Table 5.7.8: Faulty patent details

Sl. No.	Faculty Name	Patent/Product details
1	Dr. Mohan Kumar B N	Secure Energy oriented Multi-Objective Optimization technique for WSN, Design No.: TEMP/E-1/56262-2023-CHE., Published
2	Dr. Mohan Kumar B N	Automated Diagnosis System for Medical Image using Convolution Neural Networks - Design Number: 202341050567- Published.
3.	Dr. Shivashankar	Artificial Intelligence-Driven Data Processing Platform, Design application number. Design No.: 6298639.-2023. Published
4	Dr. Shivashankar	Secure Energy oriented Multi-Objective Optimization technique for WSN, Design No.: TEMP/E-1/56262-2023-CHE., Published
5	Prof. Anshu Deepak	Smart Robotics Using IoT and ML Techniques, Design number: 400573-001, Published.
6	Prof. Parimala Gandhi	Solar powered LCD projector Design Number: 380833-001-2023
7	Prof. Parimala Gandhi	IoT with malware forensics approach based on darknet centric proactive deception technique. Design number: 202241049346-2022

8	Dr.Rasmi R	Cancer cell detection device Design number: 387912-001-2023
9	Dr. Rasmi R	Heart attack detection device Design number: 387010-001-2023
10	Dr.Rasmi R	Design system of IoT driven leaf infection with soil property prediction by using deep learning Design number: 202241058461-2022

**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 26.00

- The institution has effective welfare measures for teaching, non-teaching staff and students. The Institution is committed towards developing the skills of faculty members which enable them to perform better. The institution has developed two levels of faculty appraisal system.
- A performance appraisal system has been developed by the institution 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 format following norms of the college. All staff members are required to fill the Annual Performance 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. All regular teaching and non-teaching staff of RRIT are eligible for Performance Appraisal. Annually the performance appraisal process is completed.
- **Types :**
  1. The faculty appraisal through a feedback system about academics is obtained from students twice in a semester- mid sem and end sem.
  2. The faculty self-appraisal form- consists of self-development activities, academic contribution, department level development activities and Institution level development activities.

**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 curriculum,
- professional membership involvement in college/universities activities.

**Non-teaching faculty are assessed based on:**

- working knowledge
- Communication
- Teamwork
- Attitude towards co-workers
- faculty/student relation,
- job performance,
- Maintenance of document
- Willingness to take responsibility

**All self-appraisal forms are carefully evaluated by Internal Quality Assurance cell and teaching faculty members are awarded suitably as:**

- Best Researcher,
- Innovative teacher
- Best mentor
- Best Teacher
- Result oriented teacher.

**Performance Analysis on Teaching Learning:**

- The institute also assess the performance of the teacher by circulating the structured feedback form to students and the same is evaluated by IQAC . The faculty who scores less than 75% in feedback analysis are counselled by HOD and Principal and suggest necessary improvement.
- 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.
- 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.
- Teaching staff are encouraged to attend Trainings, FDP, seminars, workshops, International/National level conferences etc.

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

Total Marks 1.00

Institute Marks : 1.00

Provision of visiting/adjunct/emergitus faculty is available

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**6 FACILITIES AND TECHNICAL SUPPORT (80)**

Total Marks 71.00

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

Total Marks 26.00

Institute Marks : 26.00

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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	LIC/Communication lab/Advanced communication lab/analog electronic circuits lab	20	•30MHz Cathode Ray Oscilloscope, •3Mhz Function Generator, •2Mhz Function Generator, •10MHz Function Generator. •Linear IC Trainer Kits •Digital Storage Oscilloscope 100MHz , •Digital Storage Oscilloscope 200MHz • Fibre Optic trainer •Klystron Source Microwave setup •GUNN Source Microwave Setup •Micro strip setup C Band •Micro strip setup X Band •6.5 Digit Digital Multimeter •Function Generator	21hrs/week	Mr.Linganna B	Instructor	Diploma in ECE
2	Power electronics lab/project lab	20	•Chopper Module, •Inverter Module, •SCR Converter Module, •IGBT Inverter Module, Power Supply, •LCR Meter., soldering gun	6hrs/week	Manja Shetty	lab assistant	sslc
3	DSP lab/CCN lab/ARM lab/Data structures using C++ lab	20	30 computers, • DSP starter kits,Arm cortex M3 Development Board.	15hrs/week	Mrs.Aiswarya	instructor	BE in E & C
4	VLSI & HDL lab/Research lab/Microcontroller lab	20	30 computers, FPGA boards, lunch box kits,•Microcontroller Development Kits, •MFP430F2013 microcontroller starter kits, •Microcontroller development board based on PIC16F877 with In circuit debugger •	12hrs/week	Mrs.Aiswarya	Instructor	BE in E & C
5	Ability Enhancement lab	20	25 computers with softwares	18hrs/week	Mrs.ramya	Lab assistant	SSLC
6	Logic design lab	20	Digital IC Trainers kits• IC Tester	9hrs/week	Mr.Linganna B	Instructor	Diploma in ECE

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

Total Marks 22.00

Institute Marks : 22.00

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	XILINX VIVADO	software with perpetual license	project and Research	Utilized by research scholars and faculty, content beyond syllabus for students, implement project by UG students	Digital VLSI, Image processing, Embedded systems	PO4,PO5, PSO1,PSO2
2	MSP 430 lunch box kits	Provided by TI	content beyond syllabus, workshops on microcontrollers, self learning	conducted workshops, NPTEL course on embedded systems	Microcontrollers	PO5,PO12
3	Virtual lab nodal center	check	self learning	content beyond syllabus for various courses	basic electronics, DSP, Control systems, Digital system design	PO5,PO12
4	Microwind	opensource	self learning	content beyond syllabus	VLSI	PO5,PO12

### 6.3 Laboratories: Maintenance and overall ambience (10)

Total Marks 8.00

Institute Marks : 8.00

The department has 6 well equipped laboratories to satisfy all the requirements of learning as per the university.

- Updation of laboratories as per the requirement
- All Laboratories are well equipped to meet the requirements of curriculum.
- All labs are connected to Uninterrupted Power Supply to ensure that labs run smoothly
- Regular servicing of equipment's is done to ensure for smooth conduction of labs
- Storage facility is available in all labs.
- All laboratories are well furnished and well ventilated
- Conventional black boards and students seating arrangement in all the laboratories
- Adequate lighting in all the labs
- All Labs are open for students and faculties for research.

