

R R Institute of Technology Mechanical Engg.

Part A : Institutional Information

1 Name and Address of the Institution

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

2 Name and Address of Affiliating University

Visvesvaraya Technological University

3 Year of establishment of the Institution:

2008

4 Type of the Institution:

<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)

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

Name of Institutions	Year of Establishment	Programs of Study	Location
National Public School	2014	School	RR Campus, Chikkabanavara Bengaluru,
RR School of Architecture	2014	Bachelor of Architecture	RR Campus , Chikkabanavara, Bengaluru
RR Polytechnic	2010	Diploma in Engineering	RR Campus, Chikkabanavara, Bengaluru
RR Institute of Advanced Studies	2006	Master of Business Administration	RR Campus, Chikkabanavara Bengaluru
RR Institute of Management Studies	2010	B.Com, BBA (Aviation), BBA (Logistics), BCA (Cloud Computing), B.Com Tourism & Travel Management- Aviation (IATA)	RR Campus, Chikkabanavara Bengaluru,
RR college of Education	2004	B.Ed	RR Campus, Chikkabanavara Bengaluru,
RR College of Pharmacy	2005	D.Pharm, B.Pharm, M.Pharm (Pharmaceutics, Pharmacognosy), Pharm. D, Post Baccalaureate courses	RR Campus, Chikkabanavara Bengaluru,
Manjunatha College and School of Nursing	2003	B.Sc & M.Sc in Nursing, PB.B.Sc.Nursing, GNM, Research Centre in Ph.D	RR Campus, Chikkabanavara Bengaluru

RR Institute of Medical Sciences	2016	B.Sc. in Optometry Technology, Radiotherapy Technology, Perfusion Technology, Radiography and Imaging Technology, Cardia Care Technology, OTT & Anesthesia Technology	RR Campus, Chikkabanavara Bengaluru
NRR Hospital	2008	Multi Specialty health services	Hesarghatta Road, Chikkabanavara Bengaluru
Prakriya Hospital	2019	Multi Specialty health services	Nagasandra, Tumkur Road
National Academy of Learning	2017	Pre-University	RR Campus, Chikkabanavara Bengaluru

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

Name of Program	Program Applied level	Start of year	Year of AICTE approval	Initial Intake	Intake Increase	Current Intake	Accreditation status	From	To	Program for consideration	Program for Duration
BE	UG	2010	2010	60	Yes	60	Applying first time	--	--	Yes	4
Sanctioned Intake for Last Five Years for the BE											
Academic Year						Sanctioned Intake					
2023-24						60					
2022-23						60					
2021-22						60					
2020-21						120					
2019-20						120					
2018-19						120					
Electrical & Electronics Engineering	UG	2008	2008	60	No	60	Applying first time	--	--	0	4
Electronics & communication Engineering	UG	2008	2008	60	No	60	Applying first time	--	--	0	4
Computer science & Engineering	UG	2010	2010	60	Yes	180	Granted accreditation for 3 years for the period (specify period)	2022	2025	No	4
Sanctioned Intake for Last Five Years for the Computer science & Engineering											
Academic Year						Sanctioned Intake					
2023-24						180					
2022-23						120					
2021-22						120					
2020-21						60					
2019-20						60					
2018-19						60					
Information Science Engineering	UG	2010	2010	60	No	60	Granted accreditation for 3 years for the period (specify period)	2022	2025	0	4

Civil Engineering	UG	2010	2010	60	Yes	60	Granted accreditation for 3 years for the period (specify period)	2022	2025	No	4
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Sanctioned Intake for Last Five Years for the Civil Engineering

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

8 Programs to be considered for Accreditation vide this application:

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

9 Total number of employees in the institution:

A. Regular* Employees (Faculty and Staff):

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

B. Contractual* Employees (Faculty and Staff):

Items	2023-24		2022-23		2021-22	
	MIN	MAX	MIN	MAX	MIN	MAX
Faculty in Engineering (Male)	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:

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

11 Vision of the Institution:

The 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:

Mission of the Institution	
M1	To consistently strive for Academic Excellence
M2	To promote collaborative Research & Innovation
M3	To create holistic teaching learning environment that build ethically sound manpower who contribute to the stake holders operating at Global environment

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

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

NBA Coordinator, If Designated

PART B: Criteria Summary

Criteria No.	Criteria	Total Marks	Institute Marks
1	VISION, MISSION AND PROGRAM EDUCATIONAL OBJECTIVES	60	54.00
2	PROGRAM CURRICULUM AND TEACHING - LEARNING PROCESSES	120	104.00
3	COURSE OUTCOMES AND PROGRAM OUTCOMES	120	111.00
4	STUDENTS' PERFORMANCE	150	81.83
5	FACULTY INFORMATION AND CONTRIBUTIONS	200	135.09
6	FACILITIES AND TECHNICAL SUPPORT	80	70.00
7	CONTINUOUS IMPROVEMENT	50	40.00
8	FIRST YEAR ACADEMICS	50	41.56
9	STUDENT SUPPORT SYSTEMS	50	44.00
10	GOVERNANCE, INSTITUTIONAL SUPPORT AND FINANCIAL RESOURCES	120	109.00
	Total	1000	791

CRITERION 1	VISION, MISSION AND PROGRAM EDUCATIONAL OBJECTIVES	60
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The Department of Mechanical Engineering was setup in the year 2010 with an intake of 60 approved by AICTE & affiliated to Visvesvaraya Technological University, Belagavi later Research center was established in the year 2012. The Department has good number of doctorates with Research experience.

1.1	State the Vision and Mission of the Department and Institute	05
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Vision of the Institution

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

Mission of the Institution

M1	To consistently strive for Academic Excellence.
M2	To promote collaborative Research & Innovation
M3	To create holistic teaching learning environment that build ethically sound manpower who contribute to the stake holders operating at Global environment.

1.1.1	State the Vision and Mission of the Department
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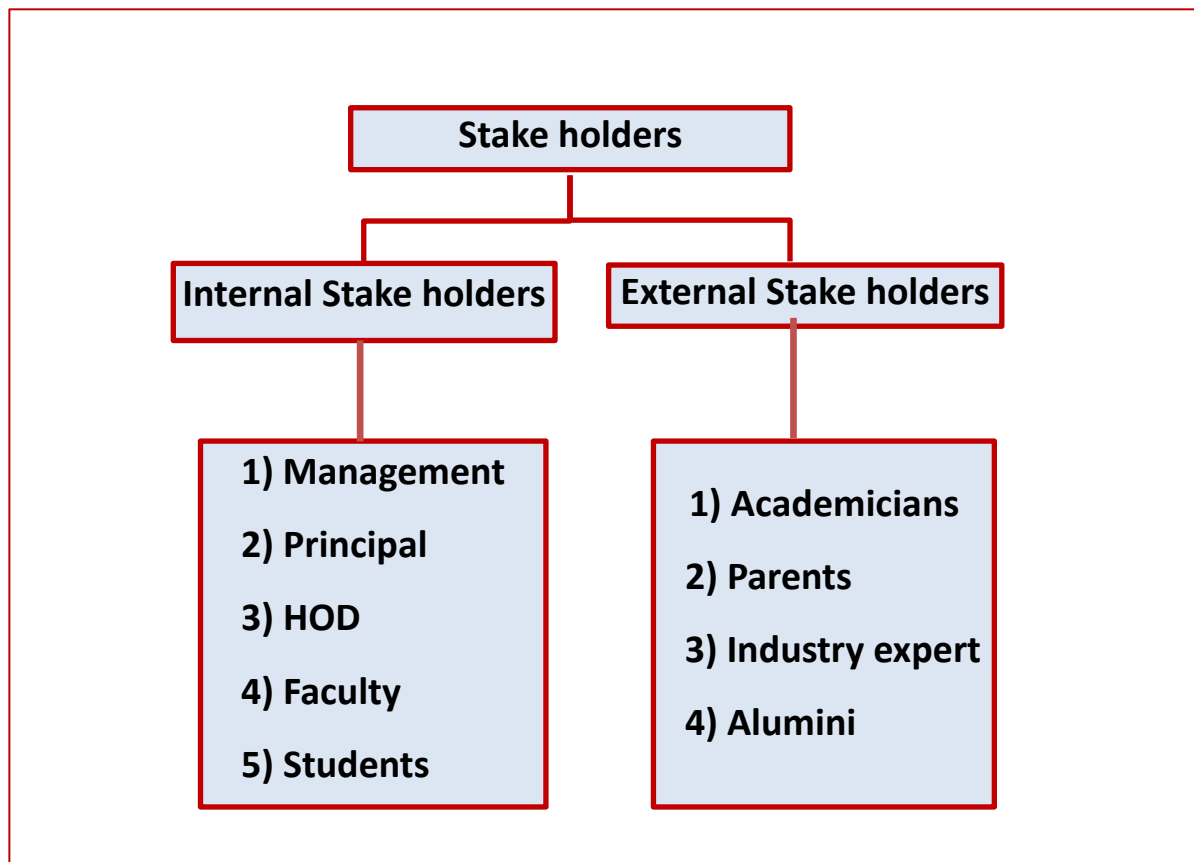
Vision of the Department

“To provide high quality technical education through creative & critical thinking to develop technically strengthened students which contribute the institute to emerge as a premier institute at national level”.

Mission of the Department

M1	To Produce qualified and skilled human resources, create R & D environment.
M2	To be a centre of excellence in the fields of Mechanical Engineering
M3	To shape young Engineers with Innovative skills, Employable, Entrepreneurial and leadership qualities so as to meet the demands of professionally challenging and stimulating avenues of the Industries.

1.1.2	List of Stake Holders Defines the Vision and Mission of the Department.	
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1.2	State the Program Educational Objectives (PEO's)	05
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PEO1	Provide the students with fundamental technical knowledge and skills required in mathematics, science, and engineering to recognize, analyze and solve the problems, and to apply these expertise's to generate new knowledge, ideas, concepts and/or products in industry and/or government to implement these solutions in practice.
PEO2	Provide students with the necessary instructions and practical experiences to work well in local and international team environments and to be effective written and oral communicators, both for communicating ideas to other people, mentoring, and for learning from others.
PEO3	Produce graduates who recognize the importance of and engage in life-long learning, whether through self-study, continuing education courses or workshops, or through formal graduate level education and encourage others to have this same motivation.

PEO4	Produce graduates who have an understanding of ethical responsibility and service towards their peers, employers, and society and follow these precepts in their daily lives.
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The Program Educational Objectives (PEOs) support and are in consonance with the Mission of the Institution and the department. The attempt was to define PEOs as broad based, general statements that describe the career and professional accomplishments that the program is preparing our graduates to achieve - describe long term program targets or directions of development and to ensure that the Program Educational Objectives (PEOs):

1.3	Indicate where the Vision, Mission and PEOs are Published and Disseminated among Stakeholders	10
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Sl.No	Published Places
1	Department website https://www.rrit.ac.in/mechanical.php
2	Institute website https://www.rrit.ac.in
3	Department HOD Chamber & Staff rooms.
4	Department Laboratories.
5	Department Notice Boards.
6	Department Classrooms.
7	On the cover pages of IA Books, Lab Journals and Assignment Books.
8	Workshops, Seminars. Faculty Development Programme (FDP)
9	Department Newsletter.
10	Parents meeting.
11	Alumni Association meeting and Alumni meets.

In addition to the above, we convey Vision, Mission and PEO's during the first day of each academic semester by HOD & respective class coordinators and also convey the same through departmental associations such as departmental forum. Apart from these Vision and Mission are disseminated to all the stakeholders of the program through faculty meetings, student awareness workshops, student induction programs etc.

1.4	Mention the Process for Defining Vision and Mission of the Department	25
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1.4.1	Process for Defining the Vision and Mission of the Department
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The department establishes the vision and mission in line with institution through a consultative process involving all the stakeholders and in establishing the Vision and Mission of the department, the following steps were followed as shown in Fig. 1.2.

Steps	Process
Step 1	Head of the Department & along with the Department Academic Committee (DAC) prepare the draft version of Vision and Mission of the department by looking into the Institute Vision and Mission.
Step 2	Drafted Vision and Mission statements are shared with the Stakeholders such as faculty, students, alumni, parents and employer for their views.
Step 3	Incorporate Ideas and suggestions obtained b the stake holders, If it is not satisfactory again review the Vision and Mission. This process is repeated until all the stake-holders approve Vision and Mission.
Step 4	Then the final approval of Vision and Mission statements is taken from the Department Advisory Board.
Step 5	Final Vision & Mission.

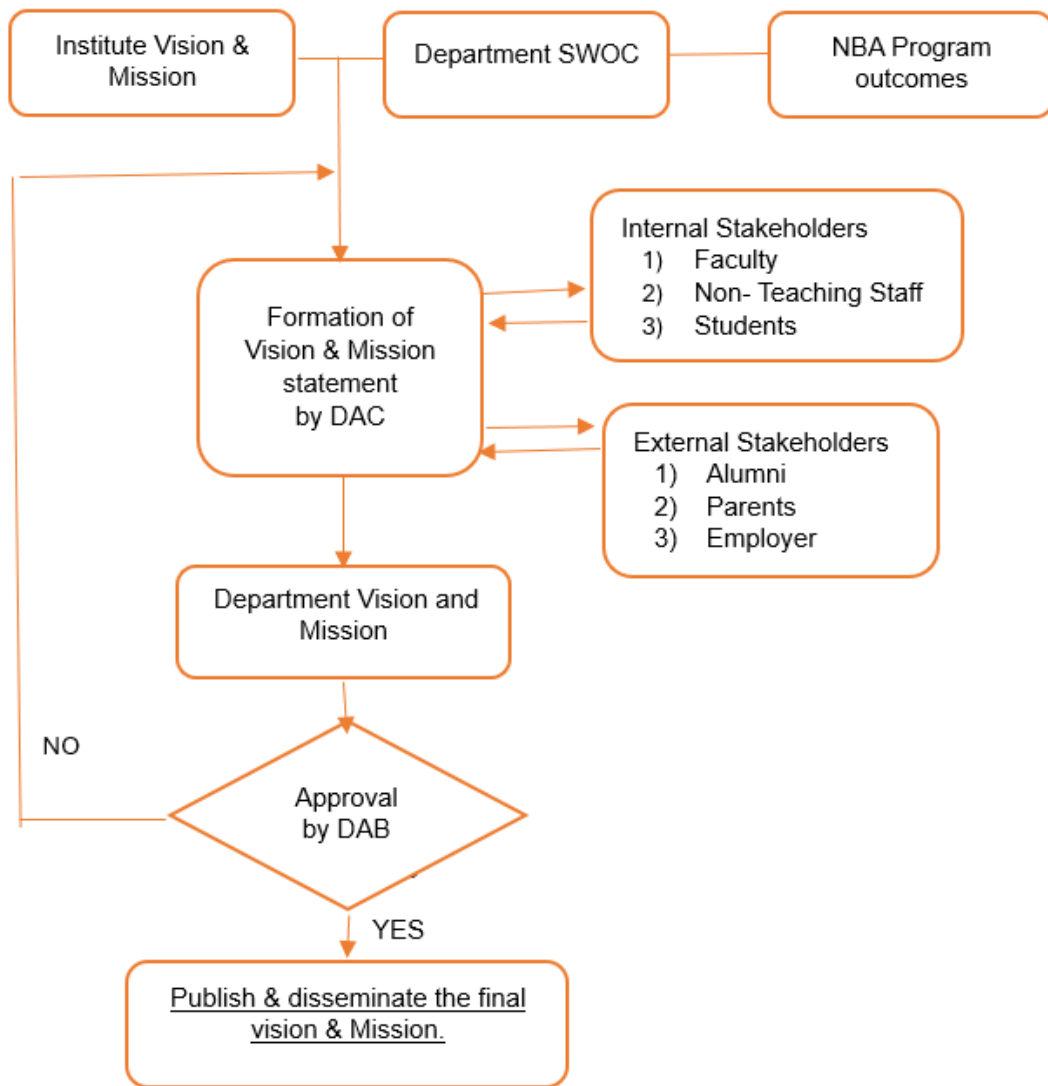


Fig. 1.2: Process for Defining the Vision and Mission of the Department

1.4.2	State the process for defining the PEOs of the Programme
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Steps	Process
Step 1	The Head of the Department along with DAC held session with all the faculty members for defining PEOs of the Department by considering the program outcomes, Institution & Department Vision & Mission statements.
Step 2	PEO statements were circulated among stake holders for their feedback
Step 3	The suggestions & modifications provided by the stake holders were analyzed in Department Advisory Board (DAB) meeting & final PEOs are formulated
Step 4	Final program educational objectives were forwarded for the approval in DAB
Step 5	The approved program educational Objectives were published & disseminated to all the stakeholders

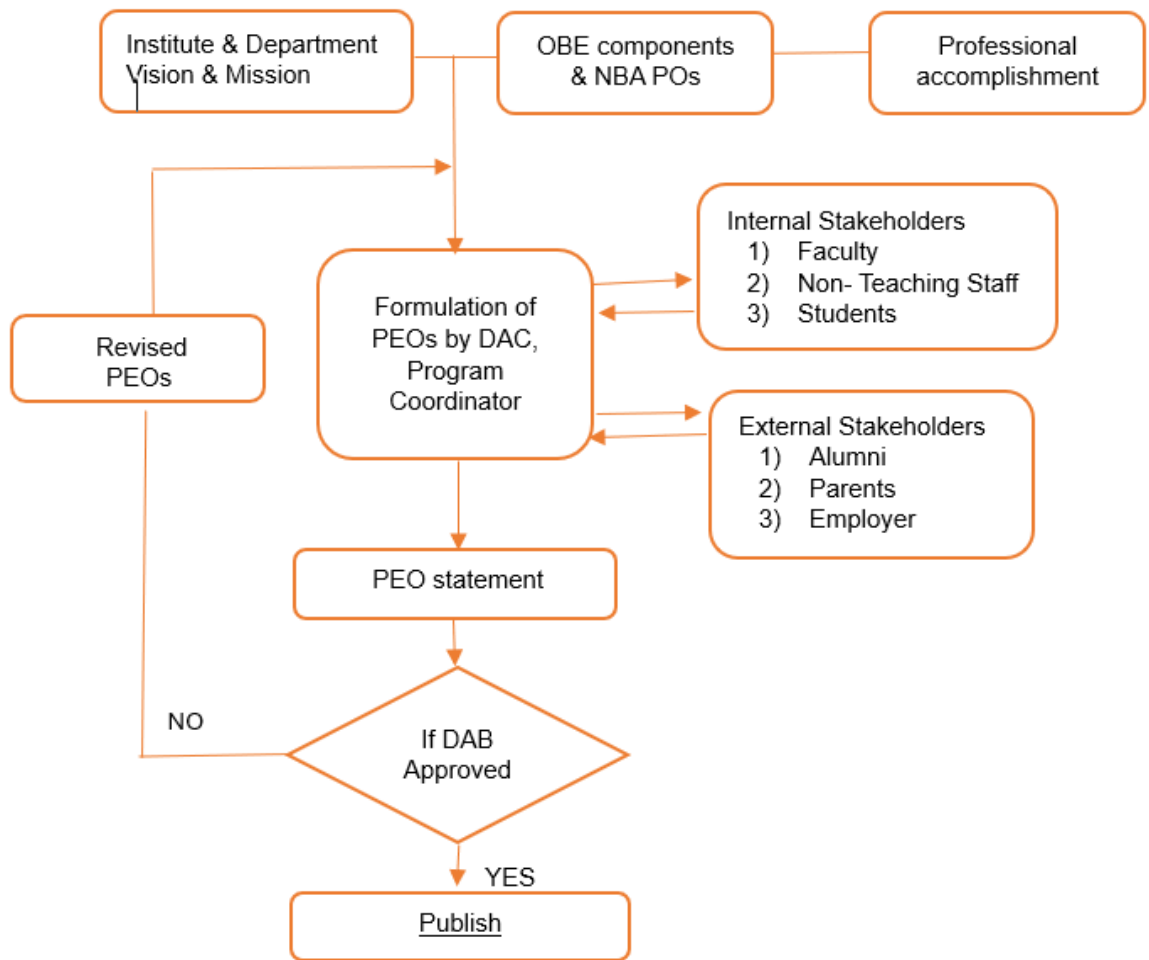


Fig. 1.3: Stake holder's involvement / relevance in the Process for defining the PEO's of the Department.

1.5	Establish consistency of PEOs with Mission of the Department (Generate a Mission of the Department – PEOs matrix with justification and rationale of the mapping)	15
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Table 1.6: Mapping PEO - Mission statements

	M1: To Produce qualified and skilled human resources, create R & D environment.	M2: To be a centre of excellence in the fields of Mechanical Engineering	M3: To shape young Engineers with Innovative skills, Employable, Entrepreneurial and leadership qualities so as to meet the demands of professionally challenging and stimulating avenues of the industries.
PEO 1:	Graduates are thorough in academic fundamentals of mechanical engineering and management, thus will excel in academics to large extent and therefore have a strong correlation	Graduates having acquainted with the academic fundamentals of mechanical engineering & management, will take up mini projects, major projects therefore have a Strong correlation.	Graduates having acquainted to the modern tool usage by under-going training in Modelling and analysis tools they have employable skills. Strong correlation.
PEO 2:	Graduates are thorough in excellent skills of mechanical engineering, thus will excel in academics and industry to large extent and therefore have a Moderate correlation.	Graduates are thorough in excellent skills of mechanical engineering, will take up internship program in industries and are capable of collaborating to a relative extent, therefore have a moderate correlation.	Graduates are thorough in excellent skills of Management therefore have a Strong correlation
PEO 3:	Graduates are thoroughly aware of higher studies, R&D and socio-ethical values through mechanical engineering, thus will excel in academics and industry to large extent and therefore have a Low correlation.	Graduates have less exposure to the industry projects and hence less innovative skills. Low correlation.	Graduated having acquainted with the academic fundamentals of mechanical engineering & management, will imbibe socio-ethical development and entrepreneurship skills to certain extent, therefore have a Moderate correlation
PEO 4:	Graduates are aware of management skills and socio-ethical values through mechanical engineering. moderate correlation	Graduates undertake projects in team and hence they will be able to interact with each other and express their ideas. moderate correlation	Graduates have very less exposure to the societal values, hence they have Low correlation.

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PEO Statements		M1	M2	M3
PEO1	Provide the students with fundamental technical knowledge and skills required in mathematics, science, and engineering to recognize, analyze and solve the problems, and to apply these expertises to generate new knowledge, ideas, concepts and/or products in industry and/or government to implement these solutions in practice.	3	3	3
PEO2	Provide students with the necessary instructions and practical experiences to work well in local and international team environments and to be effective written and oral communicators, both for communicating ideas to other people, mentoring, and for learning from others.	2	2	3
PEO3	Produce graduates who recognize the importance of and engage in life-long learning, whether through self-study, continuing education courses or workshops, or through formal graduate level education and encourage others to have this same motivation.	1	1	2
PEO4	Produce graduates who have an understanding of ethical responsibility and service towards their peers, employers, and society and follow these precepts in their daily lives.	2	2	1

CRITERION 2	PROGRAM CURRICULUM AND TEACHING – LEARNING PROCESSES	120
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2.1	Program Curriculum	20
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2.1.1	State the process used to identify compliance of University curriculum for attaining the Program Outcomes and Program Specific Outcomes as mentioned in Annexure I. Also mention the identified curriculum gaps, if any	10
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Department of Mechanical Engineering curriculum is affiliated to Visvesvaraya Technological University (VTU), Belagavi, Karnataka, comprises of

- a) Humanities, social sciences & Management courses (HSMC).
- b) Basic Science courses (BSC)
- c) Engineering Science courses (ESC),
- d) Professional core courses (PCC)
- e) Professional Elective courses
- f) Open elective courses (OEC)
- g) Project work h) seminar
- i) Internship &
- j) Mandatory courses.

The program curriculum is in compliance with AICTE norms courses.

The Table 2.1(a) gives a curriculum structure of curriculum followed by the VTU. Some components of CO's/ PO's attainment are not included in the curriculum provided by the affiliated university,

The Institution makes additional efforts to impart such knowledge by covering aspects through "CONTENTS BEYOND SYLLABUS". We add content beyond syllabus by proper "GAP analysis" process.

Table 2.1(a): Program Curriculum structure

Total Course credits of the Program										
SEM	HSMC	BSC	ESC	PCC	PEC	OEC	Mini Project/ Project	Internship	Seminar	Total
I SEM	01	09	10							20
II SEM	01	09	10							20
III SEM	01	03		20						24
IV SEM	01	03		20						24
V SEM	01			24						25
VI SEM				16	03	03	02			24
VII SEM				10	06	03	01			20
VIII SEM				03	03		08	03	01	18
Total	05	24	20	93	12	06	11	03	01	175

Table 2.1: Program structure of VTU structure as followed by Department of Mechanical Engineering, RRIT

Program structure	VTU Credits (Total 175)
Humanities, social sciences & Management courses (HSMC)	8
Basic Science courses (BSC)	24
Engineering Science courses (ESC)	20
Professional core courses (PCC)	90
Professional Elective courses (PEC)	12
Open elective courses (OEC)	06
Project work, Internship & Seminar	15
Mandatory courses	Dipmaths,

Referring university curriculum all the Subjects are mapped with Twelve Program Outcomes. The percentage compliance of subjects with all the POs individually has been tabulated below:

Further continuous improvement has been mitigated by organizing seminars and workshops, personality development programs, inviting experts to give talks and interact with students and site visits.

Table 2.3: Contribution of Curriculum

Course component	Curriculum content (% of contribution)	PO	PEO
1. Humanities, social sciences & Management courses (HSMC)	8/175=4.57%	1, 2, 7, 8	1, 2, 3,4
2. Basic Science courses (BSC)	24/175=13.71%	2, 3, 4	1,2,3
3. Engineering Science courses (ESC)	20/175=11.43%	5, 9	1,2,3,4
4. Professional core courses (PCC)	90/175=51.43%	9, 10, 11	1,2,3
5. Professional Elective courses (PEC) & Open elective courses (OEC)	18/175=10.29%	2, 3, 4	1, 2, 3
6. Project work, Internship & Seminar	15/175=8.57%	2, 3, 4	1, 2, 3

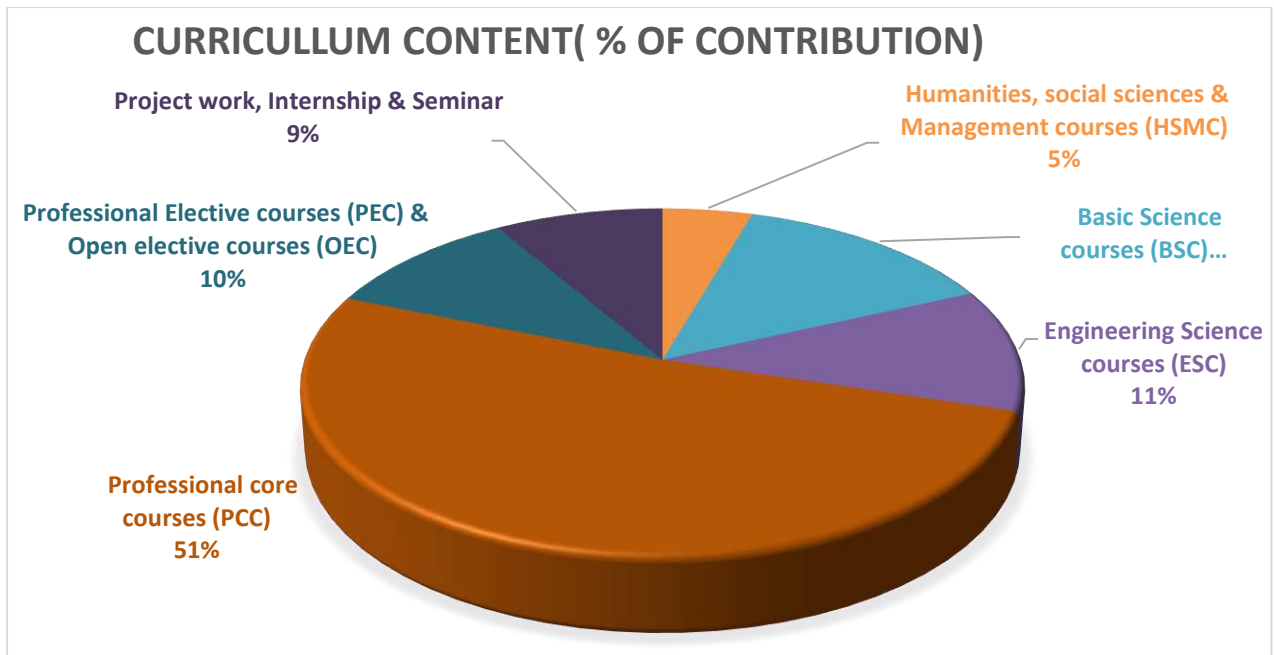
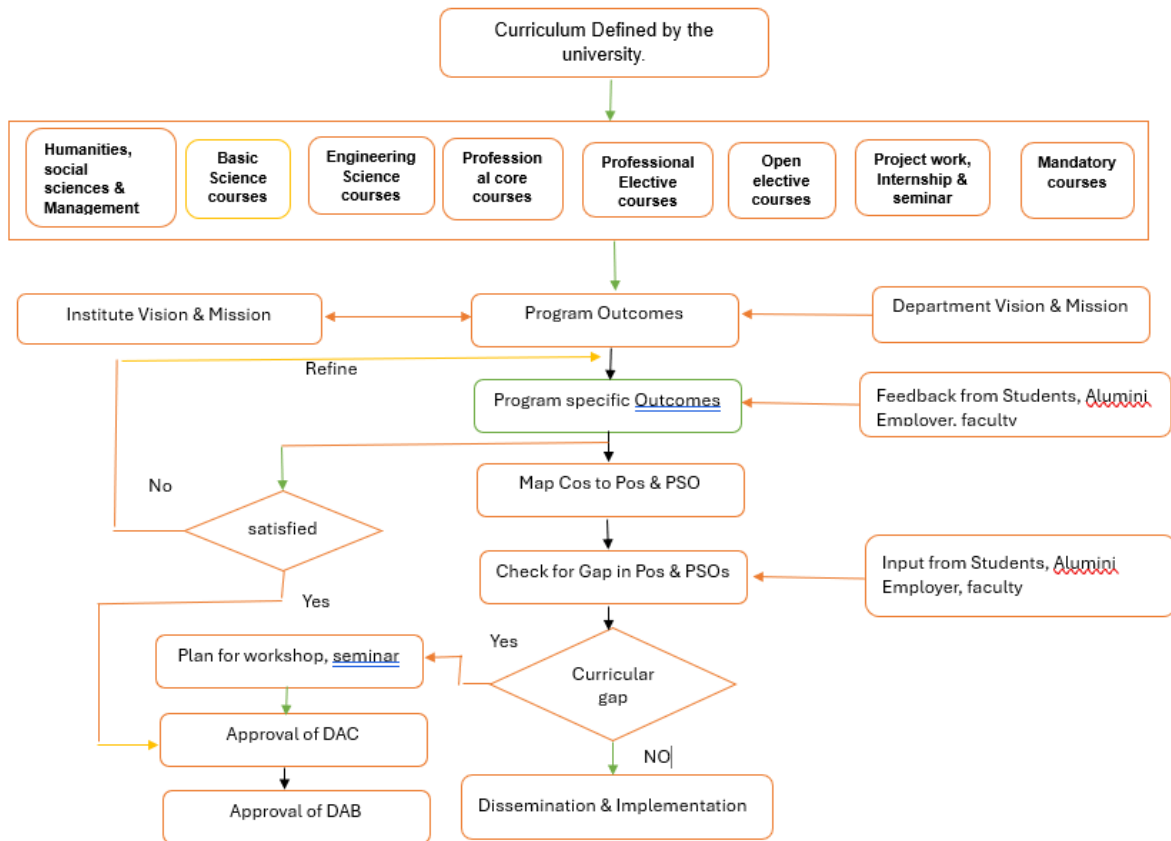


Fig. 2.2: Curriculum Content

PSO'S of the Department	
PSO1	Demonstrate the basic knowledge of science, mathematics, material Science, Engineering and technology to formulate and solve mechanical engineering problems.
PSO 2	Design, synthesis and analyze mechanical, fluid, thermal and multidisciplinary component or systems by adopting analytical, numerical and experimental techniques.



Process to define PSOs of the Department

- Define or refine PSOs whenever 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)

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.

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SI.NO	Subject	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS01	PS02
1	18MAT11	✓	✓	✓									✓	✓	✓
2	18PHY12	✓	✓	✓	✓				✓	✓		✓	✓		
3	18ELE13	✓	✓	✓							✓		✓		
4	18CIV14	✓	✓	✓	✓		✓	✓		✓	✓	✓	✓		
5	18EGDL15	✓	✓			✓	✓				✓		✓	✓	
6	18PHYL16	✓	✓	✓					✓	✓					
7	18ELEL17	✓	✓							✓	✓				
8	18EGH18								✓	✓	✓		✓		
9	18MAT21	✓	✓	✓									✓	✓	✓
10	18CHE22	✓	✓	✓	✓				✓	✓		✓	✓		
11	18CPS23	✓	✓			✓							✓	✓	
12	18ELN24	✓	✓			✓	✓						✓	✓	
13	18ME25	✓	✓	✓				✓					✓	✓	✓
14	18CHEL26	✓	✓	✓					✓	✓					
15	18CPL27	✓	✓			✓							✓	✓	✓
16	18EGH28								✓	✓	✓		✓		
17	18MAT31	✓	✓	✓									✓	✓	✓
18	18ME32	✓	✓	✓				✓					✓	✓	✓
19	18ME33	✓	✓	✓				✓					✓	✓	✓
20	18ME34	✓	✓	✓	✓			✓					✓	✓	✓
21	18ME35B	✓	✓	✓				✓					✓	✓	✓
22	18ME36B	✓	✓	✓		✓		✓					✓	✓	
23	18MEL37B	✓	✓				✓						✓	✓	✓
24	18MEL38B	✓	✓	✓										✓	✓
25	18KVK39						✓		✓		✓				
26	18MAT41	✓	✓	✓									✓	✓	✓
27	18ME42	✓	✓	✓				✓					✓	✓	✓
28	18ME43	✓	✓	✓		✓		✓					✓	✓	✓
29	18ME44	✓	✓	✓				✓					✓	✓	✓
30	18ME45A	✓	✓	✓		✓		✓					✓	✓	✓
31	18ME46A	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
32	18MEL47A	✓	✓	✓	✓	✓		✓						✓	✓
33	18MEL48A	✓					✓	✓					✓	✓	
34	18CPH49						✓		✓		✓		✓		

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35	18ME51	✓	✓		✓		✓	✓	✓	✓	✓	✓	✓		
36	18ME52	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
37	18ME53	✓	✓	✓				✓					✓	✓	✓
38	18ME54	✓	✓	✓									✓	✓	✓
39	18ME55	✓	✓	✓			✓	✓				✓	✓	✓	✓
40	18ME56	✓	✓	✓	✓									✓	✓
41	18MEL57	✓	✓				✓						✓	✓	✓
42	18MEL58	✓	✓	✓		✓	✓	✓					✓	✓	✓
43	18CIV59						✓	✓	✓				✓		
44	18ME61	✓	✓	✓		✓		✓				✓	✓	✓	✓
45	18ME62	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
46	18ME63	✓	✓	✓									✓	✓	✓
47	18ME641	✓	✓				✓	✓					✓	✓	
48	18CV653	✓					✓	✓		✓	✓	✓	✓		
49	18MEL66	✓	✓	✓		✓	✓				✓		✓	✓	✓
50	18MEL67	✓	✓	✓				✓					✓	✓	✓
51	18MEMP68	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
52	18ME71	✓	✓	✓	✓	✓		✓					✓	✓	✓
53	18ME72	✓	✓	✓		✓	✓						✓	✓	✓
54	18ME731	✓	✓	✓									✓	✓	✓
55	18ME744	✓		✓	✓	✓	✓						✓	✓	✓
56	18EE754	✓	✓	✓			✓	✓					✓	✓	
57	18MEL76	✓		✓		✓	✓						✓	✓	✓
58	18MEL77	✓	✓	✓	✓		✓			✓				✓	✓
59	18MEP78	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
60	18ME81	✓	✓	✓			✓	✓	✓					✓	✓
61	18ME823	✓			✓	✓				✓			✓	✓	✓
62	18MEP83	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
63	18MES84	✓	✓	✓	✓	✓	✓			✓	✓		✓	✓	✓
64	18MEI85	✓	✓	✓		✓			✓	✓	✓		✓	✓	✓
	No of courses	60	56	50	34	41	45	40	36	35	36	30	57	55	49
	% of Articulation	94	88	78	53	64	70	63	56	55	56	47	89	86	77

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

Sl No	POs & PSOs	% of Mapping	Shortcomings Identified in Program Curriculum
1	PO1: Engineering Knowledge:	94	Most Courses correlated to engineering knowledge
2	PO2: Problem analysis:	88	Strong correlation to mathematical knowledge
3	PO3: Design/development of solutions:	78	Moderate correlation in applying engineering knowledge to design
4	PO4: Conduct investigations of complex problems:	53	Moderate research literature review to courses specified
5	PO5: Modern Tool Usage:	64	Moderate use of software tools in curriculum
6	PO 6: The Engineer and Society:	70	Moderate integrated approach in curriculum towards integrated professional practice
7	PO7: Environment and Sustainability:	63	Moderate integrated approach in curriculum towards Environment and sustainability
8	PO8: Ethics	56	Moderate approach towards ethics in curriculum practice
9	PO9: Individual and Team Work:	55	Moderate approach towards experiential learning is minimum and limited courses for team works
10	PO10: Communication	56	Moderate of exposure due to limited hours allocated, poor communication skill
11	PO11: Project Management and Finance:	47	Limitation of duration in executing project and less exposure to finance management skill
12	PO12: Life-long learning:	89	Course components strongly address life skills
13	PSO1	86	Strongly meets industry needs
14	PSO2	77	Limitation to product development skill in curriculum

Action Plan

The department identifies the curriculum gaps and prepares the Action plan for the Gaps.

The Action plan prepared is discussed in the faculty meeting and activities to be carried out in the subsequent semester.

Initiatives taken to address the curriculum gap

Industrial Visits: industrial visits are organised to learn the practical perspective of theoretical concepts.

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

Workshops: The students are encouraged to attend hands on training to acquire skill.

2.1.1.2	Identified Gaps for continuous improvement:	
	<ul style="list-style-type: none">❖ Curriculum on professional ethics, legal, safety, social issues and lifelong learning is❖ insufficient. (PO8)❖ Curriculum focussing on knowledge to acquire management skills to work in diversified and multidisciplinary environment needs to be improved. (PO11)❖ Curriculum focussing on knowledge to acquire lifelong learning skills to work in diversified and multidisciplinary environment needs to be improved. (PO12)	
2.1.2	State the delivery details of the content beyond the syllabus for the attainment of PO's and PSO's	10

The Department Identifies the content beyond the syllabus for attainment of Program outcomes and Program specific outcomes are delivered by any one following methods.

1. Industrial Visits:

The Industrial visits are regularly arranged to Provide students with a practical perspective of theoretical concepts and exposure to the real time environment.

2. Workshops:

Workshops helps the students to learn practically and apply a specific capability or skillset.

3. 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.

4. 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.

5. 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.

6. 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.

7. 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 must 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.

Industrial Visits



Visit to ACE Designers on 03/08/2021



Visit to Vishnu Forge Ltd on 02/07/2023



Visit to Bureau of Indian Standards on 08/07/2022



Workshop on creo Modelling



workshop- “Entrepreneurship and Electric Vehicles,- innovation and future trend”



Workshop on automation and different types of sensors used in industrial application- Mr. Venugopal.