### 6.4 Project laboratories (5)

Total Marks 5.00

1) **VLSI lab:**

- Facilities: licensed mentor graphics and Xilinx Vivado tool, internet, 30 computers with 16GB RAM & 512 SSD
- Utilization: Research scholars and students working in the domain of VLSI & embedded systems, Image processing

2) **DSP lab:**

- **Facilities: MATLAB**
- Utilization: students working on signal processing, control systems, image processing

3) **Project lab:**

- Facilities: soldering facility, computers
- Utilization: Impelementation of project, soldering, computers,

Students are allowed to utilize any resources available in the department to execute their projects and mini projects .

**6.5 Safety measures in laboratories (10)**

Total Marks 10.00

Institute Marks : 10.00

Sr. No	Laboratory Name	Safety Measures
1	Communication lab/AEC lab	1. Do's and Don't boards 2. first aid kits 3. CCTV 4. Effective grounding 5.Fire Extinguisher
2	Project/power electronics lab	1. Do's and Don't boards 2. first aid kits 3. CCTV 4. Effective grounding 5.Fire extinguisher
3	Digital electronics lab	1. Do's & Don't boards 2. CCTV 3. First aid kits
4	Ability Enhancement lab	1. Do's and Don't boards 2. CCTV
5	VLSI/HDL/Micro controller lab	1. Do's and Don't boards 2. first aid kits 3. CCTV 4. Effective grounding 5.Fire extinguisher
6	DSP/CCN lab	1. Do's and Don't boards 2. first aid kits 3. CCTV 4. Effective grounding 5.Fire extinguisher

**7 CONTINUOUS IMPROVEMENT (50)**

Total Marks 42.00

**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
<b>PO 1 : Engineering Knowledge</b>			
PO 1	2.49	2.1	Moderately attained
Additional theory classes and tutorial classes to introduce and understand the concepts of basic science and engineering subjects.			
<b>PO 2 : Problem Analysis</b>			
PO 2	2.33	1.97	Moderately attained
Additional classes will be conducted beyond the regular classes for the courses which has less attainment. Conduct Expert lectures, Seminars and Guest lecture to help students in identifying & analyzing the real time problems			
<b>PO 3 : Design/development of Solutions</b>			
PO 3	2.16	1.83	Moderately attained
To conduct Expert lectures, workshop and hands on training session to understand process of designing and analyzing real life software problems Students were encouraged to participate in external inter college technical competitions, coding contests and hackathons.			
<b>PO 4 : Conduct Investigations of Complex Problems</b>			
PO 4	1.97	1.74	Moderately attained
Guest lectures/workshops /hands on session conducted to improve knowledge in identifying and analyze problems			
<b>PO 5 : Modern Tool Usage</b>			
PO 5	2.3	2.04	Moderately attained
workshops/ Hands-on session to learn new tools. Learning in a Virtual lab environment encouraged Programming tutorials involving industry expertise and interactions			
<b>PO 6 : The Engineer and Society</b>			
PO 6	2.24	1.99	Moderately attained
Wide range of electives are offered to support engineering practice to society at large Encourage Student projects to address societal issues Programs on e-waste management, Health camps, awareness programs			
<b>PO 7 : Environment and Sustainability</b>			
PO 7	2.29	2.05	Moderately attained
Programs on e-waste management Activity on energy conservation Seed bomb-plantation related programme, conducted under NSS activities.			
<b>PO 8 : Ethics</b>			
PO 8	2.31	2	Moderately attained
Plagiarism report for projects Seminar on Intellectual property rights Sadhbhavana divas Awareness on electrol literacy			
<b>PO 9 : Individual and Team Work</b>			
PO 9	2.09	1.78	Moderately attained
Students will be encouraged to participate in various co-curricular and extra-curricular activities in other colleges/sports activities/cultural activities Sessions on soft skills and personality development			
<b>PO 10 : Communication</b>			

PO 10	1.92	1.78	Moderately attained
training programme on employability skills, soft skills Present paper in conferences Seminar on case studies, subject seminars			
<b>PO 11 : Project Management and Finance</b>			
PO 11	1.95	1.82	Moderately attained
Prepare project proposals for funding from government agencies			
<b>PO 12 : Life-long Learning</b>			
PO 12	1.82	1.79	Target attained
Students will be motivated to register for GRE/TOEFL/GATE and other competitive examinations. To understand the broadest context of the technological changes, guest lectures, seminars were organized in the recent technologies. Certificate courses membership of professional societies			

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

PSOs	Target Level	Attainment Level	Observations
<b>PSO 1 : Ability to analyze, design, build and test analog and digital systems in the areas related to microelectronics, communication, signal processing, VLSI &amp; Embedded systems</b>			
PSO 1	1.82	1.73	Target attained
Innovative teaching learning methods are practiced for the subjects that do not meet the target through Assignments & Tutorials. organize workshops, seminars, guest lectures AICTE PARAKH rating			
<b>PSO 2 : Ability to identify and solve complex problems in electronics &amp; communication engineering and provide efficient solutions using modern tools/algorithms working individually or in a team</b>			
PSO 2	1.86	1.65	Moderately attained
organized workshops, Industrial visits, seminars workshops and implement mini-projects AICTE PARAKH rating			

### 7.2 Academic Audit and actions taken thereof during the period of Assessment (10)

Total Marks 8.00



An academic audit is conducted by the institution academic review committee every semester to assess the quality of education. The committee evaluates all the documents with respect to the individual course and common department files.

**Contents of individual course files:**

- Vision & Mission- College & Department
- Calendar of events- College & Department
- Program outcomes, Program specific outcomes, Program educational objectives
- Bloom's Taxonomy
- Time table- Individual & Class
- Syllabus
- Lesson plan
- Question bank
- IA question paper with scheme
- Assignment questions
- List of slow & fast learners
- Remedial class time table
- Result analysis
- VTU previous years question papers/model question papers
- Lab manual for IPCC subject
- CO-PO mapping with attainment
- Teaching pedagogy (quiz, subject seminar, virtual labs or any other related activities)
- Notes/ PPTs

**Department Files:**

- Department profile
- Subject allocation & Time table
- Project
- Internship
- Technical seminar
- Mini project
- Circular file-department, college & VTU
- Staff meeting
- Result analysis
- PTM
- Proctor
- Conference/seminar/workshop
- Industrial visit
- certificate program
- Publication file- faculty & student
- Department library
- Collaboration with MoU
- Stock register
- Purchase
- Equipment service
- Remedial class
- CO-PO attainment

The academic review committee checks all the files for its completion as per the policy of IQAC. Report of the same will be submitted by the head of the committee to the Principal. Same will be shared by the Principal to the HoD's of the departments. Any lacunas will be communicated by the HoD to the faculty.