2022-23

Sl. No.	Gap	Action taken	Date-Month-Year	Resource Person with designation	% of students	Relevance to POs, PSOs
1	Fundamental to rock mechanics principles and applications	SDP on “In-situ stress measurements and its applications	12/12/2022	Mr. Vikram S Scientist, Geotechnical Engg. Dept., National Institute of Rock Mechanics, Bengaluru	30	PO3, PO7
2	Standardization	“One day training program on standards”	26/12/2022	Mr. Pradeep Kumar, Deputy Director, BIS, Bengaluru	113	PO6, PO7, PO8, PO12
3	Automated machine learning	Workshop on “Auto ML”	17/04/2023	Mr. A M Govind Kumar Director, Seaport AI	39	PO4, PO5, PO11, PO12
4	Product specific Standards	“Standard writing Competition	16/06/2023	Mr. Mohan Kumar P S BIS, Bengaluru	32	PO6, PO7, PO8, PO9, PO12

2021-22

Sl. No.	Gap	Action taken	Date-Month-Year	Resource Person with designation	% of students	Relevance to POs, PSOs
1	Material inspection methods	Certificate Program on Destructive and Non-Destructive testing	23/11/2021 to 27/11/2021	Dr. Channabasavaraj Dr. Amarnath G Dr. Manjunatha G Mr. Kalburgi Bharath Mr. Murali G E, Mr. Harish M R	33	PO6, PO7, PO8, PO9, PO10, PO12

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				Dept. of Mechanical, RRIT, Bengaluru		
2	Automated manufacturing process	Webinar on Mastercam for Education	27/12/2021	Mr. Sitansu Mohanty, Technical Director, Mastercam India	31	PO4, PO5, PO10, PO12
3	Cleanliness and hygiene	Awareness Campaign on Swachatha /COVID by MSME Bengaluru	22/12/2021	Mr. A Shivakumar, Assistant Director, MSME, Bengaluru	50	PO6, PO7, PO8, PO9
4	Entrepreneurship	Two days workshop on “Entrepreneurship and Electric Vehicles”	23/12/2021 to 24/12/2021	Mr. Naveen Chander, Founder & Director, 3Q Sutranta LLP, Bengaluru Mr. Shravan, Managing Director, Mastie bikes Pvt. Ltd. Bengaluru	64	PO3, PO6, PO7, PO9, PO10, PO11
5	Career in modern manufacturing industries	Current trend in Industry 4.0 and technical career guidance	02/12/2021	Mr. Mohan Shamanna , CEO, Indoskill , Bengaluru	20	PO6, PO10, PO11
6	Automation	Seminar on “Industrial application of sensors and transducers”	10/01/2022	Mr. R Venugopal, MD, Venjay Automation, Bengaluru	55	PO3, PO4, PO7
7	Software development and data analysis	Workshop on “Python coding	13/01/2022 to 15/01/2022	Mr. Mohan Shamanna , CEO, Indoskill Mr. Mohammed Azr Hussain CTO, Indoskill, Bengaluru	60	PO2, PO3, PO4 PO5, P10, PO12
8	Surface modeling	Certificate program on “3D-surface modeling using solid edge”	08/04/2022	Dr. Channabasavaraj Dr. Amarnath G, Dr. Manjunatha G Mr. Kalburgi Bharath Mr. Murali G E Mr. Deepak A R Mr. Srinivas K R	25	PO3, PO4, PO5

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				Dept. of Mechanical, RRIT, Bengaluru		
9	Construction technology	Seminar on “Advances & career opportunities in construction technology”	16/05/2022	Mr. Prasad K V Assistant Professor NICMAR, Hyderabad	42	PO1, PO6, PO7, PO11
10	CNC Machines & NC programming	Industrial visit	03/08/2021	GT & TC, Rajajinagar Bengaluru	26	PO1, PO5, PO9, PO12
11	Heat treatment and Forging	Industrial visit	30/04/2022	Vishnu Forge Limited, Bengaluru	25	PO9, PO10, PO11, PO12
12	CNC Machines & NC programming	Industrial visit	20/06/2022	IMTEX Forming BIEC, Bengaluru	32	PO1, PO5, PO9, PO12
13	Standardization	Industrial visit	08/07/2022	Bureau of Indian Standard Bengaluru	29	PO6, PO7, PO8, PO12

2020-21

Sl. No.	Gap	Action taken	Date- Month- Year	Resource Person with designation	% of students	Relevance to POs, PSOs
1	Entrepreneurship	Entrepreneurship Awareness	29/08/2020	Sumanth S Athreya, Founder & Design Director, Yantrova, Bangalore	50	PO3, PO6, PO7, PO9, PO10, PO11
2	Awareness on new technologies	Seminar on “Preparing for technology careers of tomorrow”	23/10/2020	Mr. Abhishek R Patil CEO & Founder Zcientia Labs Pvt. Ltd.	100	PO6, PO8, PO12

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3	High Yielding Strength Materials	Seminar on “Introduction to HYSD bars and proper usage on site”	07/11/2020	Mr. Anirudh Shah AGM – Technical SK Steeltech, Bengaluru	44	PO1, PO3, PO7
4	Safety precautions	Seminar on “Managing Risk associated with foundry work”	21/11/2020	Dr. Shivam Professor, NIT, Puduchery	31	PO6, PO7, PO8, PO9
5	New way of working	Seminar on “corporate and new normal”	31/05/2021	Dr. Mamatha G, Dept. of ISE RNS institute of Technology, Bengaluru	42	PO6, PO7, PO8, PO12
6	Overcome misunderstandings and conflicts.	Seminar on “challenges of intercultural management”	03/06/2021	Dr. Mike Hoffmeister, Trainer and life coach,, Ostfalia University of Applied Sciences, Germany	79	PO9, PO10, PO12
7	Product design skills	One day Seminar on “Developing Employability skills”	10/06/2021	Mr. Srinivasa Gopal COE, DesignTech Systems Pvt. Ltd.	53	PO3, PO5, PO9, PO11
8	Heat treatment and solidification	One day Seminar on “Development of functionally graded materials through directional solidification”	11/06/2021	Dr. Ramesh M R, Associate professor, Dept. of Mechanical Engg., NIT, Surathkal	344	PO1, PO12
9	Identify opportunities	Webinar on “Career pathway and study abroad opportunities”	13/07/2021	Mr. Joel Noronho AECC Global, Karnataka	56	PO7, PO10



Students attending “One day workshop programme on AutoML”



Certificate Program on the —3D sur-face modelling using Solid Edge

2.2	Teaching-Learning Processes	100
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2.2.1	Describe processes followed to improve quality of Teaching and learning	25
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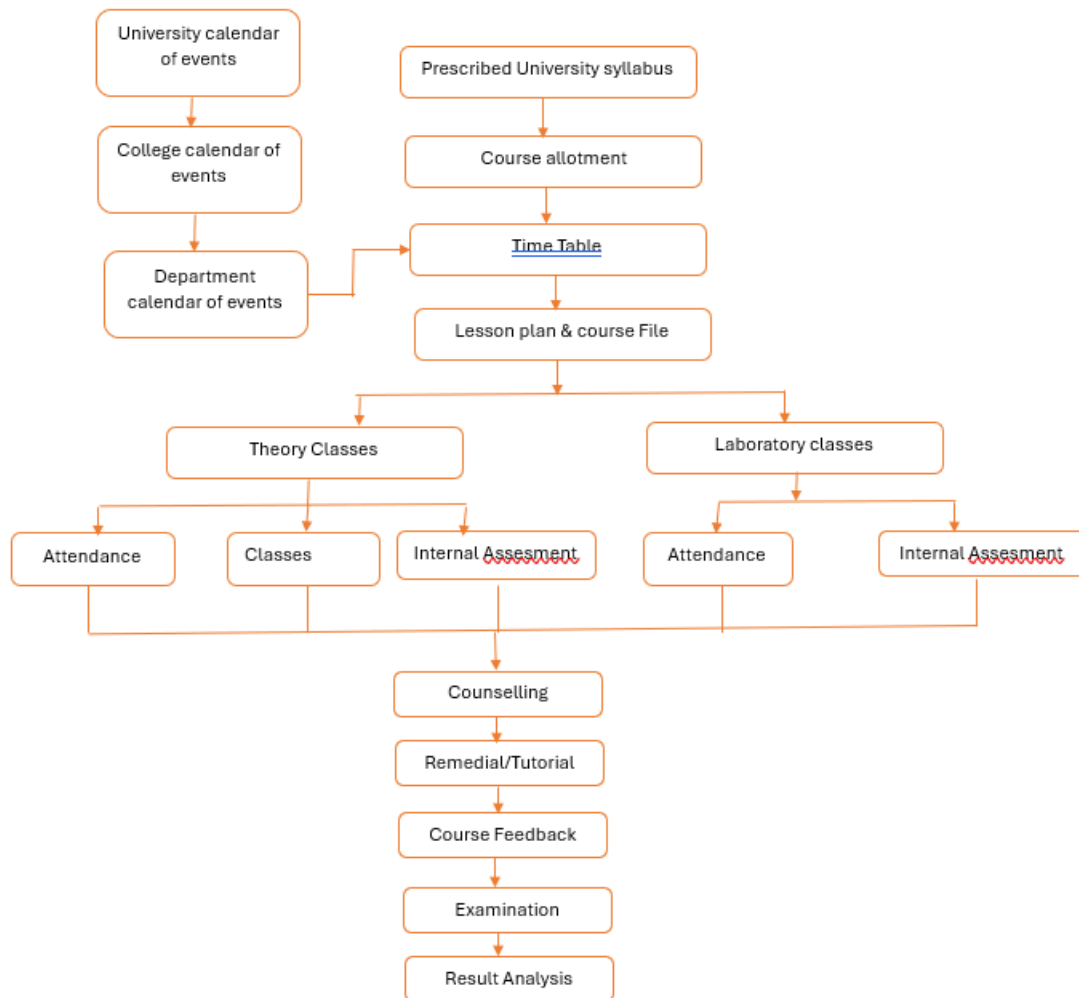


Fig.2.2.1a: Process followed for Teaching and Learning

2.2.1.1	Initiatives and implementation details of Improving Instruction Methods
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The academic planning begins with university calendar which depicts the semester beginning, last working day, tentative schedule of practical and theory examination.

- ❖ Based on the VTU calendar of events, college and department calendar of events will be prepared. College calendar of events consists of the activities planned for the semester which includes internal test dates, total number of working days and holidays.
- ❖ The college calendar of events is prepared and circulated among the faculties and displayed on the notice board.

- ❖ Department calendar of events contains conduction of events like organizing internal assessment tests, guest lectures, conferences, industrial visits, workshops etc.
- ❖ Faculties maintain the academic course file.
- ❖ Industrial visits are arranged to reduce the curriculum gaps.

The student academic assessment consists of:

- ❖ For 2022 scheme: Continuous Internal Evaluation (50 Marks) and Semester End Examination (50 Marks)
- ❖ For 2021 scheme: Continuous Internal Evaluation (50 Marks) and Semester End Examination (50 Marks)
- ❖ For 2018 scheme: Continuous Internal Evaluation (40Marks) and Semester End Examination (60 Marks)

The Continuous Internal Evaluation (CIE) consists

2018 Scheme: Three tests are conducted & the average of the three test marks and Assignments are considered for 2018 scheme.

2022 Scheme: Two tests are conducted, and the average of two tests marks and Assignments /Seminars/Quiz will be considered for the 2022 scheme for the award of final CIE marks.

The question papers for the Semester end examination are set by VTU. The final marks will be awarded by considering continuous internal evaluation marks and Semester End Examination marks.

(A) Adherence to Academic Calendar

- ❖ Department Calendar of events is prepared in line with VTU and College calendar of events, All the activities in the department are planned well before commencement of the semester. The Department strictly adheres to the academic calendar for conducting several academic activities. The HOD and senior faculty members analyses department calendar and will be incorporated with additional activities to meet the curriculum gap.
- ❖ The department calendar of events comprises of academic activities like, Internal Test dates, internal assessment, internal marks display, proctor meeting, parent teachers meeting, assignment submission, conference, orientation program, alumini meet, and Laboratory examination schedule.
- ❖ Once the calendar is released, the other connecting academic activities take the initiation in the department. The Head of the Department allocates the courses to faculty, who in turn prepare the course outcomes (CO) for each of the courses and map the COs with POs and PSOs employing the numeric weightages/ratings. Subject

allotment is done well ahead and lesson plans, course plan, soft and hard copies of the lecture notes are kept ready. Individual faculty members will prepare the course plan and lesson plan for the semester adhering to the department calendar of events.

- ❖ The academic calendar allows the teachers and the students to space out their teaching and learning practice and evaluation process. The calendar clearly illustrates the duration of class work, CIE and SEE examinations. The calendar is disseminated to students and faculty through circulars, displayed on noticeboards, and is also posted on website. Taking a cue from this academic calendar the teaching learning process is designed and described.

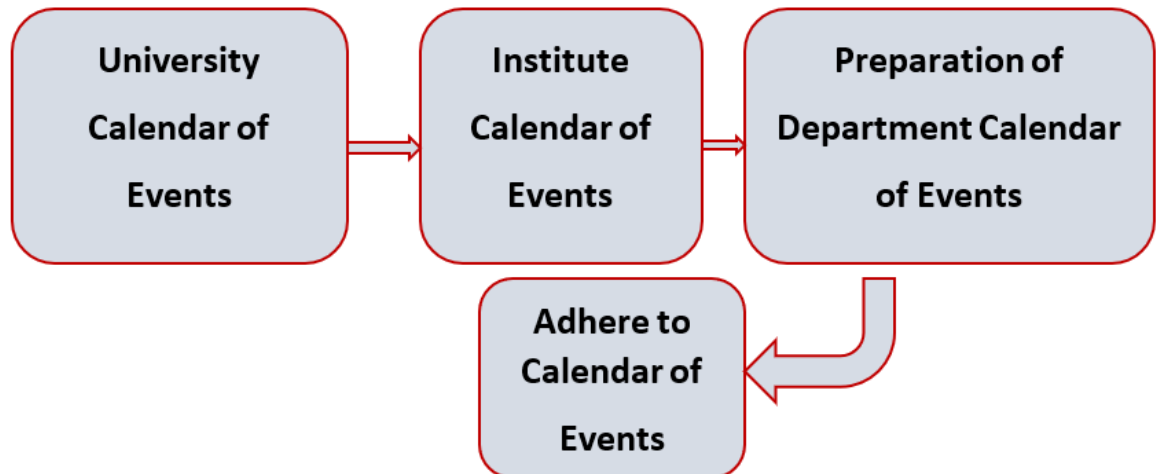


Figure 2.2.1b: Adherence to Academic Calendar

B. Course Delivery Methods:

The classroom lectures are delivered by the faculty through various educational tools such as

- Chalk and talk
- Power point presentation (PPT) (Smart board)
- Demonstration of Experiments
- Assignments
- Quiz
- Tutorials (Question bank)
- Seminars

Lectures	Classroom lectures are conducted using basic and conventional method of disseminating information to the students as per the curriculum. Students are encouraged to think and analyse the engineering problems.
Power point Presentations (Smart board)	Ideas and concepts taught during lectures are reinforced in the minds of students with the aid of presentations and videos.
Tutorials	Tutorials help the students in analysing and solving the engineering problems based on the theory dealt during lectures. The tutorial sessions make the concept clear to the students.
Assignments	Assignments make students self-reliant in solution of solving problems through understanding of theory through practice
Laboratory Experiments	Exposes the students on experimental and practical aspects of theory studied in classrooms. Lab-experiments help students in verifying the theory concepts by interpretation of results. Laboratory experiments are carried out in teams, thus helps in developing the spirit of working together as a team in the minds of young students.
Seminars	Students are made to present a seminar during their academic year. In this, the students are supposed to present on a particular topic by referring to various books, Journals of National and International repute.

C. Methodologies to support slow learners and encourage bright students:

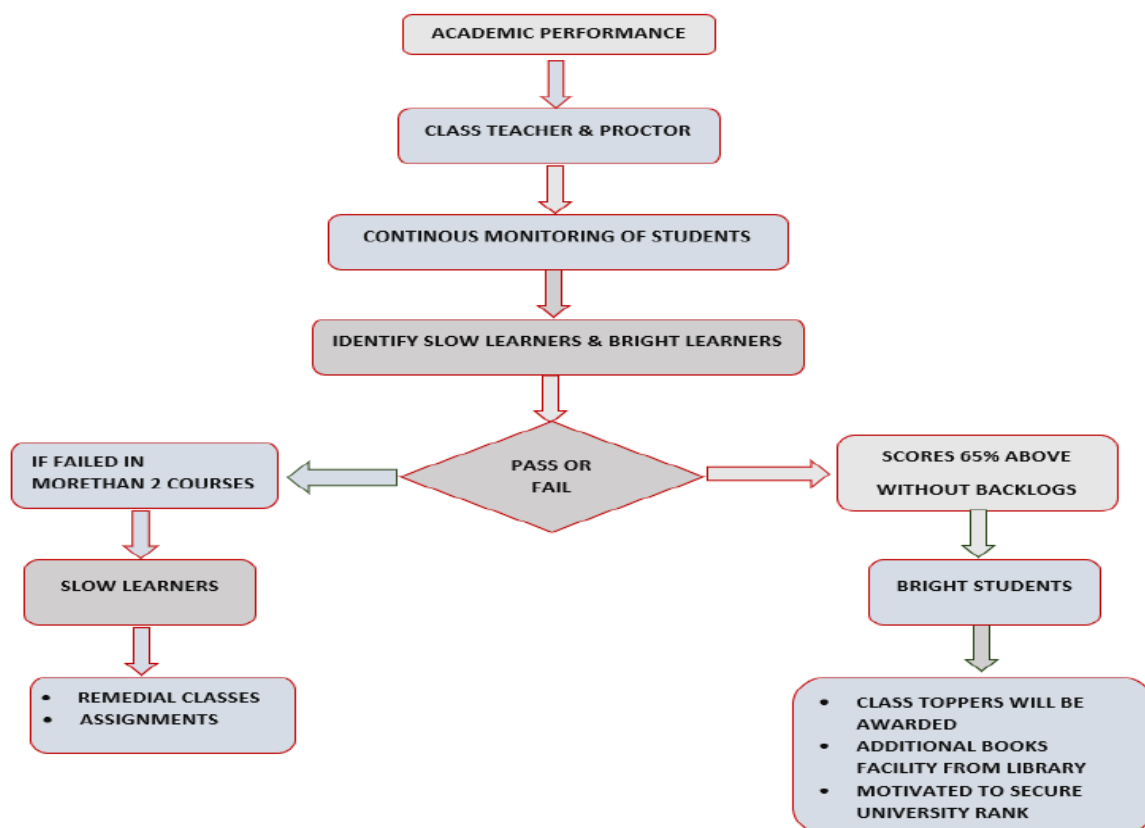


Fig.2.2.1c Methodologies to identify & improve slow learners and to encourage Bright Students

Slow Learners:

- ❖ Students who fail in 2 subjects in semester end examination are considered as slow learners.
- ❖ Class teachers and Subject teachers will identify slow learners who score less than average marks in internal assessment.
- ❖ After identifying, the student performances are informed to their parents and special classes are conducted.

Bright Students:

- ❖ Students with good academic performance in semester end examination are considered as bright students.
- ❖ Students are encouraged to participate in workshops, seminars, paper presentations.
- ❖ Students are given chance to organize technical programs at department level.

D. Quality of classroom teaching:

The following innovative teaching methods are adopted by the faculty:

Faculty members are making use of online sources like National Program on Technology Enhanced Learning (NPTEL) for effective teaching.

Smart boards, projectors, models and charts are used as teaching aids.

Well-structured lesson plans are prepared and executed for all theory and practical courses, reviewed by Reviewer and HOD.

Maintenance of Course files:

A course file is prepared by the concerned faculty. The course file consists of following items:

- ❖ Calendar of events: It includes university, college, and department calendar of events.
- ❖ Timetable: Timetable includes the clear schedule of the subjects and labs allotted to the faculty.
- ❖ Syllabus copy attested by HOD: After the subject allotment, attested syllabus copy will be issued to the concerned faculties.
- ❖ Previous university question papers: The faculty members will maintain the photocopy of the previous year question papers in their course file.
- ❖ Lesson plan: Lesson plan is prepared for each lecture hour in the teaching plan by the course coordinator before the commencement of the semester and it is reviewed by the

reviewer and approved by the HOD. The lesson plan includes pre-requisites for the course, course objectives, and course outcomes.

- ❖ Question Bank: Question banks are prepared in line with the university question papers.
- ❖ Tutorial: Tutorial contains module wise questions which will be discussed before the Internal Assessment.
- ❖ Internal question papers with scheme: Test question papers with scheme prepared by the course coordinator, reviewed by the reviewer and approved by HOD.

E. Conduction of experiments

Laboratory Conduction

- ❖ Lab incharge of respective Labs will prepare the manuals, material requirements, conduction of experiments and cycle of experiments before commencement of semester.
- ❖ The Laboratories are conducted in session of 3 periods, in each session the faculty explains the procedure, theory, calculations and applications of the experiment.
- ❖ The students will write the necessary details in the observation book, and then conduct the experiment, tabulate the readings, calculate and evaluate the results.
- ❖ The calculated results were represented in the form of graphs and documented in the record book by the students, later which will be evaluated by concerned faculty.
- ❖ The experiments are evaluated by the faculties according to lab rubrics.

F. Continuous assessment in laboratory:

Continuous assessment system is implemented for assessment of laboratory work. The evaluation is done based on submission of laboratory observations, records, conduction, viva and punctuality of the student. Internal test is conducted at the end of the semester and evaluated as per Laboratory Rubrics.

Rubrics for continuous evaluation in every lab session (Max. 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		Total: 0 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 Marks
	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		Total: 0 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 continuous evaluation in every lab session (Max. 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 marks
	Draw/ Tabulate or write Program / Computation and obtain result	2	Partially Know the Program /Experimental setup	1		
	Able to debug the circuit or program	1				
	Total: 05 Marks		Total: 1 Marks		Total: 0 Marks	
Execution	Able to Execute the experiment compile the problem without error	3	Partially able to conduct the given experiment	01	Not able to execute	0 Marks
	Draw/ Tabulate/ conduct/execute the program	2				
	Obtain the result as expected	1	Partially Obtain the result as expected	01		
	Total: 05 Marks		Total: 02 Marks		Total: 0 Marks	
Viva Voce or Quiz	Answered 5 questions	Answered 4 questions	Answered 3 questions	Answered 2 questions	Answered 1question	Student did not answer any question
	Total:5 Marks	Total:4 Marks	Total:3 Marks	Total:2 marks	Total:1 Mark	Total:0 Marks

G. Process and Student feedback on teaching learning actions taken:

The feedback is taken twice in a semester, all the students are required to fill an online feedback-form appraising the teaching of faculty.

- Lecture classes are monitored by senior Professors and Head of the Department. They give constructive comments to improve the teaching- learning process. This motivates them to improve their skills and abilities.
- Training/orientation programs are conducted by professional experts to improve the skills of the faculty members.

2.2.1.2	Impact Analysis
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The following are the positive outcomes observed after adopting the above mentioned innovative TLP:

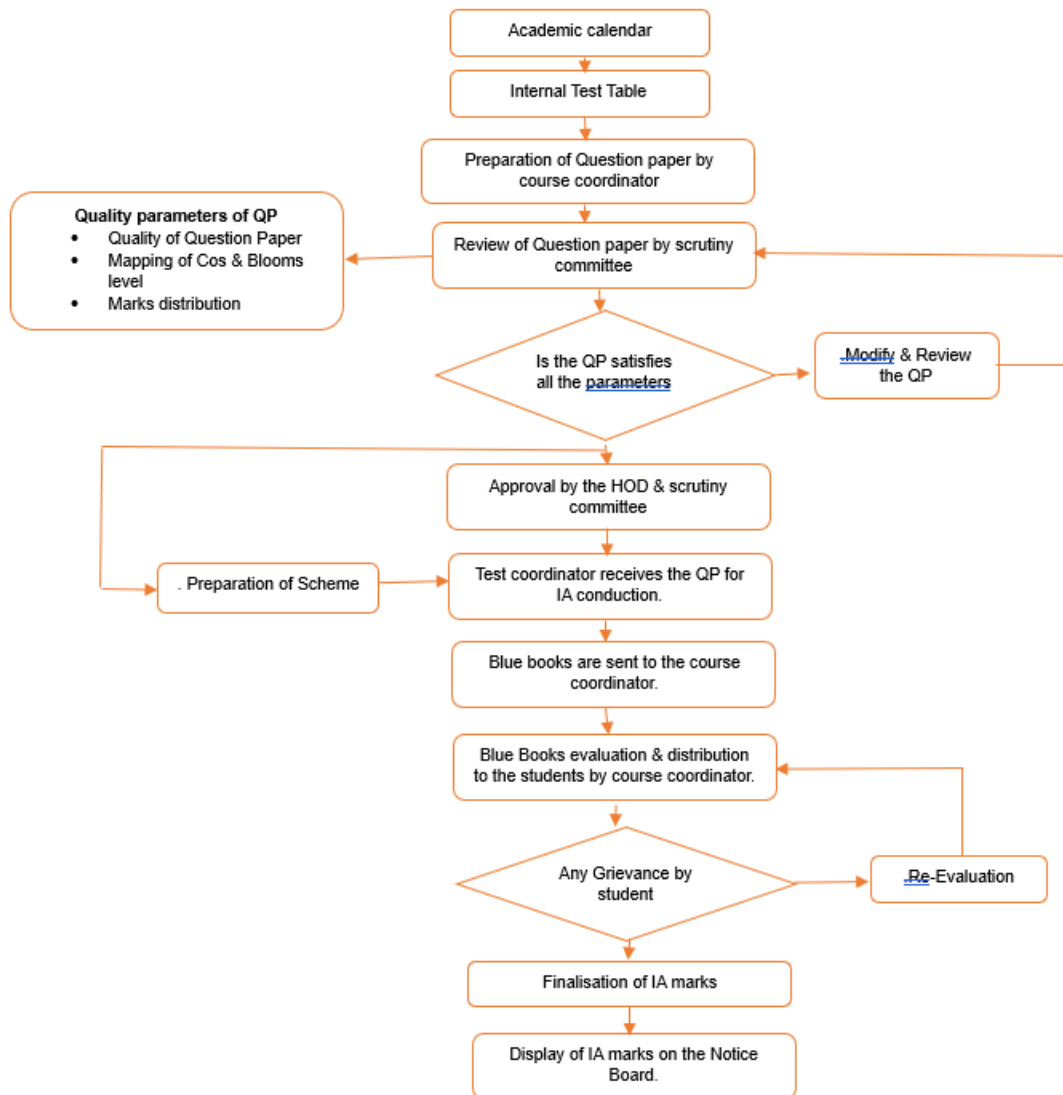
- ❖ Improved attendance of students for every class
- ❖ Active participation of students in OBE(Outcome Based Education)activities
- ❖ New view points and new project ideas are derived in class
- ❖ Better bondage between students and faculties

2.2.2	Quality of internal semester Question papers, Assignments and Evaluation	20
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Process for conduction of Internal Assessment.

1. The Department conducts three internal assessments as per the calender of events of the college.
2. The continuous internal evaluation(CIE) is computed for 40 marks as per the regulations of the university. It includes 30 marks based on the internal assessment conduction and 10 marks is for assignments.
3. The question paper and the scheme for the internal assessment for each course is set by the respective course coordinator by incorporating respective COs and cognitive levels (RBT levels) .
4. The evaluation of the answer books will be carried out by respective course coordinator based on approved scheme and solution.
5. The final internal marks is computed for the average of three internal assessment as per university norms.

2.2.2.1	Initiatives and Implementation details for improving the quality of Internal Semester Question papers (Internal Assessment Test)
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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.

Criteria	Initial learning or Incomplete	Develop	Accomplish	Exemplary
Knowledge	No grasp or No Understanding of Subject	Only Basic Concept is Understood	Able to Explain	Elaborate 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 2days from due date	Partially writes and submits on atime	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
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Process followed for identification of Project & allotment of Project Guides

- 1) Department meeting is conducted by the head of the department at the beginning of the 7th semester and designates project coordinator.
- 2) HOD & Project coordinator educates the students to select projects in different domains, thirst area & Interdisciplinary projects such as Additive Manufacturing, Modern mobility etc.
- 3) Students are informed to form project batches comprising of minimum 3 & maximum 4 students based on the area of interest.
- 4) The project coordinators in discussion with HOD will allocate the faculty members as guides for the projects based on their domain and expertise.
- 5) The project batch students are informed to submit the synopsis about their project under the supervision of their respective guides to the project coordinators.
- 6) A schedule for the synopsis review is been prepared by the project coordinators and the same will be informed to the students for their synopsis presentation.
- 7) The synopsis review will be carried out by a Project Evaluation Committee and suggest any modifications or corrections in their project synopsis.
- 8) By incorporating the modifications and corrections, if any, the students will submit the finalized project synopsis duly signed by their concerned guide to project coordinators.
- 9) They are also encouraged to apply for funds under various external funding schemes such as KSCST & VTU, etc.
- 10) The students are encouraged to participate in project exhibitions, Paper publication of their work in journals.

2.2.3.1	Initiatives
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- 1) Students are encouraged to apply for KSCST funding.
- 2) The college conducts Project exhibition " MERAKI" where the students will exhibit their project & the project will be reviewed by the external resource person & best 3 projects will be selected & cash prize will be given.
- 3) The students are encouraged to publish their work in the Journal.

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

- 1) All projects are mapped to POs and PSOs.
- 2) Each project is evaluated with internal marks and is graded according to their project quality and with their contribution towards attainment of PO's.

(i) Process of Monitoring

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

2.2.3.1.1 Implementation

Schedule	Task	Details
7th Semester		
2nd week	Creation of project batches	Students are informed to form their batch.
4th week	Guide Allotment	Guide allotment based on the domain and expertise
6th week	Submission of Project title & Synopsis	Students are instructed to submit the title with Synopsis
8th week	Presentation of Synopsis	Presentations are reviewed by a Project coordinator, Head of the department and senior faculty along with Guide
13th week	Phase1 First Review	Review of requirement by guide and Coordinator
16th week	Phase1 Final Review	Project coordinator, Head of the department and senior faculty along with guide will review Methodology, design concept,
8th Semester		
5th week	Phase2 First Review	Review of progress regarding implementation & validation by guide and Coordinator

9th week	Phase2 Final Review	In the final review the project team will demonstrate the final model in front of review committee
12th week	Report submission	Submission of the final report duly signed by the guide, HOD, and Principal.

(ii) Process of Evaluation

a) Internal Evaluation:

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

Table 2.2.3(vi): Evaluation of Project Work

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

b) External Evaluation:

The Final Projects are evaluated by Internal and External examiners as appointed by the university. The external examiner is from other affiliated college.

The examiners conduct viva-voce examination for the students. The project teams will come forward and defend the carried-out project work. Based on the performance in viva-voce examination, final marks are awarded to the students that are sent to university.

D) Process to assess individual and team performance

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

- a. Problem Formulation
- b. Planning
- c. Technical skills
- d. Communication
 - Presentation
 - Documentation
- e. Teamwork
 - Group participation
 - Peer review
 - Societal or environmental issues

List of Project Titles mapping with PO and PSO-AY-2022-23

sl. no	Project title	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
1	Design & development of cost effective vibrope tree shaker in harvesting by reverse engineering technique	Y		Y		Y	Y	Y		Y		Y			Y
2	Development of a device for vehicle monitoring at blind curves	Y		Y		Y	Y	Y		Y		Y		Y	Y
3	Design & fabrication of portable solar winover	Y		Y		Y	Y	Y		Y		Y		Y	Y
4	Automated overhead water tank cleaning system	Y		Y		Y	Y	Y		Y		Y		Y	Y
5	Design & fabrication of Gas Atomiser	Y		Y		Y	Y	Y		Y		Y		Y	Y
6	Fabrication of Drone & controlling using Virtual reality	Y		Y		Y	Y	Y		Y		Y		Y	Y
7	Automatic domestic waste segregation system	Y		Y		Y	Y	Y		Y		Y		Y	Y

List of Project Titles mapping with PO and PSO-AY-2021-22															
sl. n o	Project title	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
1	Greenhouse monitoring system using IOT for plant Nursery	Y		Y		Y	Y	Y		Y		Y			Y
2	Fabrication and Testing of Vacuum assisted smart floor cleaner robot	Y		Y		Y	Y	Y		Y		Y		Y	Y
3	Design and fabrication of underwater ROV for detecting foreign body	Y		Y		Y	Y	Y		Y		Y		Y	Y
4	Design of smart helmet using microcontroller	Y		Y		Y	Y	Y		Y		Y		Y	Y
5	Design & Fabrication of foldable DIY electric scooter	Y		Y		Y	Y	Y		Y		Y		Y	Y
6	Mobile app based hydraulic jack operation	Y		Y		Y	Y	Y		Y		Y		Y	Y
7	Automatic domestic waste segregation system	Y		Y		Y	Y	Y		Y		Y		Y	Y

2.2.4	Initiatives related to Industry Interaction	15
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Initiatives related to industry interaction including industry internship/summer training

Industry interactions help the students to acquire the practical knowledge. In order to improve the technical abilities various industrial activities are carried out.

Organising guest lectures, seminars, internships, and industrial visits significantly enrich the quality of the curriculum by providing students with real-world insights and practical experiences beyond the theoretical knowledge.

The department has taken following initiatives for establishing and nurturing good relations with industry.

List of MOUS signed

SL No	Name of the Organization	ADDRESS with contact details
1	Medini Technologies	No. 2943/E,3rd Floor, 40, Service Rd, opposite Maruthi Mandir, Hosahalli Extension, Vijayanagar, Bengaluru, Karnataka 560040 Ph: 080-23301005
2	Mukesh Restyles Pvt Ltd.,	Mukesh Restyles Pvt Ltd., No 56, Lalbagh Road Bangalore-560027
3	Vishnu Forge Industries Limited	HMT Post C01, C02, 2nd Stage, Bengaluru, Karnataka 560031 Ph: 099453 37731
4	Institute For Engineering Research and Publication	Institute For Engineering Research and Publication Rais Towers, 2054/B,2nd Floor West block, 2nd Ave, Anna Nagar, Chennai, Tamil Nadu 600040 Ph: 044-49589038
5	Govt. Tool Room and Training Centre	Govt. Tool Room and Training Centre Rajajinagar Industrial Estate, 72nd Cross Rd, Bengaluru, Karnataka 560010 Ph: 080 2315 2119
6	Cadmaxx Solutions Pvt Ltd	#2095, 2nd floor, 9th Cross, 5th Main Rd, RPC Layout, Vijayanagar, Bengaluru, Karnataka 560040 Ph: 097398 66634
7	KS Institute of Technology	4, Kanakapura Rd, Raghuvanahalli, Bangalore City Municipal Corporation Layout, Bengaluru, Karnataka 560109 Ph: 080 2843 5722
8	Bureau of Indian Standards	Opp. Jalahalli Metro, Peenya Industrial Area 1st Stage, Tumkur Rd, Vivekananda Nagar, Peenya, Bengaluru, Karnataka 560058

Guest Lectures and Seminars

Sl. No	Name of the Event	Industry resource Person	DATE	No. of students benefitted
AY-2020-21				
1	Seminar on “Managing Risk associated with foundry work”	Dr. Shivam, Professor, NIT, Puduchery	21/11/2020	31
2	Seminar on “Introduction to HYSD bars and proper usage on site”	Mr. Anirudh Shah, AGM – Technical SK Steeltech, Bengaluru	07/11/2020	44
3	Seminar on “Preparing for technology careers of tomorrow”	Mr. Abhishek R Patil, CEO & Founder Zcientia Labs Pvt. Ltd	23/10/2020	100
4	Entrepreneurship Awareness	Sumanth S Athreya, Founder & Design Director, Yantrova, Bangalore	29/08/2020	50
AY-2021-22				
1	Seminar on “Advances & career opportunities in construction technology”	Mr. Prasad K V, Assistant Professor NICMAR, Hyderabad	16/05/2022	42
2	Workshop on “Python coding	Mr. Mohan Shamanna, CEO, Indoskill Mr. Mohammed Azr Hussain, CTO, Indoskill, Bengaluru	13/01/2022 to 15/01/2022	60
3	Seminar on “Industrial application of sensors and transducers”	Mr. R Venugopal, MD, Venjay Automation Bengaluru	10/01/2022	55
4	Current trend in Industry 4.0 and technical career guidance	Mr. Mohan Shamanna, CEO, Indoskill Bengaluru	02/12/2021	20

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5	Two days workshop on “Entrepreneurship and Electric Vehicles”	Mr. Naveen Chander, Founder & Director, 3Q Sutrantra, LLP, Bengaluru Mr. Shravan, Managing Director, Mastiebikes Pvt. Ltd. Bengaluru	23/12/2021 to 24/12/2021	64
6	Webinar on Mastercam for Education	Mr. Sitansu Mohanty, Technical Director Mastercam India	27/12/2021	31
AY-2022-23				
1	“Standard writing Competition”	Mr. Mohan Kumar P S BIS, Bengaluru	16/06/2023	32
2	Workshop on “AutoML”	Mr. A M Govind Kumar, Director, Seaport AI	17/04/2023	39
3	“One day training program on standards”	Mr. Pradeep Kumar, Deputy Director, BIS, Bengaluru	26/12/2022	113
4	SDP on “In-situ stress measurements and its applications	Mr. Vikram S, Scientist, Geotechnical Engg. Dept., National Institute of Rock Mechanics, Bengaluru	12/12/2022	30

2.5 Initiative related to industry internship/summer training

Industrial Internship is part of Engineering course, during which the students visit different industries and relate their technical knowledge gained during their course to the actual in the industry and also get insight regarding the internal working environment of a company and how a company functions as well as useful information related to the practical aspects of the educational course which cannot be visualized in lectures. Internships are planned before commencement of every odd semester. The Head of Department nominates a coordinator for organizing the Internship in various Industries. The HOD & Co-ordinator communicates with various industries to get the permission from the industries according to their scheduled dates & University calendar of Events. At the beginning of each semester, based on the requirement of curriculum and feedback from previous batch students, the type of industry and tentative dates of industrial training are finalized. After receipt of permission, the industrial Internship coordinator allocates faculty in charge for accompanying the students.

During the internship training, experts or technical staff from the industry explains about their industry and its operations to the students. They also share their experience and knowledge with the students. The students get the opportunity to interact with technical experts and clear their doubts on the relevant subject. The students are able to reinforce the knowledge, which they have gained through classroom lectures. They are exposed to the real work involved in big infrastructural projects. They get motivated to undergo internship/in plant training do innovative project and to seek placement in the industries suiting their area of interest.