**Action:** Faculty to incorporate all the suggestions/comments from the committee, reauditing to ensure for compliance

### 7.3 Improvement in Placement, Higher Studies and Entrepreneurship (10)

Total Marks 8.00

Institute Marks : 8.00

**Table 7.3.1 below shows the placement, higher studies, entrepreneur and pay package details:**

Item	CAYm1 (2022-23)	CAYm2 (2021-22)	CAYm3 (2020-21)
Total no. of final year students	14	14	17
No. of students placed in companies/government sector	10	9	16
No. of students admitted to higher education with qualifying scores in competitive exams like gate, IELTS, TOEFL & others	2	2	1
No. of students turned entrepreneurs	1		
Highest package in rupees	5,00,000	4,37,408	6,50,000
Lowest package in rupees	1,80,000	2,76,000	2,22,000

**Table 7.3.2 below shows the list of higher education**

Batch	Competitive exams cleared	Higher education details	Course & University
LYG(2019-2020)	October 2023	Priyadarshini M S(1RI19EC012)	MBA in marketing and human resource management, Jain university, Bengaluru)
	July 2023	Shikha kumari(1RI20EC401)	PG diploma in vocational education, NTT, Bengaluru
LYGm1(2018-2019)	IELTS-May 2023	Viresh Hiremath(1RI18EC017)	Master's in international management, IU International University of applied sciences, Germany
	University Entrance exam, August 2023	Saikat Barman(1RI18EC013)	M.Tech in VLSI design, Indian institute of engineering science and technology, Howrah
LYGm2(2017-2018)	TOEFL-August 2023	Samadrita Roy(1RI17EC021)-	MS in business analytics, California state University, February 2024

#### 7.3.3: Entrepreneur:

**Harshith G S(1RI19EC005)-Partner, ACE VENTURES. Started on 4/2/2022, Registration number: 29ABXFA3444Q1ZG**

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

Total Marks 8.00

Institute Marks : 8.00

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 1st year CET	No of students admitted	28	43	17
	Opening Score/Rank	10841	63062	48329
	Closing Score/Rank	300877	125433455	167042
Name of the Entrance Examination for Lateral Entry or lateral entry details Lateral DCET	No of students admitted	05	02	0
	Opening Score/Rank	3441	6341	0
	Closing Score/Rank	7926	8499455	0
Average CBSE/Any other board result of admitted students(Physics, Chemistry&Maths)		76	68	76

8 FIRST YEAR ACADEMICS (50)

Total Marks 41.43

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			
Mrs. SHWETH.	DASPS5573K	M.Sc	24/03/2008	MATHEMATICS	Assistant Professor	03/04/2017	0	25	25	Yes	Regular	
Ms. SRIVALLI	JUCPS6835L	M.Sc	20/03/2022	MATHEMATICS	Assistant Professor	07/11/2022	25	0	0	Yes	Regular	
VIJAYALAKSH	AMVPV0448C	M.E/M.Tech	22/07/2012	ECE	Assistant Professor	08/03/2011	25	25	25	Yes	Regular	
Mr. PAVAN SA	DJMPB2334G	MA	06/06/2019	ENGLISH	Assistant Professor	23/10/2018	0	0	17	No	Regular	30/07/2022
Mrs. MALA N	BSCPM8903P	MA	13/03/2018	ENGLISH	Assistant Professor	16/12/2021	0	8	0	No	Regular	12/06/2023
AISHWARYA V	CIPPA7559B	M.E/M.Tech	02/12/2021	CIVIL	Assistant Professor	13/09/2021	25	0	0	Yes	Regular	
HARISH M R	AOGPH5810R	M.E/M.Tech	01/09/2018	MECH	Assistant Professor	31/08/2020	0	0	25	Yes	Regular	
RAVI PATIL	AWQPR0045L	M.E/M.Tech	05/12/2014	CIVIL	Assistant Professor	16/01/2015	0	0	25	Yes	Regular	
ABHISHEK M	GDUOM4932C	M.E/M.Tech	05/12/2020	CIVIL	Assistant Professor	15/12/2021	0	25	0	Yes	Regular	
SUSHMA R K	FTTPS4424K	M.E/M.Tech	17/07/2018	CIVIL	Assistant Professor	14/02/2021	0	25	0	Yes	Regular	
Dr.SOWMYA A	EEKPS4588K	M.Sc. and PhD	10/03/2022	PHYSICS	Assistant Professor	27/09/2021	0	100	0	Yes	Regular	
Dr. MOHAN KL	BIZPM5287M	M.Sc. and PhD	15/07/2019	CHEMISTRY	Associate Professor	16/07/2022	100	0	0	Yes	Regular	
Dr NIRANJAN	AJDPC4679F	ME/M. Tech and PhD	06/12/2020	CSE	Associate Professor	01/07/2021	0	0	100	Yes	Regular	
Dr. RAGHU K	AUFPR9779Q	ME/M. Tech and PhD	14/07/2023	CIVIL	Associate Professor	14/07/2023	100	0	0	Yes	Regular	
Mrs.THEJASW	BHGPD4257E	M.Sc	26/10/2010	CHEMISTRY	Assistant Professor	19/08/2019	0	25	25	Yes	Regular	
Mrs. J MARYM	BJLPM9910J	M.Phil	06/11/2011	ENGLISH	Assistant Professor	16/05/2022	15	0	0	Yes	Regular	
MURALI G E	CWAPM9182K	ME/M. Tech and PhD	05/09/2015	MECH	Assistant Professor	04/02/2018	0	25	0	Yes	Regular	

MALASHREE (	CRXPM6899M	M.E/M.Tech	12/11/2013	EEE	Assistant Professor	22/03/2021	0	0	25	Yes	Regular	
Dr.ANITA R SH	DSDPS6126R	M.Sc. and PhD	10/06/2013	PHYSICS	Associate Professor	23/07/2018	50	0	100	Yes	Regular	
Mr.VINOD K.L	AWNPL3713A	MA	26/10/2017	KANNADA	Assistant Professor	23/10/2019	0	15	0	No	Regular	31/07/2023
RAKSHITH KU	CFIPR1395Q	ME/M. Tech and PhD	11/12/2014	MECH	Assistant Professor	08/01/2023	15	0	0	Yes	Regular	
MANGALA PY/	AHYPH4463P	M.E/M.Tech	09/11/2017	EEE	Assistant Professor	16/05/2022	15	0	0	Yes	Regular	
SELVARANI S	HBQPS9167G	M.E/M.Tech	12/12/2023	CSE	Assistant Professor	16/10/2023	15	0	0	Yes	Regular	
Dr. MADH	APVPD7959R	ME/M. Tech and PhD	23/05/2023	EEE	Assistant Professor	04/04/2022	0	25	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
<b>Average</b>	60	3	16	5

## 8.2 Qualification of Faculty Teaching First Year Common Courses (5)

Total Marks 3.33

Institute Marks : 3.33

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	2	1	3	4.00
2022-23	1	1	3	2.00
2023-24	2	1	3	4.00