Internship 2021-22					
Sl. no.	USN	Name of the Candidate	Internship title	Name of the Internal Guide	Name of the Industry
1	1RI18ME001	Abishek Johny	CNC Milling Programming and Essentials for NX Designers	Mr. Murali	GT & TC Rajajinagar Industrial Estate, Bangalore - 10 Phone: 23152118, 23152119, 23157189
2	1RI18ME003	Amit Kumar Bhagat	Service and Maintenance of Cars	Dr.Channabasavarj.S	Mayur Enterprises Peenya 1st stage, Bangalore - 560058 Phone: 28395263, 41171265 Email: sbmayur@gmail.com
3	1RI18ME004	Anjan Gowda.H	CNC Milling Programming and Essentials for NX Designers	Dr. Amarnath. G	GT & TC Rajajinagar Industrial Estate, Bangalore - 10 Phone: 23152118, 23152119, 23157189
4	1RI17ME005	Arun kumar k	Study on the Advanced Technology used in BS6 Vehicle	Dr.Channabasavaraj.S	Take it Smart (OPC) Pvt. Ltd. #1274, 2nd Floor, Sanitary Core, 3rd Phase, Yelahanka New Town, Bengaluru - 560064 Phone: 8792697647, 8050104212
5	1RI18ME008	Gurukiran m	CNC Milling Programming and Essentials for NX Designers	Dr. Amarnath. G	GT & TC Rajajinagar Industrial Estate, Bangalore - 10 Phone: 23152118, 23152119, 23157189
6	1RI18ME012	Jefin Varghese	Essentials for NX Designers	Mr. Murali	Siemens Centre of Excellence, GTTC, Rajajinagar Industrial Estate, Bangalore - 10

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7	1RI18ME013	Kamrul Ansari	Service and Maintenance of Cars	Mr. Bharath	Mayur Enterprises Peenya 1st stage, Bangalore - 560058 Phone: 28395263, 41171265 Email: sbmayur@gmail.com
8	1RI18ME017	Mebin Mathew	CNC Milling Programming and Essentials for NX Designers	Mr. Murali	GT & TC Rajajinagar Industrial Estate, Bangalore - 10 Phone: 23152118, 23152119, 23157189
9	1RI18ME019	Narayan prasad Pokharel	Service and Maintenance of Cars	Mr. Bharath	Mayur Enterprises Peenya 1st stage, Bangalore - 560058 Phone: 28395263, 41171265 Email: sbmayur@gmail.com
10	1RI18ME020	Pronob Jyoti Gogoi	Milling NC Programming	Mr. Srinivas	Siemens Centre of Excellence, GTTC, Rajajinagar Industrial Estate, Bangalore - 10
11	1RI18ME021	Rahul prasad Singh Yadav	Service and Maintenance of Cars	Mr. Srinivas	Mayur Enterprises, KIADB Main Road, Next to PIA 21Bhavan, Peenya 1st stage, Bangalore – 560058, Phone: 28395263, 41171265 Email: sbmayur@gmail.com
12	1RI18ME022	Ram Kumar Devaredi	CNC Milling Programming and Essentials for NX Designers	Dr. Manjunath	GT & TC Rajajinagar Industrial Estate, Bangalore - 10 Phone: 23152118, 23152119, 23157189
13	1RI18ME023	Ravi Kumawat	CNC Milling Programming and Essentials for NX Designers	Mr. Srinivas	GT & TC Rajajinagar Industrial Estate, Bangalore - 10 Phone: 23152118, 23152119, 23157189
14	1RI18ME025	Rizwan Razak	Automated Machinery	Mr. Bharath	Friends Polymers, 16/430F, I.D Plot, Vadackal, Alappuzha - 688003

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15	1RI18ME026	Sagar nyaupane	Equipment Maintenance	Mr. Lohith	Kolar Gold Field Mines K.G.F. taluk, Kolar district, Karnataka
16	1RI18ME027	Sanjith Sunny	CNC Milling Programming and Essentials for NX Designers		GT & TC, Rajajinagar Industrial Estate, Bangalore – 10, Phone: 23152118, 23152119, 23157189
17	1RI18ME028	Saroj Budhathoki	Processing of Rubber	Mr. Lohith	Sri Manjunatha Rubbers Yeshwanthpur Bangalore 560022 contact: 8892149094
18	1RI18ME029	Sunil Chai	Processing of Rubber	Mr. Lohith	Sri Manjunatha Rubbers Yeshwanthpur Bangalore 560022 contact: 8892149094
19	1RI16ME030	Tabrej Alam Ansari	Service and Maintenance of Cars	Dr. Channabasavaraj	Mayur Enterprises, KIADB Main Road, Next to PIA 21 Bhavan, Peenya 1st stage, Bangalore – 560058, Phone: 28395263, 41171265 Email: sbmayur@gmail.com
20	1RI18ME031	Trinayan Borthakur	CNC Milling Programming and Essentials for NX Designers	Dr. Channabasavaraj	GT & TC Rajajinagar Industrial Estate, Bangalore - 10 Phone: 23152118 23152119, 23157189
21	1RI14ME033	Yandapalli Sadasiva Reddy	CNC Milling Programming and Essentials for NX Designers	Dr. Manjunath.G	GT & TC Rajajinagar Industrial Estate, Bangalore - 10 Phone: 23152118 23152119, 23157189
22	1RI19ME400	Kishan G Gaikwad	CNC Milling Programming and Essentials for NX Designers	Dr. Amarnath.G	GT & TC Rajajinagar Industrial Estate, Bangalore - 10 Phone: 23152118 23152119, 23157189
23	1RI19ME401	Sourav Nath	Processing of Rubber	Mr. Lohith	Sri Manjunatha Rubbers Yeshwanthpur Bangalore 560022 contact: 8892149094

CRITERION 3	COURSE OUTCOMES AND PROGRAM OUT COMES	120
3.1	Establish the correlation between the courses and the Program Outcomes (POs) and Program Specific Outcomes (PSOs)	20
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)	05

Course Name: Material science (18ME34)

Year of Study: 2019 -20

Course Outcomes:

At the end of the course completion student will be able to:

C204.1	Understand the mechanical properties of metals and their alloy
C204.2	Analyze the various modes of failure and understand the microstructures of ferrous and non-ferrous materials.
C204.3	Describe the processes of heat treatment of various alloys
C204.4	Acquire the Knowledge of composite materials and their production process as well as applications .
C204.5	Understand the properties and potentialities of various materials available and material selection procedures.

Course Name: Metal cutting and forming (18ME45A)

Year of Study: 2019 -20

Course Outcomes:

At the end of the course completion student will be able to:

C215.1	Explain the construction & specification of various machine tools. Discuss different cutting tool materials, tool nomenclature & surface finish
C215.2	Apply mechanics of machining process to evaluate machining time
C215.3	Analyze tool wear mechanisms and equations to enhance tool life and minimize machining cost
C215.4	Understand the concepts of different metal forming processes
C215.5	Apply the concepts of design of sheet metal dies to design different dies for simple sheet metal components

Course Name: Fluid Power Engineering (18ME55)

Year of Study: 2020 -21

Course Outcomes:

At the end of the course completion student will be able to:

C305.1	Identify and analyse the functional requirements of a fluid power transmission system for a given application
C305.2	Visualize how a hydraulic/pneumatic circuit will work to accomplish the function

C305.3	Design an appropriate hydraulic or pneumatic circuit or combination circuit like electro-hydraulics, electro- pneumatics for a given application.
C305.4	Select and size the different components of the circuit.
C305.5	Develop a comprehensive circuit diagram by integrating the components selected for the given application."

Course Name: Non-Traditional Machining Process (18ME641)	Year of Study: 2020 -21
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Course Outcomes:

At the end of the course completion student will be able to:	
C314.1	Understand the compare traditional and non-traditional machining process and recognize the need for Non- traditional machining process
C314.2	Understand the constructional features, performance parameters, process characteristics, applications, advantages and limitations of USM, AJM and WJM
C314.3	Identify the need of Chemical and electro-chemical machining process along with the constructional features, process parameters, process characteristics, applications, advantages and limitations
C314.4	Understand the constructional feature of the equipment, process parameters, process characteristics, applications, advantages and limitations EDM & PAM
C314.5	Understand the LBM equipment, LBM parameters, and characteristics. EBM equipment and mechanism of metal removal, applications, advantages and limitations LBM & EBM

Course Name: Control Engineering (18ME71)	Year of Study: 2021 -22
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Course Outcomes:

At the end of the course completion student will be able to:	
C401.1	Identify the type of control and control actions. Develop the mathematical model of the physical systems
C401.2	Estimate the response and error in response of first and second order systems subjected standard input signals "
C401.3	Represent the complex physical system using block diagram and signal flow graph and obtain transfer function. "
C401.4	Analyse a linear feedback control system for stability using Hurwitz criterion, Routh's criterion and root Locus technique in complex domain "
C401.5	Analyse the stability of linear feedback control systems in frequency domain using polar plots, Nyquist and Bode plots. "

Course Name: Non Destructive Testing (18ME823)	Year of Study: 2021 -22
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Course Outcomes:

At the end of the course completion student will be able to:

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C412.1	To understand various Non-Destructive Testing (NDT) methods and Various physical characteristics of materials and their applications in NDT
C412.2	Understand the basic surface NDT methods such as Liquid penetrant test, Magnetic particle test – Principles.
C412.3	Explain and perform Contact and non-contact inspection methods such as thermography and eddy current testing.
C412.4	Understand Ultrasonic Testing-Principle and Acoustic Emission Principle instrumentation parameters and applications.
C412.5	Understand principles of Radiography and different film and film less techniques.

3.1.2	CO - PO Matrices of courses selected in 3.1.1 (Six matrices to be mentioned; one per semester from 3rd to 8th semester)	05
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Course Name: Material Science (18ME34)	Year of Study: 2019 -20
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MS (18ME34)	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C204.1	3	2	2	-	-	-	2	-	-	-	-	2
C204.2	3	2	2	-	-	-	1	-	-	-	-	1
C204.3	3	2	1	-	-	-	2	-	-	-	-	1
C204.4	2	2	2	-	-	-	3	-	-	-	-	2
C204.5	2	2	2				2					2
Average	2.6	2	1.8	-	-	-	2	-	-	-	-	1.6

Course Name: Metal Cutting and Forming (18ME45)	Year of Study: 2019 -20
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MCF (18ME45)	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C215.1	2	1	-	-	-	-	-	-	-	-	-	3
C215.2	2	2	2	-	-	-	-	-	-	-	-	1
C215.3	2	2	2	-	-	-	2	-	-	-	-	2
C215.4	2	1	2	-	2	-	2	-	-	-	-	2
C215.5	1	-	3		1		1					1
Average	1.8	1.2	1.8	-	0.6	-	1.0	-	-	-	-	1.8

Course Name: Fluid Power Engineering (18ME55)	Year of Study: 2020 -21
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FPE (18ME55)	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C305.1	3	3	-	-	-	3	3	-	-	-	2	2

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C305.2	3	3	2	-	-	3	2	-	-	-	2	2
C305.3	3	3	3	-	-	3	-	-	-	-	2	2
C305.4	3	3	3	-	-	3	-	-	-	-	-	2
C305.5	3	3	3			3					2	2
Average	3	3	3	-	-	3	2.5	-	-	-	2	2

Course Name: Non-Traditional Machining Process (18ME641)	Year of Study: 2020 -21
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NTM (18ME641)	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C314.1	3	-	-	-	-	2	2	-	-	-	-	3
C314.2	3	2	-	-	-	2	2	-	-	-	-	2
C314.3	3	2	-	-	-	2	2	-	-	-	-	2
C314.4	3	2	-	-	-	2	2	-	-	-	-	2
C314.5	3	-	-	-	-	2	2	-	-	-	-	2
Average	3	2	-	-	-	2	2	-	-	-	-	2.20

Course Name: Control Engineering (18ME71)	Year of Study: 2021 -22
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CE (18ME71)	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C401.1	3	3	2	1	1	-	2	-	-	-	-	2
C401.2	3	3	2	1	1	-	2	-	-	-	-	2
C401.3	3	3	3	2	2	-	2	-	-	-	-	1
C401.4	3	3	3	2	2	-	2	-	-	-	-	2
C401.5	3	3	3	1	2	-	2	-	-	-	-	2
Average	3	3	2.6	1.4	1.6	-	2	-	-	-	-	1.8

Course Name: Non Destructive Testing (18ME823)	Year of Study: 2021 -22
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NDT (18ME823)	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C410.1	3	-	-	-	-	-	-	-	1	-	-	1
C410.2	3	-	-	-	-	-	-	-	-	-	-	2
C410.3	3	-	-	2	-	-	-	-	-	-	-	2
C410.4	3	-	-	-	2	-	-	-	-	-	-	2
C410.5	3	-	-	-	2	-	-	-	2	-	-	2
Average	3	-	-	2	2	-	-	-	1.5	-	-	1.8

CO - PSO matrices of courses (six matrices to be mentioned; one per semester from 3rd to 8th semester)

Course Name: Material Science(18ME34)	Year of Study: 2019 - 20
----------------------------------------------	---------------------------------

MS (18ME34)	PSO1	PSO2
C204.1	3	2
C204.2	3	2
C204.3	3	2
C204.4	3	2
C204.5	3	2
Average	3	2

Course Name: Metal Cutting and Forming (18ME45)	Year of Study: 2019 - 20
--------------------------------------------------------	---------------------------------

MCF (18ME45)	PSO1	PSO2
C215.1	3	2
C215.2	3	2
C215.3	3	2
C215.4	3	2
C215.5	3	2
Average	3	2

Course Name: Fluid Power Engineering(18ME55)	Year of Study: 2020 - 21
-----------------------------------------------------	---------------------------------

FPE (18ME55)	PSO1	PSO2
C305.1	3	3
C305.2	3	3
C305.3	3	3
C305.4	3	3
C305.5	3	3
Average	3	3

Course Name: Non-Traditional Machining Process(18ME641)	Year of Study: 2020 - 21
----------------------------------------------------------------	---------------------------------

NTM (18ME641)	PSO1	PSO2
C304.1	3	-

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C304.2	3	-
C304.3	3	-
C304.4	3	-
C304.5	3	-
Average	3	-

Course Name: Control Engineering (18ME71)

Year of Study: 2021 - 22

CE (18ME71)	PSO1	PSO2
C404.1	3	2
C404.2	3	2
C404.3	3	3
C404.4	3	3
C404.5	3	3
Average	3	2.6

Course Name: Non Destructive Testing (18ME823)

Year of Study: 2021 - 22

NDT (18ME823)	PSO1	PSO2
C412.1	2	-
C412.2	2	1
C412.3	2	-
C412.4	2	-
C412.5	2	2
Average	2	1.5

3.1.3

Program Level Course - PO matrix of all courses INCLUDING first year courses

10

First year PO matrix for all courses

SUBJECT CODE	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C101	3.00	2.20	1.75	-	-	-	-	-	-	-	-	2.2
C102	3.00	2.8	2.6	1.00	-	-	-	-	-	-	1.00	2.00
C103	2.00	2.20	1.4	-	-	-	-	-	-	-	-	2.00
C104	2.00	2.25	2.0	1.00	-	2.00	2.00	-	-	-	2.00	2.00
C105	3.00	3.00	-	-	3.00	1.00	-	-	-	-	-	2.33
C106	3.00	3.00	3.0	-	-	-	-	-	-	-	-	-

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C107	2.00	2.00	3.00	-	-	-	-	-	-	-	-	-
C108	-	-	-	-	-	2.50	-	3.00	-	-	-	3.00
C111	3.00	2.00	-	-	-	-	-	-	-	-	-	2.00
C112	3.00	2.8	2.8	1.00	-	-	-	3.00	3.00	-	1.00	2.00
C113	3.00	3.00	-	-	3.00	-	-	-	-	-	-	3.00
C114	3.00	3.00	-	-	3.00	1.00	-	-	-	-	-	2.00
C115	3.00	2.00	2.00	-	-	-	2.00	-	-	-	-	2.00
C116	3.00	3.00	3.00	-	-	-	-	2.00	2.00	-	-	-
C117	3.00	2.00	-	-	3.00	-	-	-	-	-	-	2.00
C118	-	-	-	-	-	-	-	2.00	1.00	3.00	-	3.00
C201	3.00	2.2	2.00	-	-	-	-	-	-	-	-	2.00
C202	2.00	1.6	1.00	-	-	-	1.00	-	-	-	-	1.00
C203	3.00	3.00	3.00	-	-	-	1.66	-	-	-	-	3.00
C204	2.60	2.00	1.8	2.00	-	-	2.00	-	-	-	-	1.6
C205	1.80	1.5	2.25	-	-	-	1.6	-	-	-	-	1.8
C206	3.00	3.00	1.8	-	1.00	-	1.8	-	-	-	-	1.6
C207	3.00	2.00	-	-	-	2.00	-	-	-	-	-	2.00
C208	3.00	1.66	1.0	-	-	-	--	-	-	-	-	-
C209	-	-	-	-	-	2.00	-	1.00	-	3.00	-	0.00
C211	3.00	2.2	1.5	-	-	-	-	-	-	-	-	2.00
C212	3.00	3.00	3.00	-	-	-	1.66	-	-	-	-	3.00
C213	3.00	3.00	3.00	-	1.00	-	1.6	-	-	-	-	1.6
C214	2.00	1.6	1.00	-	-	-	1.00	-	-	-	-	1.4
C215	1.80	1.5	2.25	-	1.5	-	1.66	-	-	-	-	1.8
C216	3.00	2.25	2.00	2.25	2.00	3.00	3.00	3.00	-	2.00	3.00	2.00
C217	2.75	1.5	1.67	1.00	1.00	-	1.00	-	-	-	-	-
C218	3.00	-	-	-	-	2.00	2.00	-	-	-	-	2.00
C219	-	-	-	-	-	2.00	-	3.00	-	2.00	0.00	3.00
C301	3.00	2.2	-	2	-	1.66	2.33	3.00	2.66	2.66	3.0	2.75
C302	3.00	3.00	3.00	1.00	1.00	1.00	1.00	1.00	-	1.00	1.00	1.2
C303	3.00	3.00	2.00	-	-	-	2.00	-	-	-	-	3.00
C304	2.8	3.00	3.00	-	-	-	-	-	-	-	-	3.00
C305	3.00	3.00	2.75	-	-	2.2	2.5	-	-	-	2.00	2.00
C306	1.8	2.2	1.75	2	-	-	-	-	-	-	-	-
C307	3.00	2.00	-	-	-	2.00	-	-	-	-	-	2.66
C308	3.00	2.25	2.25	-	3.0	3.00	3.0	-	-	-	-	2.25
C309	-	-	-	-	-	3.00	3.0	3.0	-	-	2.0	3.0
C311	3.00	3.00	2.5	-	3.0	-	2.0	-	-	-	1.0	3.0
C312	3.00	3.00	3.0	1.00	1.0	1.00	1.0	1.0	-	1.00	0.00	1.2
C313	3.00	3.00	2.8	-	-	-	-	-	-	-	-	2.6
C314	3.00	2.00	-	-	-	2.0	2.0	-	-	-	2.0	2.2
C315	2.00	-	-	-	-	3.0	3.0	-	3.0	2.0	-	2.0
C316	3.00	3.00	2.0	-	3.0	2.0	-	-	-	2.00	-	2.0

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C317	3.00	3.00	2.2	-	-	-	2.0	-	-	-	2.0	2.0
C318	3.00	3.00	2.0	3	2.66	3.0	2.0	3.0	3.0	2.00	-	2.0
C401	3.00	3.00	2.6	1.4	1.6	-	2.00	-	-	-	-	1.8
C402	2.8	2.4	2.2	-	3.0	2.75	-	-	-	-	-	2.0
C403	3.0	3.00	2.00	-	-	-	-	-	-	-	-	2.8
C404	2.0	-	2.33	2.0	1.66	2.00	-	-	-	-	-	2.0
C405	2.0	3.00	2.00	-	-	3.00	3.0	-	-	-	-	3.0
C406	3.00	0.00	2.00	-	2.0	2.00	-	-	-	-	-	2.00
C407	3.00	3.00	3.00	2.00	-	1.00	-	-	2.0	-	-	-
C408	3.00	3.00	3.00	3.00	2.66	2.4	1.4	2.2	3	2.0	2.0	2.0
C411	3.00	2.00	1.5	-	-	1.5	2.25	1.33	-	-	-	-
C412	3.00	-	-	2.00	2.0	-	-	-	1.5	-	-	1.8
C413	3.00	3.00	3.00	3.00	2.66	3.00	2.0	3.0	3.0	2.0	2.0	2.0
C414	3.00	3.00	3.00	3.00	2.00	2.00	-	-	2	2	-	2.00
C415	3.00	3.00	3.00	-	3.00	-	-	2.00	2.00	2.00	-	2.00

3.1.3	Program Level Course - PSO matrix of all courses INCLUDING first year courses	10
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Subject Code	PSO1	PSO2
C101	2.2	1.5
C102	-	-
C103	-	-
C104	-	-
C105	3.00	-
C106	-	-
C107	-	-
C108	-	-
C111	1.8	1.75
C112	-	-
C113	-	-
C114	2.00	-
C115	3.00	2.0
C116	-	-
C117	3.00	3.0
C118	-	-
C201	2.00	2.0
C202	3.00	2.0
C203	3.00	3.0
C204	3.00	2.0
C205	2.8	2.0
C206	3.00	-
C207	3.00	2.0
C208	3.00	1.0

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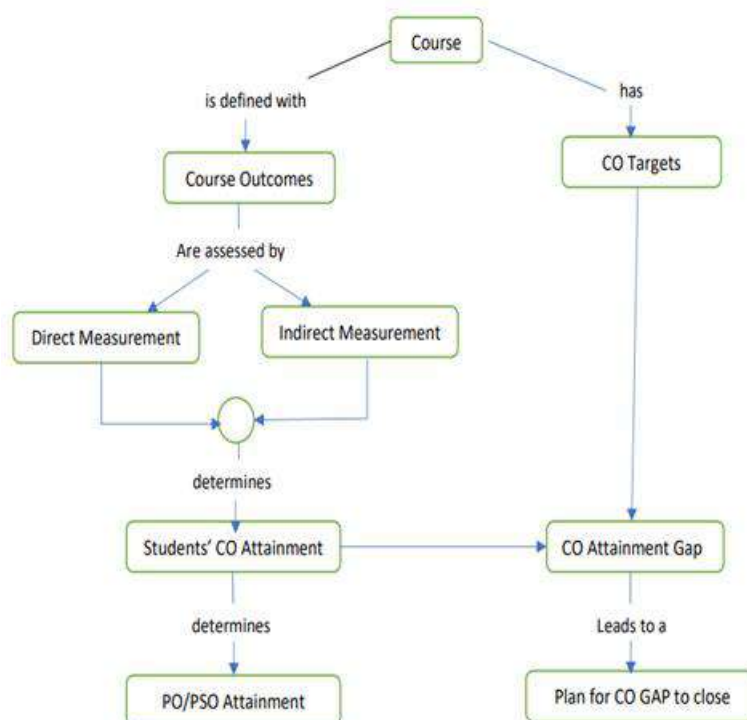
C209	-	-
C211	1.6	1.5
C212	3.00	3.0
C213	3.00	3.0
C214	3.00	2.0
C215	2.8	2.0
C216	2.0	2.0
C217	3.00	1.0
C218	3.00	-
C219	-	-
C301	-	-
C302	3.00	3.0
C303	3.00	2.0
C304	2.8	2.8
C305	3.00	3.0
C306	2.0	1.4
C307	2.20	2.2
C308	3.00	3.0
C309	-	-
C311	2.0	3.0
C312	3.0	3.0
C313	2.8	2.8
C314	3.00	-
C315	-	-
C316	3.00	3.0
C317	3.00	3.0
C318	2.00	2.2
C401	3.00	2.6
C402	2.4	2.6
C403	3.00	1.6
C404	2.8	2.0
C405	3.0	-
C406	3.0	2.0
C407	2.0	2.0
C408	2.0	2.2
C411	3.0	1.6
C412	2.0	1.5
C413	2.0	2.2
C414	2.0	2.0
C415	1.8	1.8

3.2	ATTAINMENT OF COURSE OUTCOMES	50
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3.2.1	Describe the assessment processes used to gather the data upon which the evaluation of Course Outcome is based	10
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The information on CO assessment is explained in detail under the following sections

A. Process in CO Assessment



- ❖ The University defines the courses with course outcome for each program.
- ❖ The faculty handling the Course computes outcomes by direct methods using Continuous Internal Evaluation and indirectly through course exit survey at the end of the semester and also define a CO attainment target.
- ❖ The faculty handling the course computes CO attainment and checks for attainment level in comparison with the set target attainment.
- ❖ This CO attainment level is compared with set target to check whether the COs target are attained or not. If any CO is not attained, prepares a course gap suggest a plan to attain the CO in future.
- ❖ If CO target is met then the target may be redefined if needed.