Average Assessment: 3.33

## 8.3 First Year Academic Performance (10)

Total Marks 6.10

Institute Marks : 6.10



<b>Academic Performance</b>	<b>2023-24</b>	<b>2022-23</b>	<b>2021-22</b>
Mean of CGPA or mean percentage of all successful students(X)	6.96	5.91	6.83
Total Number of successful students(Y)	55.00	56.00	10.00
Total Number of students appeared in the examination(Z)	60.00	60.00	11.00
API [X*(Y/Z)]	6.40	5.55	6.36

Average API[ (AP1+AP2+AP3)/3 ] : 6.10

Assessment [ 1.5 \* Average API] : 6.10

**8.4 Attainment of Course Outcomes of first year courses (10)**

Total Marks 8.00

**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 : 4.00

## 8.4 Attainment 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)

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

#### Semester End Examination (SEE)

SI.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.	
<b>Internal Assessment Test</b>	Qualitative performance assessment tool such as Class tests are conducted by course coordinator to assess student's knowledge and problem-solving skills.
<b>End semester exam (theory + practical)</b>	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.
<b>Lab Internal Test</b>	This is mainly to assess student's practical knowledge with their design thinking or logical analysis capabilities.
<b>Indirect Assessment Methods</b>	
<b>Course end survey</b>	To evaluate the success of program in providing students with opportunities to achieve the program outcome - every semester

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

<b>Parameters</b>	<b>High</b>	<b>Marks</b>	<b>Medium</b>	<b>Marks</b>	<b>Low</b>	<b>Marks</b>
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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

	CIE	15
Total Marks	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	Apply 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.
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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 impedance of an electrical circuit and power consumed by a 3-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

**CHEMISTRY CYCLE****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.
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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.
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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	2.49	2.58	2.52	2.56	2.54
2	21CHE12	ENGINEERING CHEMISTRY	2.80	2.80	2.80	2.82	2.81
3	21PSP13	PROBLEM SOLVING THROUGH PROGRAMING	2.85	2.43	2.64	1.98	2.52
4	21ELN14	BASIC ELECTRONICS AND COMMUNICATION ENGINEERING	1.75	1.72	1.78	1.77	1.73
5	21EME15	ELEMENTS OF MECHANICAL ENGINEERING	2.62	2.68	2.68	2.52	2.60
6	21CHEL16	ENGINEERING CHEMISTRY LABORATORY	2.92	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	3.00	3.00	3.00	3.00	2.88
9	21IDT19	INNOVATION AND DESIGN THINKING	2.34	2.22	2.22	2.34	
10	21MAT21	ADVANCED CALCULUS AND NUMERICAL METHODS	2.48	2.46	2.43	2.40	2.31
11	21PHY22	ENGINEERING PHYSICS	2.71	2.71	2.45	2.72	2.65
12	21ELE23	BASIC ELECTRICAL ENGINEERING	2.28	2.33	2.04	2.36	
13	21CIV24	ELEMENTS OF CIVIL ENGINEERING AND MECHANICIS	2.02	2.01	1.91	1.37	1.78
14	21EVNL25	ENGINERING VISUALIZATION	2.94	2.94	2.95	2.94	2.94
15	21PHYL26	ENGINEERING PHYSICS LABORATORY	2.91	2.86	2.93		
16	21ELEL27	BASIC ELECTRICAL ENGINEERING LABORATORY	2.92	3.00	2.40	2.40	2.40
17	21EGH28	PROFESSIONAL WRITING SKILLS IN ENGLISH	2.85	2.85	2.85	2.83	2.52
18	21SFH29	SCIENTIFIC FOUNDATIONS OF HEALTH	2.91	2.89	2.62		

### 8.5 Attainment of Program Outcomes from first year courses (20)

Total Marks 19.00

#### 8.5.1 Indicate results of evaluation of ezch relevant PO and/ or PSO, if applicable (15)

Institute Marks : 15.00

**POs Attainment:**

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
21MAT11	2.49	1.98	1.86	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	1.83
21CHE12	2.82	2.82	2.82	PO4	PO5	PO6	1.26	PO8	PO9	PO10	PO11	1.32
21PSP13	1.47	1.29	1.47	0.36	PO5	0.18	PO7	PO8	PO9	PO10	PO11	1.83
21ELN14	1.29	1.05	0.81	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
21EME15	2.61	0.87	0.87	PO4	1.47	0.87	1.2	PO8	PO9	0.87	PO11	0.87
21CHEL16	PO1	2.96	1.97	0.99	PO5	PO6	0.98	PO8	PO9	PO10	PO11	PO12
21CPL17	1.77	1.77	PO3	PO4	PO5	PO6	0.98	PO8	0.77	0.77	PO11	PO12
21EGH18	PO1	PO2	1.92	PO4	PO5	2.34	PO7	PO8	1.59	2.46	PO11	1.89
21IDT19	1.53	1.53	0.75	0.75	PO5	PO6	PO7	PO8	PO9	PO10	PO11	1.53
21MAT21	2.34	1.71	1.34	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	1.23
21PHY22	1.74	1.41	1.05	0.9	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
21ELE23	1.89	1.89	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
21CIV24	1.59	1.51	1.59	1.78	1.78	1.59	1.52	1.38	1.81	1.78	1.72	1.81
21EVNL25	2.94	1.96	3	PO4	1.94	0.98	0.98	0.98	PO9	2.94	PO11	1.96
21PHYL26	2.90	2.90	2.27	0.97	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
21ELEL27	2.90	2.90	2.27	0.97	PO5	2	PO7	PO8	PO9	PO10	PO11	PO12
21EGH28	PO1	PO2	1.89	PO4	PO5	2.28	PO7	PO8	1.56	2.40	PO11	1.86
21SFH29	PO1	PO2	2.5	PO4	PO5	1.86	PO7	PO8	PO9	1.86	PO11	1.86

**PO Attainment Level**

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
Direct Attainment	2.16	1.90	1.77	0.96	1.73	1.51	1.15	1.18	1.43	1.87	1.72	1.64
CO Attainment	2.16	1.90	1.77	0.96	1.73	1.51	1.15	1.18	1.43	1.87	1.72	1.64

**PSOs Attainment:**

Course	PSO1	PSO2
21MAT11	1.32	1.65
21EME15	1.74	1.74
21IDT19	1	2
21MAT21	1.38	1.35
21CIV24	1.77	1.77
21CHE12	PSO1	PSO2
21PSP13	2.49	1.32
21ELEN14	PSO1	PSO2
21CHEL16	PSO1	PSO2
21CPL17	PSO1	PSO2
21EGH18	1.53	1.53
21PHY22	PSO1	PSO2
21ELE23	PSO1	PSO2
21EVNL25	2.94	2.94
21PHYL26	PSO1	PSO2
21ELEL27	PSO1	PSO2
21EGH28	PSO1	PSO2
21SFH29	0.93	PSO2
21ELN15	0.57	PSO2

**PSO Attainment Level**

Course	PSO1	PSO2
Direct Attainment	1.57	1.79
CO Attainment	1.57	1.79

**8.5.2 Actions taken based on the results of evaluation of relevant POs (5)**

Institute Marks : 4.00

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



POs	Target Level	Attainment Level	Observations
<b>PO 1 : Engineering Knowledge</b>			
PO 1	1.8	2.16	TARGET MET
Science Fiction video play were held on 30-05-2023 Session on Emerging Trends in Electronics were held on 01-06-2023 Seminar on "Physics Of Sensors And Sensor Industry" were held on 22-7-2023			
<b>PO 2 : Problem Analysis</b>			
PO 2	1.8	1.90	TARGET MET
Idea pitching competition for students Guest lecture on computational physics were conducted on conducted on 19-11-22			
<b>PO 3 : Design/development of Solutions</b>			
PO 3	1.5	1.77	TARGET MET
Seminar on "Physics Of Sensors And Sensor Industry" were held on 22-7-2023			
<b>PO 4 : Conduct Investigations of Complex Problems</b>			
PO 4	1.5	0.96	TARGET NOT MET
Vedic Mathematics session were conducted on 02-12-2022 and 27-05-2023			
<b>PO 5 : Modern Tool Usage</b>			
PO 5	1.8	1.73	TARGET NOT MET
Proficiency, Exposure to computer Skills: Ms Office Data Science were held on 05-12-2022 Virtual lab session were conducted on 05-12-2022			
<b>PO 6 : The Engineer and Society</b>			
PO 6	1.8	1.51	TARGET NOT MET
Talk on Role of Engineer 27th May 2023			
<b>PO 7 : Environment and Sustainability</b>			
PO 7	1.8	1.15	TARGET NOT MET
Talk on Role of Engineer 27th May 2023			
<b>PO 8 : Ethics</b>			
PO 8	1.8	1.18	TARGET NOT MET
Universal Human Values sessions were held on 03-12-2022 and 05-12-2022 Session on Anti-ragging were held on 25-05-2023 Session on Anti sexual Harassment were held on 30-05-2023			
<b>PO 9 : Individual and Team Work</b>			
PO 9	1.5	1..43	TARGET NOT MET
Idea pitching competition for students			
<b>PO 10 : Communication</b>			
PO 10	1.8	1.87	TARGET MET

1.Importance of Communication skills sessions were held on 06-12-2022 2. Literary activities were conducted on 03-06-2023

**PO 11 : Project Management and Finance**

PO 11	1.5	1.72	TARGET NOT MET
Time management session were held on 09-12-2022			

**PO 12 : Life-long Learning**

PO 12	1.8	1.64	TARGET NOT MET
Yoga Practice and Presentation sessions were held on 10-12-2022			

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

PSOs	Target Level	Attainment Level	Observations
<b>PSO 1 : Ability to analyze, design, build and test analog and digital systems in the areas related to microelectronics, communication, signal processing, VLSI &amp; Embedded systems</b>			
PSO 1	1	1.57	TARGET MET
NO ACTIONS TAKEN			
<b>PSO 2 : Ability to identify and solve complex problems in electronics &amp; communication engineering and provide efficient solutions using modern tools/algorithms working individually or in a team</b>			
PSO 2	1	1.79	TARGET MET
NO ACTION TAKEN			

9 STUDENT SUPPORT SYSTEMS (50)

Total Marks 44.00

9.1 Mentoring system to help at individual level (5)

Total 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

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

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.

**9.1.2.1 Efficacy 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



**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

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### 9.4 Self-Learning (5)

Total 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.

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## 9.5 Career Guidance, Training, Placement (10)

Total 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.**

Sno	Event	Dates conducted	Resource
<b>AY 2023-2024</b>			
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
<b>AY 2022-2023</b>			
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
<b>AY 2021-2022</b>			
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
<b>AY 2020-2021</b>			

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
<b>AY 2019-2020</b>			
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



**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.
- The Institute has also constituted **IIC(Institute Innovation Council)** to facilitate innovations among students

**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 programmes leading to self-employment

**Table: 9.6.1 List of entrepreneurship events conducted in the college**

Slno	Name of the event	Date	Resource
<b>AY 2023-2024</b>			
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 Shahabdkar, 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
<b>AY 2022-2023</b>			
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
<b>AY 2021-2022</b>			

**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	<a href="https://m.indiamart.com/aceventures-128639791/">https://m.indiamart.com/aceventures-128639791/</a>
JOY BHOWMIK	ECE	GOLD BUSINESS(BANGLADESH)		
SHAMANTH P	CIVIL	i2i INFRATECH	2019	<a href="https://in.linkedin.com/in/shamant-p-717747169">https://in.linkedin.com/in/shamant-p-717747169</a>
NAVEEN CHANDER	EEE	3Q SUTANTRA LLP	2020	<a href="https://www.zaubacorp.com/company/3Q-SUTANTRA-LLP/AAT-2656">https://www.zaubacorp.com/company/3Q-SUTANTRA-LLP/AAT-2656</a>

**9.7 Co-curricular and Extra-curricular Activities (10)**

Total 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 initiative – 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.

**Table :Number of NSS and other club activities**

sno	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
2	Women health matters	Ms.Vyshaka, Manager- Women Health matters		26/2/24
3	Students inter-personal skills, mental health and personality development	Sri lakshmi Hegde, Image Consultant & soft skills trainer		1/12/23
4	Super charging your programming skills	Mr.Dinesh, Freelancer, Director, Product developer, XLanz Pvt.Ltd		27/11/23
<b>2022-2023</b>				
5	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
6	Environment and Social Awareness program in government school near haroketanahalli	NSS-RRIT	Awareness program	2022-23
7	Health awareness campaign	NSS/Red cross/Lions Club/Prakriya hospital/Partha Dental clinic	Health campaign	2022-23
8	Plantation drive	NSS/Bank of Baroda	Plantation	2022-23
<b>2021-2022</b>				
9	Awareness on Save soil	NSS/IQAC	Awareness program	2021-22
10	Awareness campaign on swachhta/covid	Mechanical Engineering/MSME	Swachh Bharat	2021-22
11	UNNAT BHARAT ABHIYAN	UBA committee/PDO (Panchayat Development Office)	UNNAT BHARAT ABHIYAN	2021-22
12	National youths day	NSS	Awareness program	2021-22
13	Awareness on National voters day	NSS	Awareness program	2021-22
14	Earth day	Green club	Awareness program	2021-22