Steps in CO computation:

1. The course outcomes are mapped to the program outcomes with correlations 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 in-charge
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.

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 5, 10 and 15 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>Quiz</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>Seminar</p> <p>It should be an individual student seminar. Seminar topics are well planned as per the course outcomes of the concerned</p> <p>Survey based Article Evaluation</p> <p>The topic will be given to student to prepare survey-based case studies as discussed by course coordinator</p>

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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.

Assessment Procedure for CO Attainment

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

Level of Correlation/Mapping Factor

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

- 3 - indicates Substantial/High mapping (high correlation towards attainment)
- 2 - indicates Moderate mapping (moderate correlation towards attainment)
- 1 - indicates Low mapping (low correlation towards attainment).

CO Attainment computation target

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

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

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

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/Mini project/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 Outcomes of all courses with respect to set attainment levels	40
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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 b. c. d. e.

f. Find the Percentage of students who scores \geq competence % for each question
%of students who got more than C % of marks = No. of students who got more than C% of marks

- g. No. of students attempted the Question
- h. Compute the average percentage of students who got more than C % of marks for each CO
- i. Compute the CO attainment for each CIE using the criterion as stated in step i.
CO Attainment Level = h. i.

- 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) $\geq 40\%$

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.

Step 4. 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.

Step 5. Course Exit Survey will be conducted at the end of the semester and analysis is carried out for each Course. The exit survey feedback include questionnaire for all COs of the course. The course exit survey considered as Indirect CO attainment.

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

Step 7: The direct CO attainment is computed by considering 40% of SEE CO attainment and 60 % of

Consolidated CIE CO attainment for the batch 2018 batch is computed as

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

Step 8: Final CO Attainment is calculated as:

Final CO Attainment = 80% of Direct Attainment + 20% of Indirect Attainment. f. g. j.

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 $< 50\%$

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:

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.

Table:3.2.2(a): Shows the attainment of COs of all the courses

Record the attainment of Course Outcomes of all courses with respect to set attainment levels									
Subject	Subject code	Index	CO1	CO2	CO3	CO4	CO5	CO6	Average
MAT-III	18MAT31	C201	62.35	69.85	72.28	60.9	68.29	-	66.73
MOM	18ME32	C202	74.88	77.85	76.42	74.55	68.38	-	74.42
BTD	18ME33	C203	82.62	74.15	76.68	-	-	-	77.82
MS	18ME34	C204	87.18	88.11	88.42	85.11	88.26	-	87.42
MCW	18ME35B	C205	97.49	92.38	95.24	98.53	94.76	-	95.68
MMM	18ME36B	C206	70.14	79.74	73.32	79.35	73.02	-	75.11
MMM LAB	18ME37B	C207	99.08	99.08	98.93	98.47	-	-	98.89
F&F & WELDING	18ME38B	C208	99.24	98.77	97.08	-	-	-	98.36
Kannada	18KAK/KVK	C209	99.04	98.88	98.88	-	-	-	98.93

Subject	Subject code	Index	CO1	CO2	CO3	CO4	CO5		Average
MATHS-IV	18MAT41	C211	86.23	83.89	85.99	84.55	85.9	-	85.31
ATD	18ME42B	C212	96.38	95.5	89.5	-	-	-	93.79
FM	18ME43	C213	96.64	94.63	97.33	98.31	99.08	-	97.20
KOM	18ME44	C214	98.16	90.17	98.31	96.63	97.18	-	96.09
MCF	18ME45A	C215	99.08	97.16	98.05	99.08	99.08	-	98.49
CAMD	18ME46A	C216	85.4	84.3	78.6	81.5	-	-	82.45
MT LAB	18MEL47A	C217	99.04	98.88	98.72	98.88	-	-	98.88
W/S & M/C SHOP LAB	18MEL48A	C218	98.47	98.16	97.7	98.93	-	-	98.32
CIP	18CPH49	C219	97.39	97.22	97.04	-	-	-	97.22

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Subject	Subject code	Index	CO1	CO2	CO3	CO4	CO5	Average
M&E	18ME51	C301	68.32	67.37	70.88	76.01	61.61	68.84
DME-I	18ME52	C302	72.96	70.25	71.12	72.8	70.88	71.60
DOM	18ME53	C303	74.08	76	76.96	79.84	78.88	77.15
TM	18ME54	C304	52.81	62.08	60.97	50.89	51.21	55.59
FPE	18ME55	C305	65.29	75.52	65.92	70.62	71.68	69.81
OM	18ME56	C306	99.68	91.05	93.2	92.88	99.36	95.23
FM LAB	18MEL57	C307	98.56	98.56	98.56	98.24	98.24	98.43
EC LAB	18MEL58	C308	98.4	98.4	98.4	98.4	-	98.40

Subject	Subject code	Index	CO1	CO2	CO3	CO4	CO5	Average
FEM	18ME61	C311	84	84.16	83.52	83.68	-	83.84
DME-II	18ME62	C312	79.84	80.65	81.6	81.92	81.44	81.09
HT	18ME63	C313	67.05	65.28	67.52	63.52	61.76	65.03
NTM	18ME641	C314	70.72	82.24	58.24	82.88	70.88	72.99
OHS	18CV653	C315	82.72	79.53	82.72	82.88	73.28	80.23
CAMA LAB	18ME66	C316	99.52	99.52	99.52	99.52	-	99.52
HT LAB	18MEL67	C317	54.88	54.72	54.56	54.72	54.72	54.72
Mini Project	18MEMP68	C318	51.5	51.36	51.36	51.52	51.52	51.45

Subject	Subject code	Index	CO1	CO2	CO3	CO4	CO5	Average
CE	18ME71	C401	90.32	91.84	92.32	92.32	92.48	91.86
CADAM	18ME72	C402	87.28	88.16	89.28	84.96	90.09	87.95
DFM	18ME731	C403	92.48	86.92	79.36	88.8	90.4	87.59
MECHATRONICS	18ME744	C404	89.5	90.44	90.69	91.6	90.81	90.61
EEC&A	18ME754	C405	84.48	80.21	89.18	91.2	91.2	87.25
CIM LAB	18ME766	C406	98.88	98.24	98.88	98.24	-	98.56
DESIGN LAB	18MEL77	C407	98.88	97.92	98.72	98.08	98.88	98.50
PROJECT PHASE-1	18MEL78	C408	99.68	99.36	99.36	99.52	99.52	99.49

Subject	Subject code	Index	CO1	CO2	CO3	CO4	CO5	Average
EE	18ME81	C411	92.16	94.24	92.25	92.17	93.92	92.94
NDT	18ME82	C412	97.36	99.57	98.84	99.28	97.45	98.5
PROJECT WORK PHASE-II	18MEP83	C413	99.52	99.52	99.52	99.52	99.52	99.52
TECHNICAL SEMINAR	18MES84	C414	97.92	98.08	97.6	97.76	-	97.84
INTERNSHIP	18MEI85	C415	99.36	98.88	98.88	99.2	99.04	99.07

3.3	ATTAINMENT OF PROGRAM OUTCOMES AND PROGRAM SPECIFIC OUTCOMES	50
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3.3.1	Describe assessment tools and processes used for measuring the attainment of each of the Program Outcomes and Program Specific Outcomes	10
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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:

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.

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.

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.

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

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

2. 3. 4. 5.

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 feedback 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.1

3.3.2	Provide results of evaluation of each PO & PSO	40
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2021-22

Subject Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C101	2.61	1.92	1.38	-	-	-	-	-	-	-	-	1.92	1.92	1.31
C102	2.16	1.98	1.86	0.72	-	-	-	2.37	2.37	-	0.72	1.44	-	-
C103	1.68	1.83	1.17	-	-	-	-	-	-	1.68	-	1.68	-	-
C104	1.77	1.95	1.74	0.84	-	2.46	2.31	-	2.76	1.77	1.83	1.77	-	-
C105	2.55	2.55	-	-	2.55	0.85	-	-	-	2.55	-	1.98	2.55	-
C106	2.15	2.16	2.16	-	-	-	-	1.43	1.43	-	-	-	-	-
C107	1.9	1.9	-	-	-	-	-	-	0.95	0.95	-	-	-	-
C108	-	-	-	-	-	-	-	1.92	0.96	2.88	-	2.88	-	-
C111	2.2	1.62	1.32	-	-	-	-	-	-	-	-	1.47	1.33	1.23
C112	2.04	1.89	1.77	0.69	-	-	-	2.22	2.22	-	0.69	1.35	-	-
C113	1.62	1.62	-	-	1.62	-	-	-	-	-	-	1.35	1.62	-
C114	1.74	1.74	-	-	1.74	0.57	-	-	-	-	-	1.17	1.17	-
C115	1.5	1.02	1.02	-	-	-	1.02	-	-	-	-	1.02	1.5	1.02
C116	2.15	2.16	2.16	-	-	-	-	1.43	1.43	-	-	-	-	-
C117	2.5	1.66	-	-	2.5	-	-	-	-	-	-	1.66	2.5	2.5
C118	-	-	-	-	-	-	-	1.74	0.87	2.58	-	2.58	-	-
C201	2.01	1.47	1.35	-	-	-	-	-	-	-	-	1.32	1.35	1.32
C202	1.5	1.2	0.75	-	-	-	0.75	-	-	-	-	0.75	2.22	1.5
C203	2.34	2.34	2.34	-	-	-	1.29	-	-	-	-	2.34	2.34	2.34
C204	2.28	1.74	1.56	1.74	-	-	1.74	-	-	-	-	1.41	2.61	1.74

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C205	1.71	1.44	2.13	-	-	-	1.53	-	-	-	-	1.74	2.7	1.92
C206	2.25	2.25	1.35	-	0.75	-	1.35	-	-	-	-	1.23	2.25	-
C207	2.94	1.98	-	-	-	1.98	-	-	-	-	-	1.98	2.94	1.95
C208	2.94	1.62	0.96	-	-	-	-	-	-	-	-	-	2.94	0.96
C209	-	-	-	-	-	2	-	0.99	-	3	-	-	-	-
C211	2.55	1.89	1.29	-	-	-	-	-	-	-	-	1.71	1.35	1.29
C212	2.82	2.82	2.82	-	-	-	1.59	-	-	-	-	2.82	2.82	2.82
C213	2.91	2.91	2.91	-	1	-	1.56	-	-	-	-	1.56	2.91	2.91
C214	1.92	1.53	0.96	-	-	-	0.96	-	-	-	-	1.35	2.88	1.92
C215	1.77	1.47	2.22	-	1.5	-	1.65	-	-	-	-	1.77	2.76	1.98
C216	-	-	-	-	-	-	-	-	-	-	-	-	1.87	1.87
C217	2.7	1.47	1.62	0.96	0.96	-	0.96	-	-	-	-	-	2.94	0.96
C218	2.94	-	-	-	-	1.95	1.95	-	-	-	-	1.95	2.94	-
C219	-	-	-	-	-	1.95	-	2.94	-	1.95	-	2.95	-	-
C301	2.07	1.53	-	1.38	-	1.17	1.59	2.13	1.83	1.83	2.07	1.86	-	-
C302	2.16	2.16	2.16	0.72	0.72	0.72	0.72	0.72	-	0.72	0.72	0.87	2.16	2.16
C303	2.31	2.31	1.53	-	-	-	1.53	-	-	-	-	2.31	2.31	1.53
C304	1.56	1.68	1.68	-	-	-	-	-	-	-	-	1.68	1.56	1.56
C305	2.1	2.1	1.95	-	-	1.53	1.74	-	-	-	1.38	1.41	2.1	2.1
C306	1.71	2.07	1.65	1.89	-	-	-	-	-	-	-	-	1.89	1.32
C307	2.94	1.95	-	-	-	1.95	-	-	-	-	-	2.61	2.16	2.16
C308	2.94	2.19	2.19	-	2.94	2.94	2.94	-	-	-	-	2.19	2.94	2.94
C309	-	-	-	-	-	2.7	2.7	2.7	-	-	-	2.7	-	-
C311	2.52	2.52	2.1	-	2.52	-	1.68	-	-	-	1.68	2.52	1.68	2.52
C312	2.43	2.43	2.43	0.81	0.81	0.81	0.81	0.81	-	0.81	0.81	0.96	2.43	2.43
C313	1.95	1.95	1.83	-	-	-	-	-	-	-	-	1.71	1.83	1.83
C314	2.19	1.5	-	-	-	1.47	1.47	-	-	-	-	1.59	2.19	-
C315	1.59	-	-	-	-	2.4	2.4	-	2.34	1.59	1.56	1.59	-	-
C316	2.97	2.97	1.98	-	2.97	1.98	-	-	-	1.98	-	1.98	2.97	2.97
C317	1.62	1.62	1.2	-	-	-	1.08	-	-	-	-	1.08	1.62	1.62

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C318	1.54	1.54	1.54	1.54	1.37	1.54	1.02	1.54	1.54	1.02	1.02	1.02	1.02	1.11
C401	2.76	2.76	2.4	1.29	1.47	-	1.83	-	-	-	-	1.65	2.76	2.4
C402	2.46	2.1	1.92	2.61	2.43	-	-	-	-	-	-	1.77	2.1	2.28
C403	2.64	2.64	1.74	-	-	-	-	-	-	-	-	2.46	2.64	1.41
C404	1.8	-	2.13	1.83	1.53	1.83	-	-	-	-	-	1.8	2.55	1.8
C405	1.74	2.61	1.74	-	-	2.61	2.61	-	-	-	-	2.61	2.61	-
C406	2.94	-	1.95	-	1.95	1.95	-	-	-	-	-	1.95	2.94	1.95
C407	2.94	2.94	2.94	1.95	-	0.96	-	-	1.95	-	-	-	1.95	1.95
C408	2.98	2.98	2.98	2.98	2.64	2.37	1.38	2.19	2.98	1.98	1.98	1.98	1.98	2.16
C411	2.79	1.86	1.38	-	-	1.38	2.1	1.23	-	-	-	-	2.79	1.5
C412	2.97	-	-	1.98	1.98	-	-	-	1.47	-	-	1.77	1.98	1.47
C413	2.98	2.98	2.98	2.98	2.65	2.98	1.99	2.98	2.98	1.99	1.99	1.99	1.99	2.19
C414	2.93	2.93	2.93	2.92	1.95	1.96	-	-	1.95	1.95	-	1.95	1.95	1.95
C415	2.97	2.97	2.97	-	2.98	-	-	1.98	1.98	1.98	-	1.98	1.78	1.78
CO Attainment	2.25	2.07	1.95	1.78	1.96	1.91	1.75	1.91	1.94	1.91	1.55	1.89	2.23	1.88
Direct Attainment	2.30	2.07	1.91	1.66	1.90	1.81	1.61	1.85	1.89	1.85	1.37	1.80	2.16	2.24
Indirect Attainment	2.03	2.11	2.21	2.24	2.26	2.32	2.32	2.19	2.19	2.21	2.26	2.26	2.21	1.95

CRITERION 4	STUDENT'S PERFORMANCE	150
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Table 4.1: Details of Students Performance

Item(Information to be provided cumulatively for all the shifts with explicit headings, wherever applicable)	CAY 2023-24	CAYm1 2022-23	CAYm2 2021-22	CAYm3 2020-21	CAYm4 2019-20	CAYm5 2018-19	CAYm6 2017-18
Sanctioned intake of the program (N)	60	60	60	120	120	120	120
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)	12	35	24	13	16	33	24
Number of students admitted in 2nd year in the same batch via lateral entry (N2)	06	08	36	08	02	10	8
Separate division students, if applicable (N3)	NIL	NIL	NIL	NIL	NIL	NIL	NIL
Total number of students admitted in the Program (N1 + N2 + N3)	18	43	60	21	18	43	32

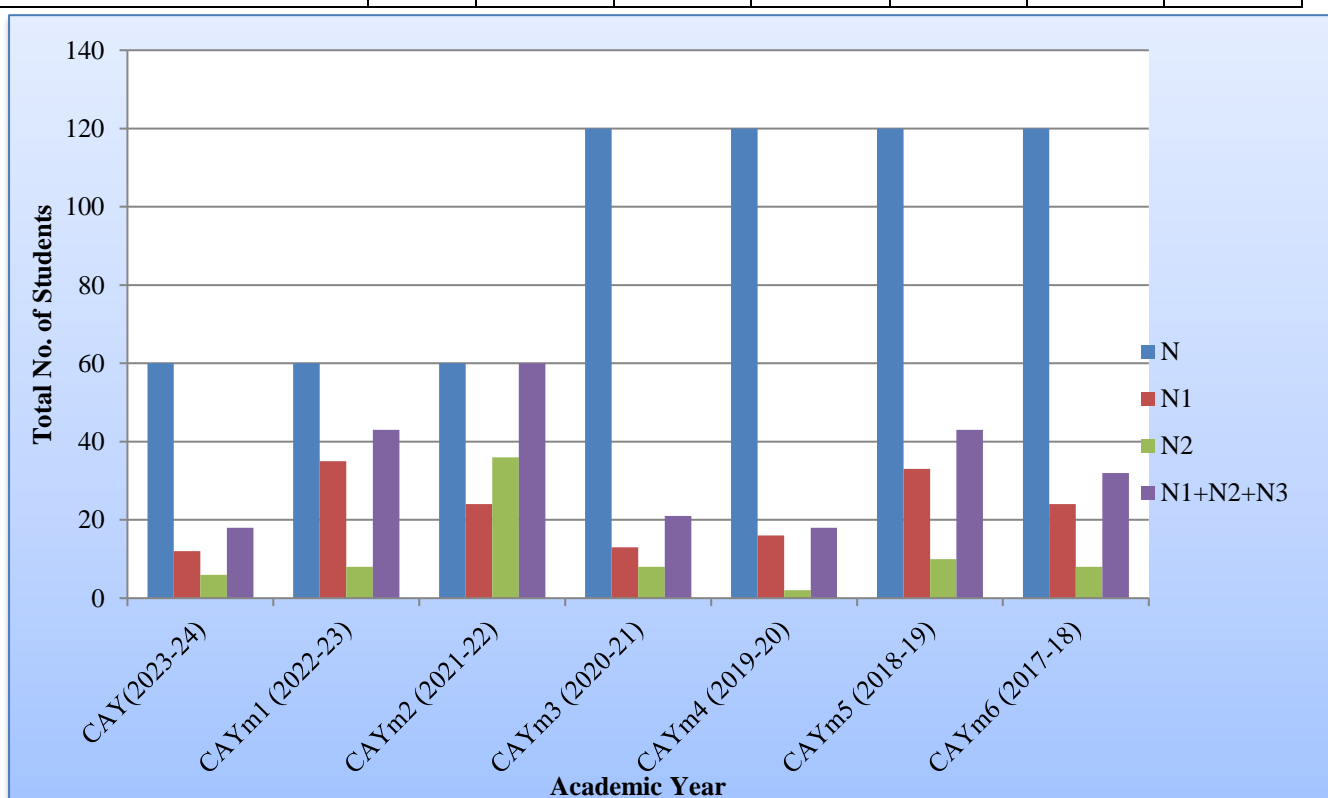


Fig. 4.1: Students Performance

Table 4.2: Students Successfully Graduated In Minimum Period

Year of entry	N1 + N2 + N3 (As defined above)	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
CAY(2023-24)	18				
CAYm1(2022-23)	43	04			
CAYm2(2021-22)	60	06	06		
CAYm3(2020-21)	21	02	04	04	
CAYm4(LYG)(2019-20)	24	06	04	04	04
CAYm5 (LYGm1)(2018-19)	35	09	09	07	06
CAYm6(LYGm2)(2017-18)	34	09	05	05	05