15	Save soil	Green club	Awareness program	2021-22
16	Svasthya Jagruti	NSS/Red cross/Lions Club/Prakriya hospital/Partha Dental clinic	Walkathon, Blood Donation & Health camp	2021-22
17	Yoga: Relax, Replenish, Revive	Electronics Dept./Swami Vivekananda Yoga Shala	Awareness program	2021-22
18	Vaccination Drive	IQAC	Vaccination against COVID	2021-22
19	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 9.7.1- Kalatarranga Organized dates**

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

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

sno	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 :**

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

**Mission :**

- 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 oversees 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

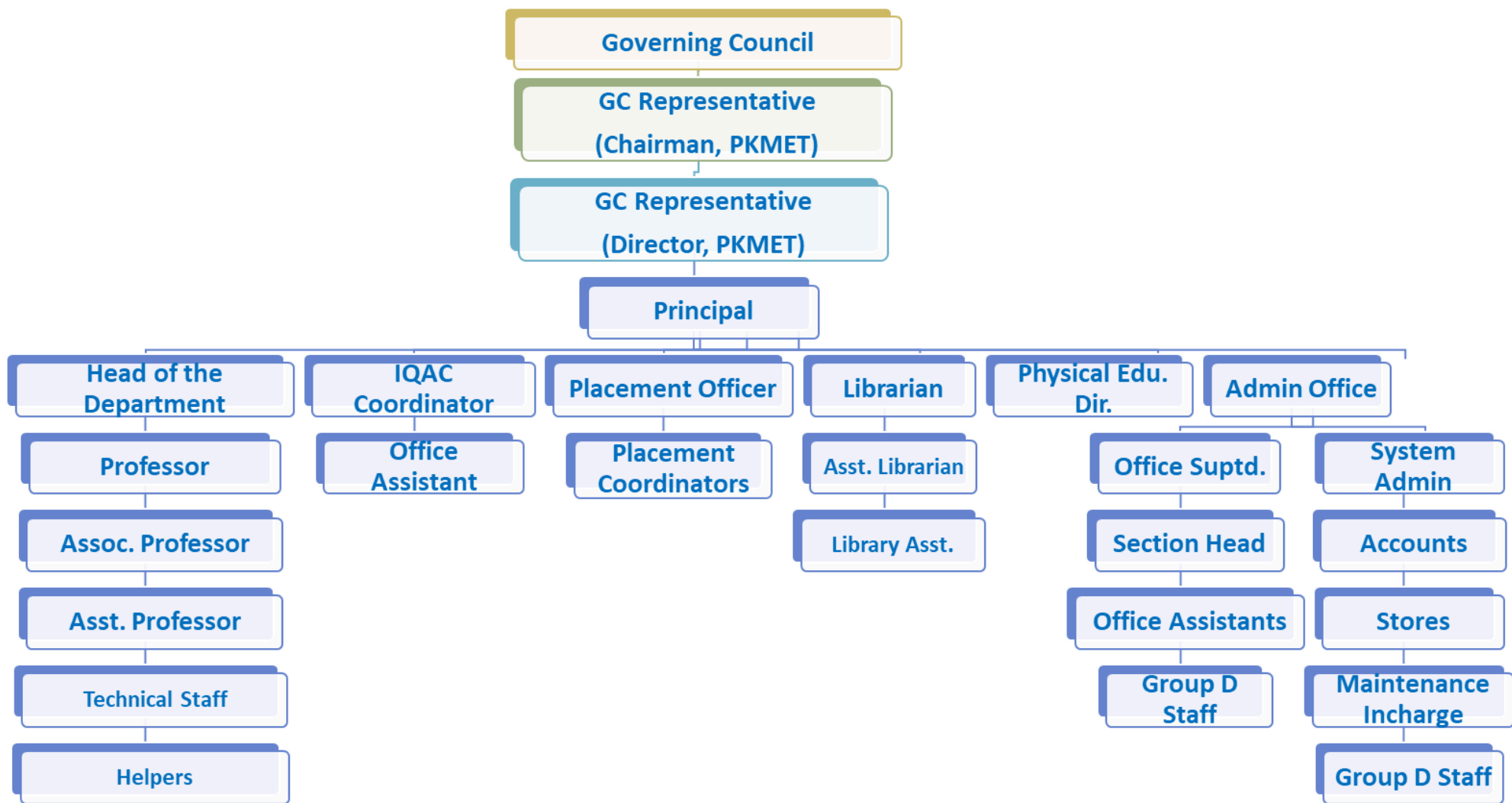


Figure 10.1: Organogram of the institute

Table 10.1: Functions of members of GC

Position	Functions
Governing Council	<ul style="list-style-type: none"> <li>• Frame directive principles and policies</li> <li>• Amend and approve policies from time to time</li> <li>• Approve budgets</li> </ul>
G C Representative Director	<ul style="list-style-type: none"> <li>• To look after the over all development of the institute</li> <li>• Mobilize external resources to strengthen the institute</li> <li>• Plan &amp; provide for necessary facilities/ equipments for development</li> </ul>

Principal	<ul style="list-style-type: none"> <li>• Design &amp; define organization structure</li> <li>• Define &amp; delegate responsibilities of various positions in the organization. Ensure periodic monitoring &amp; evaluation, of various processes &amp; sub-processes</li> <li>• Ensure effective purchase procedure</li> <li>• Define equality policy and objectives</li> <li>• Prepare annual budget</li> <li>• Conduct periodic meeting of various bodies such as Governing Council, Academic Review, Anti Ragging, Standing Committee and Grievance Redressal Committee etc</li> <li>• Manage accounts and finance Employee recruitment process</li> <li>• Office Administration Compliance with AICTE, DTE &amp; University Admission Internal and External examinations</li> </ul>
Head of Departments	<ul style="list-style-type: none"> <li>• Plan and execute academic activities and organizes events for overall development of the department</li> <li>• Maintain discipline and culture in the department</li> <li>• Co-ordinate the activities of class teachers</li> <li>• Organizes Faculty Development Programs</li> </ul>
IQAC	<ul style="list-style-type: none"> <li>• 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.</li> <li>• IQAC strives for Achieving Excellence, Building Competencies and nurturing Global Professionals.</li> <li>• IQAC constantly monitors, suggests changes to be made in academic and administrative activities.</li> <li>• The compliance of academic, administrative procedures and continual improvement is ensured through systematic audit by IQAC.</li> </ul>
Office Superintendent	<ul style="list-style-type: none"> <li>• Liasoning with AICTE, DTE and University</li> <li>• College register, Service Books</li> <li>• Faculty personal files</li> <li>• Recruitment process</li> <li>• Maintain minutes of meeting(all)</li> <li>• New proposals</li> <li>• Co-ordinate day today activities of office Purchase process</li> <li>• Prepare annual College budget</li> </ul>
Faculty members	<ul style="list-style-type: none"> <li>• The primary role of faculty is disseminate the work allotted by head of the department time to time</li> <li>• Deliver lectures (theory classes) and conduct Lab sessions (Practical classes) as per the allotted Timetable.</li> <li>• 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</li> <li>• 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</li> </ul>
Placement Officer	<ul style="list-style-type: none"> <li>• Liaison with industry</li> <li>• Student Training and Placement drive</li> <li>• Identify and provide training needs of students</li> <li>• Arrange interviews</li> <li>• Ensures the smooth coordination with various stakeholders required for the process of placement</li> </ul>
Librarian	<ul style="list-style-type: none"> <li>• Maintains the library assets</li> <li>• Procure the necessary learning materials such as books, monographs, journals ,e resources that meets the need of all stakeholder</li> </ul>

Director -Physical Education	<ul style="list-style-type: none"> <li>• Ensure smooth conduct of sports</li> <li>• Maintains and manages sports facility</li> <li>• Encourage students to participate in tournaments</li> </ul>
Admin Staff	<ul style="list-style-type: none"> <li>• Admin Staff are responsible for upkeeping the office of the institute with all necessary documentation and records.</li> <li>• They collectively are responsible for: Maintenance of student and staff records Undertake all responsibilities in recruitment and admission related requirements of the institute</li> </ul>

**Table 10.2: List of GC members(2023-24)**

sno	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.	Industria list
7	Prof. Ramalingaiah	Professor, Mechanical Engineering, MRIT Mandya	Member, VTU nominee
8	Dr. S.G.Sreekantewara Swamy	Former Executive Secretary, KSCST	Member
9	Commissionerate	Department of Collegiate Education, Bengaluru	Member, DTE Nominee
10	Nominee of AICTE	Regiona I Officer, AICTE	Member, AICTE Nominee
11	Dr. Suresha C N	HOD, Dept. of Basic Science, RR Institute of Technology	Member, Faculty Nominee
12	Mrs. G. Parimala Gandhi	Associate Professor, Dept. of ECE., R R Institute of Technology	Member, Faculty Nominee
13	Prof. Dr. Mahendra KV	Professor & Principal, R R Institute of Technology	Member Secretary

**Table 10.3: List of GC members(2022-23)**

Sno	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.Sreekantewara 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 10.3: List of GC members(2021-22)**

sno	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, Kamataka 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 10.4: Frequency of GC meetings**

SIno	Academic Year	frequency of meeting	date 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

The management has delegated its authority to the Principal. The principal in-turn has delegated the powers to committee Heads and committee members. All these committees work independently and implement need based action into force for the upliftment of the college

**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>

**Composition (AY 2023-2024):**

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

**Mechanism followed by Anti Ragging Committee:**

1. If any student is affected due ragging , raise a complaint to any of the committee members

2. On receipt of complaint , the chairman of the committee hold meeting with members students complained and students who indulged ragging
3. Committee registers statement of complainant and respondent and thoroughly scrutiny the reviews and suggest feasible solution to the complainant by keeping respondent student future in to consideration.
4. Committee educate students about the impact if one involves in ragging and its consequences through awareness program.
5. The details of committee is displayed in all prominent places in the campus as well as in webpage, this enables students to reach the committee immediately if they face any problem due to ragging.

#### ANTI RAGGING SQUAD:

The College has an Anti - Ragging Squad which keeps vigil round the clock in the campus to prevent the occurrence of ragging in the campus .

#### Mechanism followed by Anti Ragging squad Committee:

1. A schedule is prepared by head of the committee in consultation with all the members to go for squad duty and continuously keep vigil over ragging to prevent its occurrence and recurrence
2. As per schedule the members will visit all prominent places where the lower and higher semester students meet to curb the menace of ragging.
3. Committee ensures display Pamphlets of Anti ragging, Observation of Anti ragging in the campus including hostel, Night inspection of hostels.
4. Organize pledge/oath ceremonies against anti-ragging & drug abuse.

#### 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):

SIno	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	IRI21EC042
12	Ms.Supreetha B	Student	Member	Female	IRI22IS056
13	Dr.Padmakshi Lokesh	Member, NGO	Member	Female	-

Mechanism followed by Internal Complaint Committee / Anti Sexual Harassment Committee

1. Address the Needs and problems of Girls student, women faculty members , resolve the complaints if any,
2. Organize events to emphasis importance of gender equity Seminars
3. Arrange counselor to address the issues and to prevent the harassment at college
4. Motivate Women members or girl students to speak out their issues boldly to get issues shorted if any
5. Organize events to educate importance of oral talk , words that lead to unwelcome sexual advances, unsolicited acts of physical intimacy.
6. The Committee solves the issues if any internally and suggest feasible solution by keeping students future in mind.

**Other functional Committes in the institutions:**

1. Academic review committee
2. Proctoring committee
3. IIC
4. Project committee
5. Library committee
6. purchase committee
- 7.SC/ST committee
8. Placement committee
- 9.Alumni Committee
10. Magazine committee
11. Hostel committee
12. Disciplinary committee
- 13.Anti-ragging squad

**10.1.4 Delegation of financial powers (10)**

- 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.

**Delegation of Financial power & utilization by various authorities:****1. Principal:**

- The Principal is the final decision making authority on all department & Institution requirements,
- Prepares Institutional budget proposal for financial year and get approval in G C Meeting.
- All the financial approvals will be sanctioned on the recommendation of the HODs and Principal
- Signing Authority for Department Association Accounts.

**2. Accountants:**

- Preparation of budget proposal for Institution for financial year.
- Based on the approval from Principal accountant release funds to various vendors/suppliers/petty contractors/distributors etc. throughout financial year Manage all accounts related to PF/salary, Insurance, Rental, IT, Taxes, Billings etc.

**3. HOD:**

- preparation of budget proposal for financial year.
- Recommending & forwarding authority for all the department requirements and initiate the process of purchase.
- In exigencies & emergency initiating request for purchase/procurement of all requirements of department.
- HODs are the recommending and signing authority for Department Association Account.