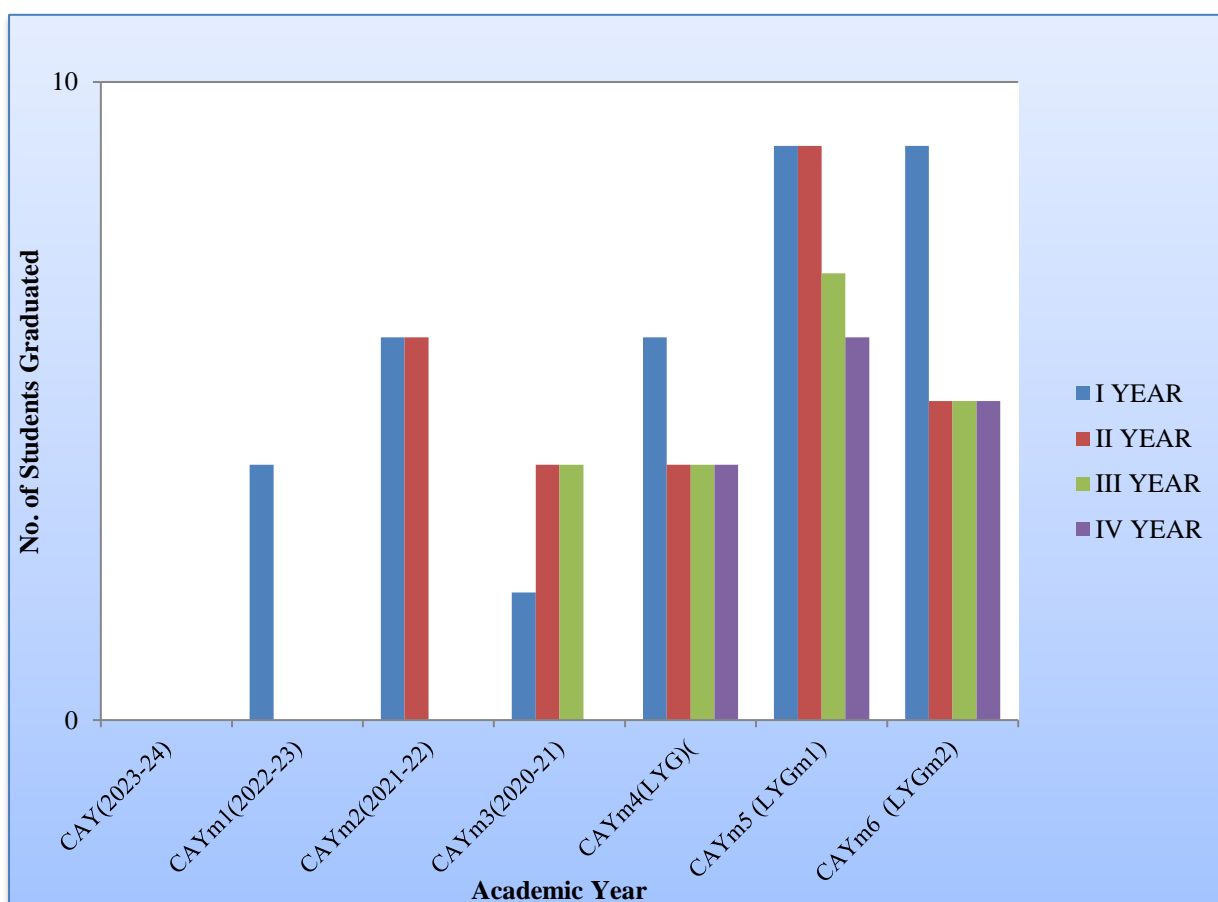


Fig. 4.2: Student's Result analysis

Table 4.3: Number of Students Successfully Graduated

Year of entry	N1 + N2 + N3 (As defined above)	Number of students who have successfully graduated (Students with backlog in stipulated period of study)			
		I Year	II Year	III Year	IV Year
CAY(2023-24)	18				
CAYm1(2022-23)	43	10			
CAYm2(2021-22)	60	18	21		
CAYm3 (2020-21)	21	13	18	16	
CAYm4(LYG)(2019-20)	24	16	18	17	16
CAYm5 (LYGm1)(2018-19)	35	21	25	22	22
CAYm6(LYGm2)(2017-18)	34	16	18	18	17

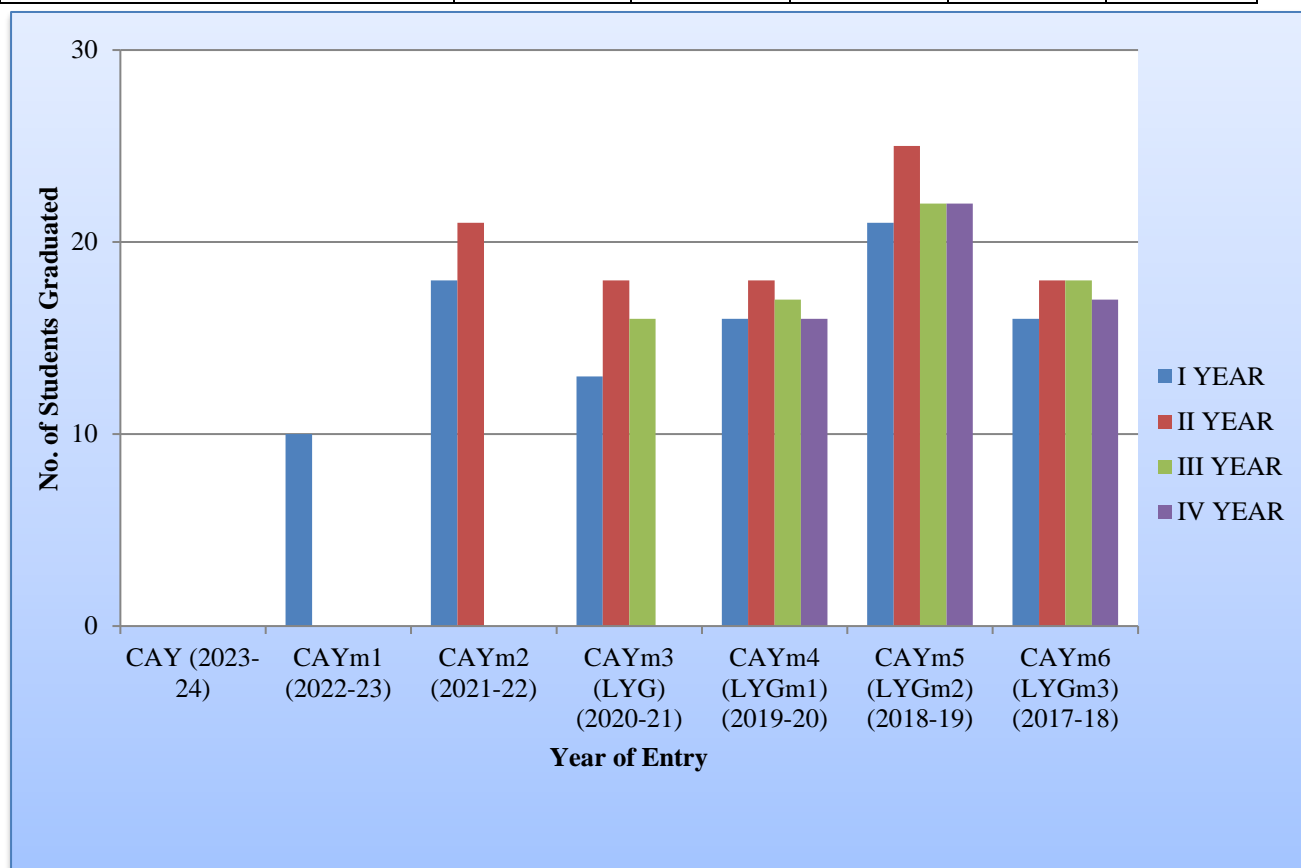


Fig. 4.3: Students Result Analysis

4.1	Enrolment Ratio	20
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Table 4.4: Students Enrolment Ratio

Year	N1	N	Enrolment Ratio = (N1/N)*100
2023-24	12	60	20.00
2022-23	35	60	58.33
2021-22	24	60	40.00
Average Student Enrolment			39.44

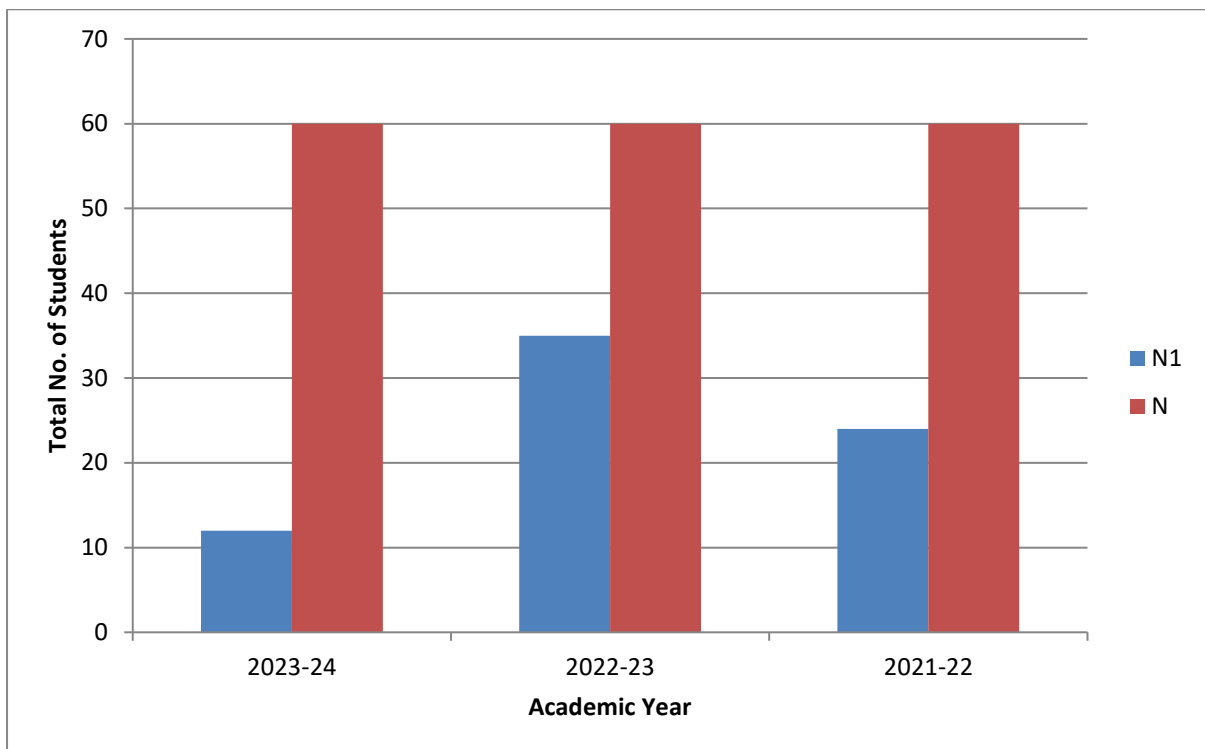


Fig.4.4: Enrolment Ratio

4.2	Success Rate in the stipulated period of the program	40
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4.2.1	Success rate without backlogs in any semester/year of study	25
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Table 4.5: Students Success Rate

Item	Latest Year of Graduation, LYG (CAYm3) (2019-20)	Latest Year of Graduation minus1, LYGm1 (CAYm4) (2018-19)	Latest Year of Graduation minus 2, LYGm2 (CAYm5) (2017-18)
Number of students admitted in the corresponding First Year + admitted in 2 nd year via lateral entry and separate division, if applicable	18	43	32
Number of students who have graduated without backlogs in the stipulated period	04	07	05
Success Index (SI)	0.22	0.163	0.156
Average SI	0.179		
Success rate without backlogs in any year of study = 25 × Ave.SI	4.48		

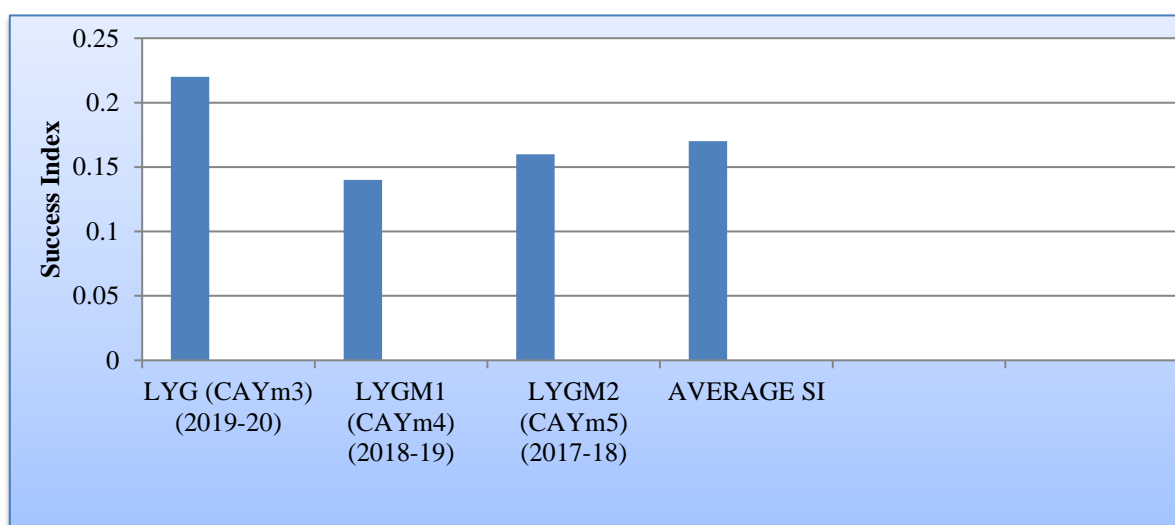


Fig. 4.5: Students Success Rate

4.2.2	Success rate in stipulated period	15
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Table 4.6: Students Success rate in Stipulated Period

Item	LYG (CAYm3) (2019-20)	LYGm1(CAYm4) (2018-19)	LYGm2(CAYm5) (2017-18)
Number of students admitted in the corresponding First Year + admitted in 2nd year via lateral entry and separate division, if applicable	18	43	32
Number of students who have graduated in the stipulated period	16	22	17
Success Index (SI)	0.88	0.51	0.53
Average Success Index	0.64		
Success rate = 15 × 0.5274	9.6		

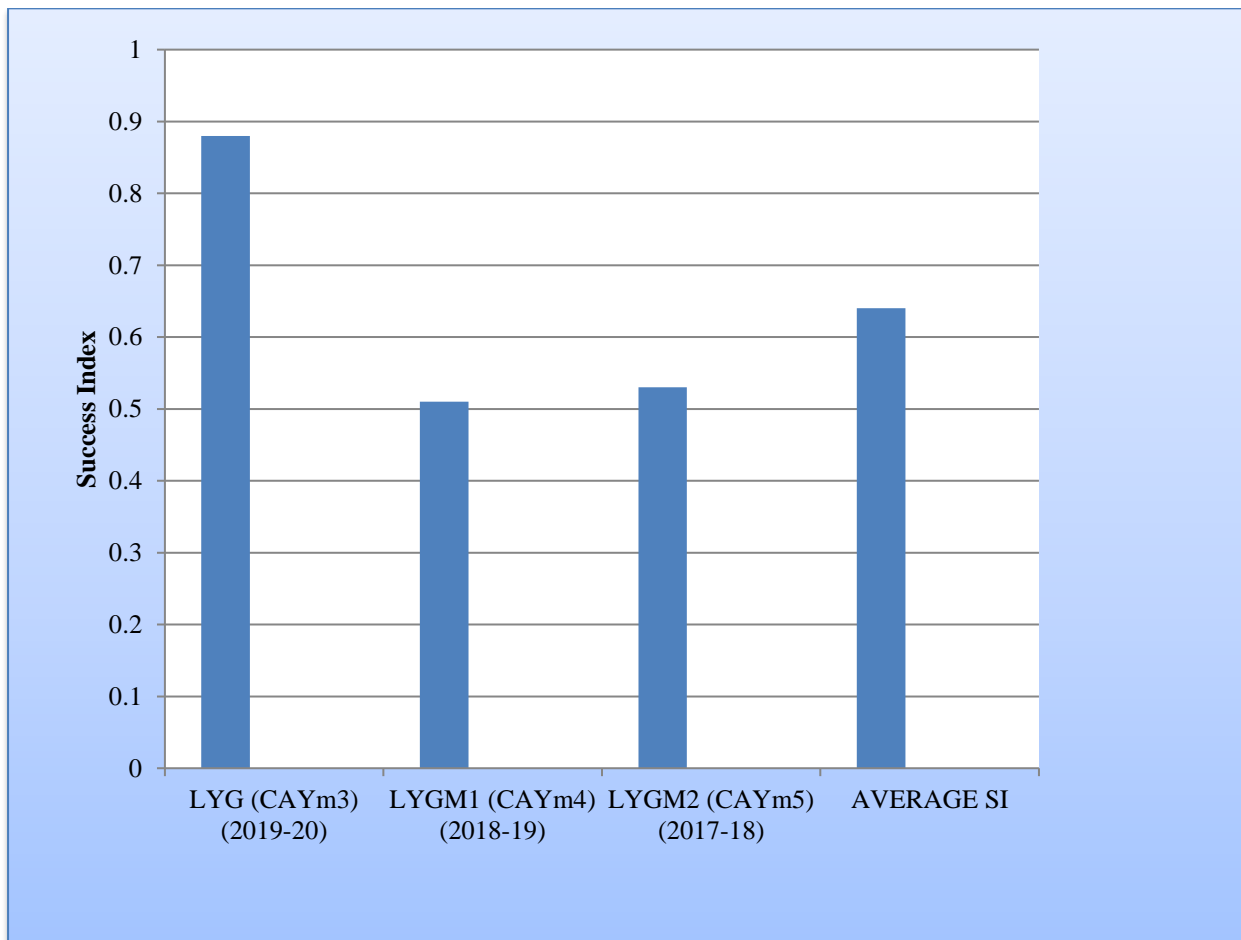


Fig. 4.6: Students Success rate in Stipulated Period

4.3	Academic Performance in Third Year	15
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Table 4.7: Academic performance in Third year

Academic Performance	CAYm3 (2020-21)	LYG (2019-20)	LYGm1 (2018-19)
Mean of CGPA or Mean Percentage of all successful students (X)	6.98	7.13	7.15
Total no. of successful students (Y)	16	17	22
Total no. of students appeared in the examination(Z)	18	18	25
API = X* (Y/Z)	6.20	6.73	6.29
Average API = (AP1 + AP2 + AP3)/3	6.4		
Academic Performance = 1.5 *1.909	9.61		