**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.

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**10.1.5 Transparency and availability of correct/unambiguous information in public domain (5)**

**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#>

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**10.2 Budget Allocation, Utilization, and Public Accounting at Institute level (30)**

Total Marks 28.00

**Summary of current financial year's budget and actual expenditure incurred (for the institution exclusively) in the three previous financial years**

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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	23291342	21767611	25749670	24523496
Others, specify	0	0	0	0	0	0	0	0
<b>Total</b>	<b>114348732</b>	<b>108903556</b>	<b>84407857</b>	<b>78155426</b>	<b>62853616</b>	<b>58557551</b>	<b>59990927</b>	<b>56920198</b>

### 10.2.1 Adequacy of budget allocation (10)

Institute Marks : 10.00

#### Budget formulation, finalization and approval process:

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

Academic Year	Budget	Expenditure	Remarks
2023-2024	114348732	108903556	adequate
2022-2023	84407857	78155426	adequate
2021-2022	62853616	58557551	adequate
2020-2021	59990927	56920198	adequate

### 10.2.2 Utilization of allocated funds (15)

Institute Marks : 13.00



- Budget is allotted to each department towards up-gradation of laboratories, laboratory consumables and repair of laboratory equipment etc.
- The allocated funds are utilized for staff salaries, infrastructure upgradation, procurement and maintenance of common utilities, house-keeping, procurement of furniture ,expenses towards consumables and contingencies, repairs etc.

Academic Year	Budget in rupees	Expenditure in rupees	Utilization in %
2023-2024	114348732	108903556	95.2%
2022-2023	84407857	78155426	92.55%
2021-2022	62853616	58557551	93.1%
2020-2021	59990927	56920198	94.5%

- The allocated budget is adequate and the budget gets sanctioned based on the budget predictions given by the department for every academic year.

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### 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>

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### 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**

26281098		Actual expenditure (till...): 24334351		Total No. Of Students 121
Non Recurring	Recurring	Non Recurring	Recurring	Expenditure per student
6039229	20241869	5591879	18742472	201110.34

**Table 2 :: CFYm1 2022-23**

15663831		Actual expenditure (till...): 14503548		Total No. Of Students 158
Non Recurring	Recurring	Non Recurring	Recurring	Expenditure per student
1545347	14118484	1430877	13072671	91794.61

**Table 3 :: CFYm2 2021-22**

18930630		Actual expenditure (till...): 17528362		Total No. Of Students 131
Non Recurring	Recurring	Non Recurring	Recurring	Expenditure per student
8205003	10725627	7597225	9931137	133804.29

**Table 4 :: CFYm3 2020-21**

11298716		Actual expenditure (till...): 10461775		Total No. Of Students 102
Non Recurring	Recurring	Non Recurring	Recurring	Expenditure per student
893363	10405353	827188	9634587	102566.42

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	763825	707245	110705	102505	272831	252622	991855	918385
	8829325	8175301	5151917	4770294	3918169	3627935	4414228	4087249
<b>Total</b>	<b>9601709</b>	<b>8890471</b>	<b>6998757</b>	<b>6480332</b>	<b>4962040</b>	<b>4594484</b>	<b>6497525</b>	<b>6016229</b>

**10.3.1 Adequacy of budget allocation (10)**

Institute Marks : 10.00

**Budget formulation, finalization and approval process:**

1. The head of the department prepares budget proposal in consultation with the lab incharges and faculty, considering the curriculum requirement and upgradation.

2. The department budget is submitted to the Principal for approval.

Academic Year	Budgeted in rupees	Expenditure in rupees	Remarks
2023-2024	9601708	8890471	Adequate
2022-2023	6998757	6480332	Adequate
2021-2022	4962040	4594484	Adequate
2020-2021	6497525	6016229	Adequate

The budget allocated to the department is adequate and utilized efficiently

**10.3.2 Utilization of allocated funds (20)**

Institute Marks : 16.00

Academic Year	Budgeted in rupees	Expenditure in rupees	Adequacy
2023-2024	9601708	8890471	711237
2022-2023	6998757	6480332	518425
2021-2022	4962040	4594484	367556
2020-2021	6497525	6016229	481296

The budget allocated was utilized towards maintenance of labs, organizing workshops, conferences, seminars and industrial visits, sponsor faculty to attend workshops/conferences and other expenses

**10.4 Library and Internet (20)**

Total Marks 18.00

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

- The library books of current titles, volumes, print resources and other relevant learning materials are procured on the recommendations of department heads. The number of volumes and titles are added every year in accordance with the norms and standards set by AICTE and VTU from time to time.
- **Budget formulation:** Library Committee will conduct a meeting and prepare a budget plan for the next academic year. The budget plan will be submitted to the management through the principal.

**Library statistics & services**

			e-resources		
S/L	(E-Resources Subscribed through VTU Consortium) Publisher (2023-2024)	No. of e-Journals	No of e- Books(perpetual Access)		
1	Library Books Volumes/ Titles (Print) 23,258/3,599(UG – 21788, PG – 304, CC- 1107, SC /ST- 59)				
2	CD/DVD's 1149	1 Elsevier - Science Direct(Engg+CSE)	298		436
3	Bound Volumes of Journals 117	2 Taylor & Francis (Engineering )	585		4950
4	E-Books 40,933	3 Springer Nature(ME, CV, CS, EC, ME and allied branches)	690		14309
5	E-Journals 21,883	4 Tata McGraw Hill	-		505
6	Newspapers 7	5 DELNET Database (IM 7401)			10849
7	Magazines 5	6 Mint Books	-		3469
8	Print Journals 13	7 PACKT BOOKS	-		3000
9	Project reports 296	8 ProQuest	4900	-	
10	Reading Room Capacity 160	9 IEEE ASPP	198		
11	Digital Library D- Space	10 Emerald	212	-	
12	Library Automation Integrated Institutions Management software (IIMS), V- 2.1.3	11 New Age International	-		3415
13	Computers 17	12 Knimbus	15000+		
14	Area 540m2	13 NDLI (National Digital Library Membership) Reg. No INKANC42BYZHWWZ	-	-	
	Monday to Friday				
15	Library Working hours _ 9:00 AM to 5:00 PM				
	Saturday 9:00 AM to 1:30 PM				
		<b>Total</b>	<b>21,883</b>		<b>40,933</b>

**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	<b>Total</b>	<b>3,599</b>	<b>23,258</b>
6	Civil Eng.	205	2237			
7	Basic Science	171	3478			
8	Others/General	90	764			
	<b>Total</b>	<b>2,888</b>	<b>21,788</b>			

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	Citi 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	Ability to analyze, design, build and test analog and digital systems in the areas related to microelectronics, communication, signal processing, VLSI & Embedded systems
PSO2	Ability to identify and solve complex problems in electronics & communication engineering and provide efficient solutions using modern tools/algorithms working individually or in a team

# 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**

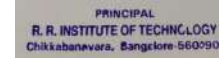
Name : Mahendra K V

Designation : Principal

Signature :



Seal of The Institution :



**Place :** Bangalore

**Date :** 20-05-2024 15:32:58