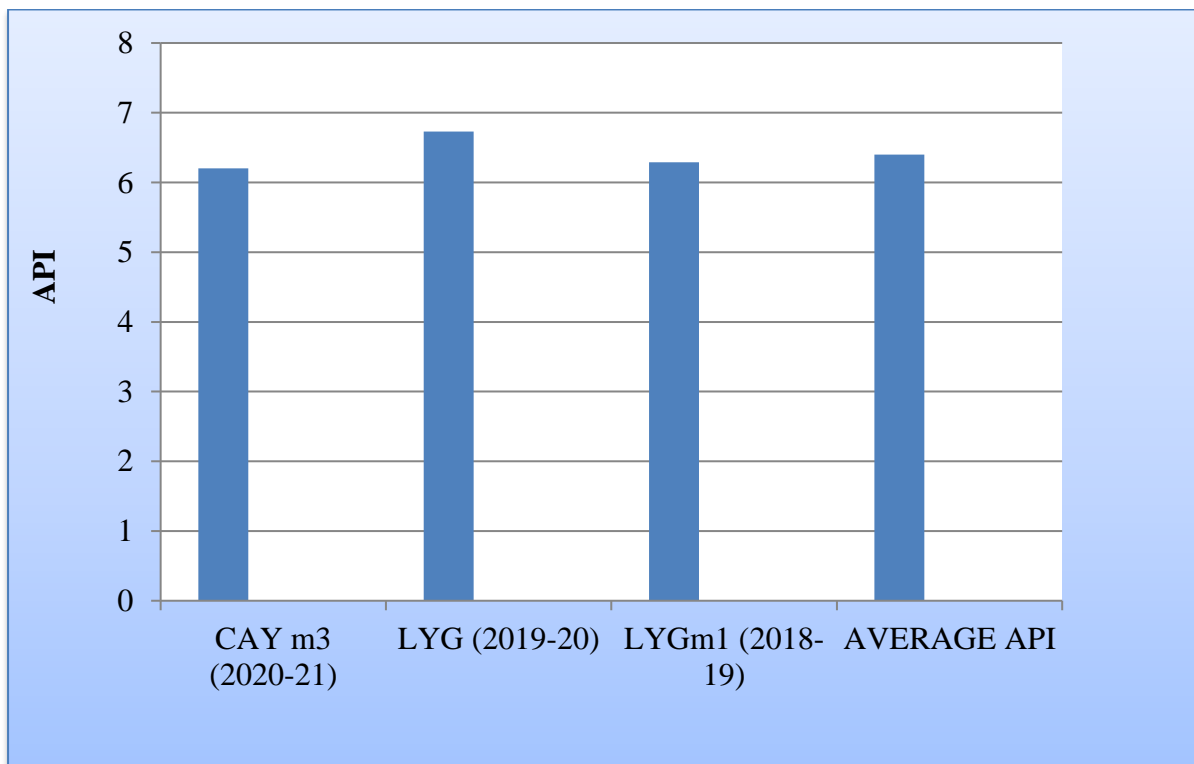


Fig. 4.7: Academic performance in Third year

4.4	Academic Performance in Second Year	15
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Table 4.8: Academic performance in Second year

Academic Performance	CAYm2 (2021-22)	CAYm3 (2020-21)	LYG (2019-20)
Mean of CGPA or Mean Percentage of all successful students (X)	6.42	6.89	7.17
Total no. of successful students (Y)	21	18	18
Total no. of students appeared in the examination(Z)	54	21	18
API = X* (Y/Z)	2.5	5.9	7.17
Average API = (AP1 + AP2 + AP3)/3	5.19		
Academic Performance = 1.5 *1.734	7.79		

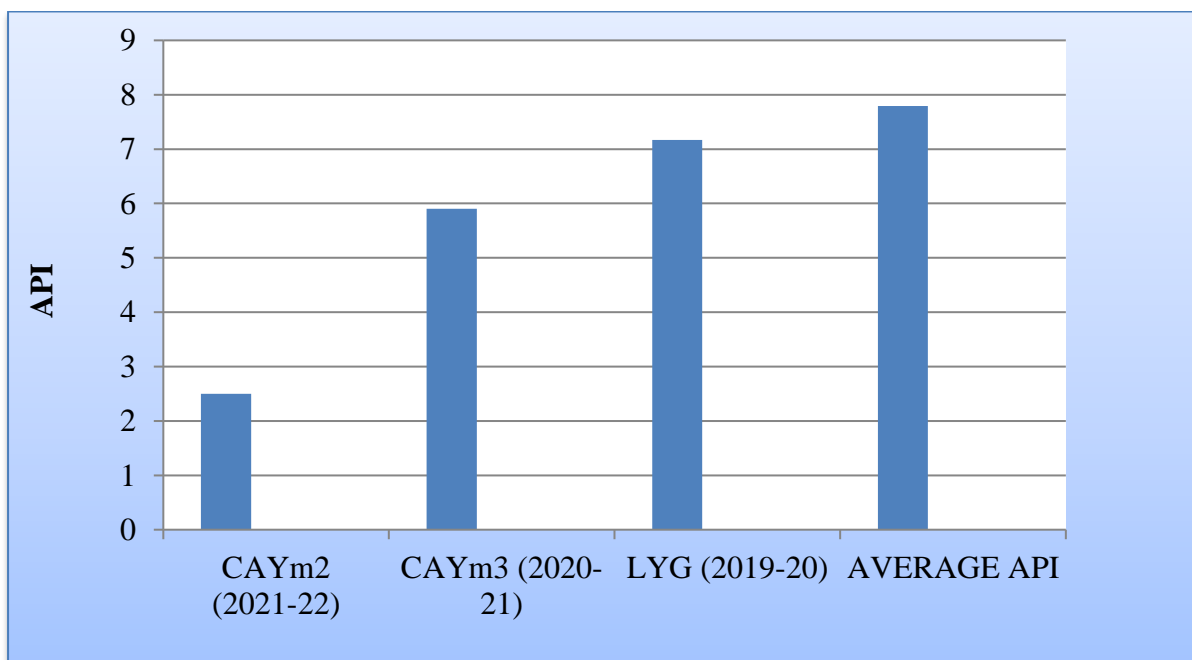


Fig. 4.8: Academic performance in Second year

4.5	Placement, Higher Studies and Entrepreneurship	40
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Table 4.9: Placement, Higher studies and Entrepreneurship

Item	LYG (2022-23)	LYGm1 (2021-22)	LYGm2 (2020-21)
Total No. of Final Year Students (N)	17	22	18
No. of students placed in companies or Government Sector (x)	17	15	11
No. of students admitted to higher studies with valid qualifying scores (GATE or equivalent State or National Level Tests, GRE, GMAT etc.) (y)	Nil	Nil	Nil
No. of students turned entrepreneur in engineering/technology (z)	Nil	Nil	Nil
x + y + z =	17	15	11
Placement Index : (x + y + z)/N	P1= 1	P2= 0.68	P3= 0.61
Average placement= (P1 + P2 + P3)/3	0.76		
=0.76*40	30.53		

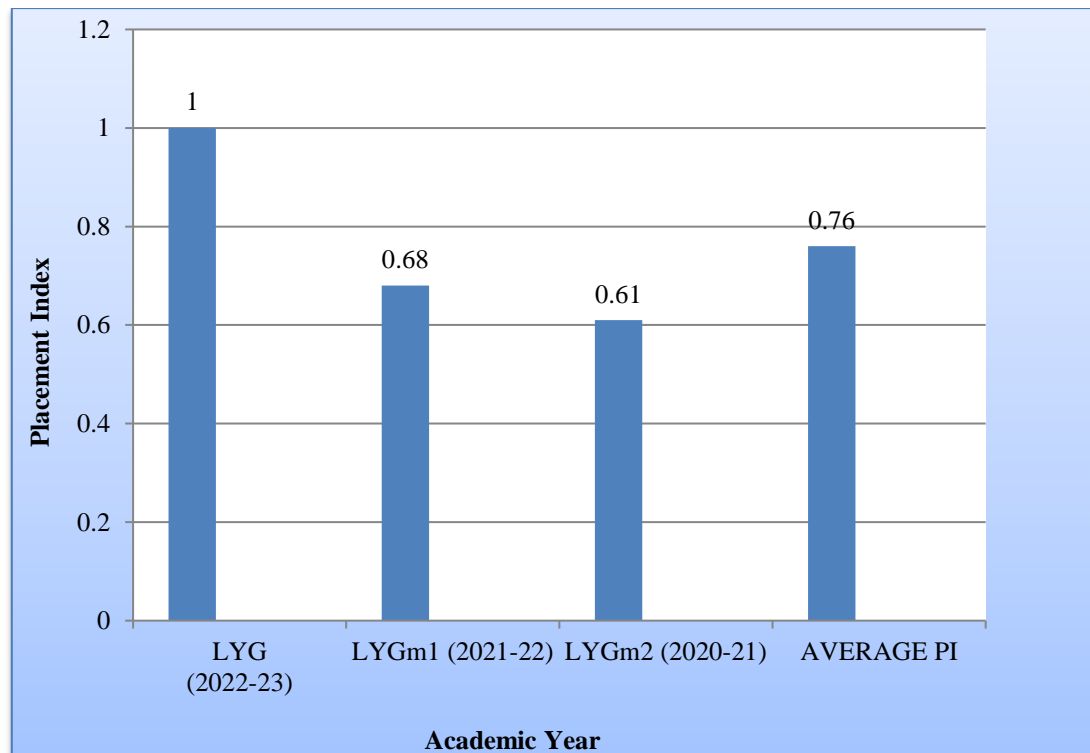


Fig. 4.9: Placement, Higher studies and Entrepreneurship

DEPARTMENT OF MECHANICAL ENGINEERING

Assessment Year Name : CAYm1				
SL. No	Student Name	Enrollment No	Employee Name	Appointment No
1	Abishek kumar sah	1RI19ME001	Hyundai	LHB2596
2	Albi K mathews	1RI19ME003	Raise to Pai India Pvt. Ltd., (9900607159)"	-
3	Harshind T	1RI19ME005	Vikram Sarabhai space centre	No. 2/3/GSS/GR/T-7632
4	Hasibu Rahman Ansari	1RI19ME006	"Pentagon Space (9731181777)"	-
5	Ishtiyaque ahmed khan	1RI19ME008	Hyundai	LHB2587
6	K Athul	1RI19ME009	"Pentagon Space (9731181777)"	-
7	Md Owaisansari	1RI19ME010	Hyundai	LHB2586
8	Nihman p	1RI19ME012	"Pentagon Space (9731181777)"	-
9	Prajwal G L	1RI19ME013	"Pentagon Space (9731181777)"	-
10	Prashanth Mishra	1RI19ME014	Hyundai	LHB2585
11	Ranjan L R	1RI19ME015	Toyotetsu India Pvt.Ltd	TTIA/HRD/NATS/2023-24
12	Imama sab	1RI20ME400	"Pentagon Space (9731181777)"	-
13	Naveen K B	1RI20ME401	Career Labs	-
14	Prasanta das	1RI20ME403	Pentagon Space	-
15	Revati Venkatramana Toregazani	1RI20ME404	EMERTXE	-
16	Thilak G	1RI20ME406	Pentagon Space	-
17	Yashwanth K M	1RI20ME407	" Omega Healthcare"	-

Assessment Year Name : CAYm2				
S.No	Student Name	Enrollment No	Employee Name	Appointment No
1	Abishek Johny	1RI18ME001	"Pentagon Space Pvt. Ltd. 099010 66669"	-
2	Anjan Gowda . H	1RI18ME004	Bharat Fritz werner, Pvt Ltd	SKAG006220 702186
3	Jefin Varghese	1RI18ME012	"Pentagon Space Pvt. Ltd. 099010 66669"	-
4	Kamrul Ansari	1RI18ME013	"Pentagon Space Pvt. Ltd. 099010 66669"	-
5	Narayan Prasad Pokharel	1RI18ME019	"Pentagon Space Pvt. Ltd. 099010 66669"	-
6	Rahul Prasad Singh yadav	1RI18ME021	"SPR Human Capital Solutions 9347163827/ 9346683258"	-

DEPARTMENT OF MECHANICAL ENGINEERING

7	Ramkumar Devaraddi	1RI18ME022	"Pentagon Space Pvt. Ltd. 099010 66669"	-
8	Ravi Kumawat N	1RI18ME023	"dMaic Innovations Pvt. Ltd. 099452 41722"	-
9	Rizwan Razak	1RI18ME025	"SPR Human Capital Solutions 9347163827/ 9346683258"	-
10	Sagar Nyaupane	1RI18ME026	"Pentagon Space Pvt. Ltd. 099010 66669"	-
11	Sanjith Sunny	1RI18ME027	"SPR Human Capital Solutions 9347163827/ 9346683258"	-
12	Saroj Budhathoki	1RI18ME028	"Pentagon Space Pvt. Ltd. 099010 66669"	-
13	Sunil Chai	1RI18ME029	"Pentagon Space Pvt. Ltd. 099010 66669"	-
14	Tabrej Alam	1RI18ME030	"SPR Human Capital Solutions 9347163827/ 9346683258"	-
15	Yandapalli sadasivareddy	1RI18ME033	KSH Automotive Pvt.Ltd	KSH-HR-F-022/0&01.11.2020

Assessment Year Name : CA Ym3				
S.No	Student Name	Enrollment No	Employee Name	Appoint ment No
1	Aaditya Regmi	1RI17ME001	"SPR Human Capital Solutions 9347163827/ 9346683258"	-
2	Dinesh	1RI17ME007	"SPR Human Capital Solutions 9347163827/ 9346683258"	-
3	Gauri Narayan Giri	1RI17ME008	"SPR Human Capital Solutions 9347163827/ 9346683258"	-
4	Gyanu Dahal	1RI17ME009	"SPR Human Capital Solutions 9347163827/ 9346683258"	-
5	Qamruzzama khan	1RI17ME014	"SPR Human Capital Solutions 9347163827/ 9346683258"	-
6	Sajin A S	1RI17ME015	"SPR Human Capital Solutions 9347163827/ 9346683258"	-
7	Sandip Giri	1RI17ME016	"SPR Human Capital Solutions 9347163827/ 9346683258"	-
8	Satish Kumar tripathi	1RI17ME017	"SPR Human Capital Solutions 9347163827/ 9346683258"	-
9	shyam nau	1RI17ME018	"SPR Human Capital Solutions 9347163827/ 9346683258"	-
10	Taheer dhuniya	1RI17ME021	"SPR Human Capital Solutions 9347163827/ 9346683258"	-
11	Ullas K V	1RI17ME022	"SPR Human Capital Solutions 9347163827/ 9346683258"	-

4.6	Professional Activities	20
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4.6.1	Professional societies/chapters and organizing engineering events	5
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The Department of Mechanical Engineering has The Institute of Indian Foundrymen (IIF), Bureau of Indian Standards (BIS) & Society of Automotive Engineers Student Chapters. The department conducts various events like Technical Talks, Industrial visits, workshop & Technical quiz under students chapters every year.

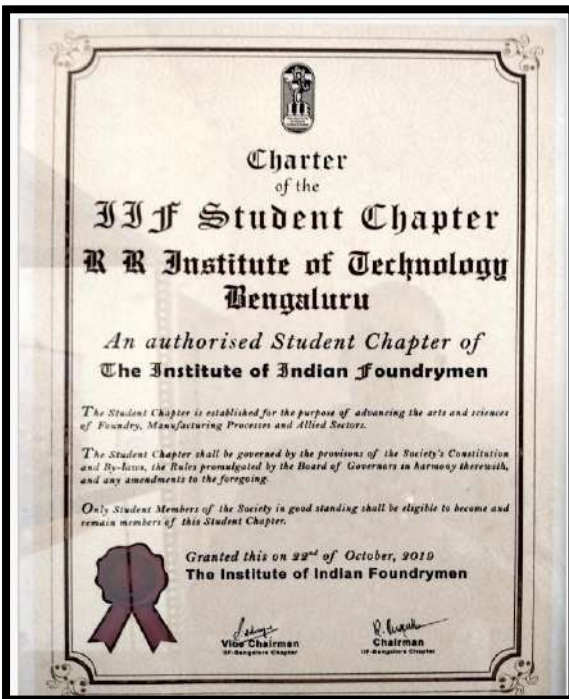
Sl. No.	Name of the Event	Date	Name of the Resource Person	Venue
1.	SAE India Student Chapter Inauguration & Technical Talk	13/11/2019	Mr. Shriram S	R R Institute of Technology, Bangalore
2.	Institute of Indian Foundrymen- student chapter Inauguration & Technical Talk	15/11/2019	Dr. P. Raghothama Rao	R R Institute of Technology, Bangalore
3.	Inauguration of Bureau of Indian Standards Club	01/09/2022	Mr. Narendra Reddy Joint Director, BIS	R R Institute of Technology, Bangalore
4.	One day Training program on Standards	26/12/2022	Mr. Pradeep Kumar Deputy Director, BIS	R R Institute of Technology, Bangalore
5.	Standard Writing Competition	16/06/2023	Mr. Mohan Kumar P N	R R Institute of Technology, Bangalore
6.	Door to Door Campaign	14/10/2022	Mr. Narendra Reddy Joint Director, BIS	Bureau of Indian Standards, Bangalore
7.	Walk for Quality	16/10/2022	Mr. Narendra Reddy Joint Director, BIS	Bureau of Indian Standards, Bangalore



IIF Student Chapter Inauguration



Seminar conducted under students Chapter



Institute of Indian Foundrymen student Chapter Certificate



Society of Automotive Engineers students Chapter Certificate



Bureau of Indian Standard

The following faculty are having membership in Indian society for technical education.

Sl.No.	Name of the faculty	Membership Number
01	Society of Automotive Engineers	
02	International Association of Engineers	228088
03	International Association of Academic Plus Corporate	FRTJQC-CE004281
04	Institute for Engineering Research & Publication	PMIN05924318
05	ISTE	LM48782
06	ORSI	2414
07	Society of Automotive Engineers	7190110145

4.6.2	Publication of technical magazines, newsletters, etc.	5
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Departmental NewsLetter

Table 4.10: Publication of Technical magazines, Newsletters

Sl. No	Name of the Editor	Name of the Publisher	Volume	Issue	Duration
1	Prof. Girish.	Dept. of Mechanical Engg.	Volume 7	Issue 2	August-2023
2	Prof. Kalburgi Bharath	Dept. of Mechanical Engg.	Volume 7	Issue 1	April-2023
3	Prof. Kalburgi Bharath	Dept. of Mechanical Engg.	Volume 6	Issue 2	August-2022
4	Prof. Kalburgi Bharath	Dept. of Mechanical Engg.	Volume 6	Issue 1	April-2022
5	Prof. Harish M.R	Dept. of Mechanical Engg.	Volume 5	Issue 2	September-2021
6	Prof. Harish M.R	Dept. of Mechanical Engg.	Volume 5	Issue 1	March-2021
7	Prof. Shridharmurthy H N	Dept. of Mechanical Engg.	Volume 4	Issue 2	September-2020
8	Prof. Shridharmurthy H N Prof. Kalburgi Bharath	Dept. of Mechanical Engg.	Volume 4	Issue 1	January-2020
9	Prof. Shridharmurthy H N Prof. Kalburgi Bharath	Dept. of Mechanical Engg.	Volume 3	Issue 2	September-2019
10	Prof. Shridharmurthy H N Prof. Kalburgi Bharath	Dept. of Mechanical Engg.	Volume 3	Issue 1	January-2019



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R R MECH CHRONICLE

Volume 6, Issue 2

Newsletter-August 2022

Upcoming Events

- Certificate programme on modeling tools.
- Student Development Programme
- Industrial visits

Inside this issue:

- Messages & Vision Mission 1
- Programmes conducted, KSCST funded 2
- Awards & Achievements, Toppers of dept. 3
- Photo Gallery 4

Student editors
Sagar Nyaupne
(1RI18ME026)

Tabrej Alam
Ansari
(1RI18ME030)

Principal's Message -

"So proud that the department of mechanical engineering is presenting Volume 6 issue 2 of newsletter with talents of their students and faculty".

Dr. Mahendra K V



HOD's Message -

"At the outset, I congratulate the editorial board for their solidarity in bringing out the fifth newsletter, Volume 6 issue 2 of the "R R MECH CHRONICLE" with flying colors for the academic year 2021-22".

Dr. Channabasavaraj S



Message From Editor -

"I am happy to serve you as an editor of R R Mech chronicle and I have tried my level best to convey the latest mechanical department news in best possible manner, hope you enjoy reading newsletter".

Mr. Kalburgi Bharath
Assistant Professor



Association of RRIT Mechanical Engineers

The mechanical departmental association "ARME" was started in the year 2016. The association effectively brings the students of the department together and bridges them to the outside world.

VISION

To develop & contribute highly motivated enthusiastic innovative young mechanical engineers to the nation.

MISSION

To provide a platform for the budding mechanical engineers to showcase their multi skillsets & encourage to acquire multifold talent through participatory learning.



For feedback and suggestions reach us @- mechanical@rrinstitutions.com

4.6.3	Participation in inter-institute events by students of the program of study.	10
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Table 4.11: Participation in different sports events by the students in the year 2023-24

Sl. No	Name Of The Student	Semester	Sports Event Participated	Place at which event held
01	Mr.Yashwanth K M	5 th	KHO KHO	Acharya Institute of Technology, Bangalore
02	Mr.Ram Kumar Devaraddi	7 th		

DEPARTMENT OF MECHANICAL ENGINEERING

CRITERION 5	FACULTY INFORMATION AND CONTRIBUTIONS	200
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Name of the Faculty Member	Qualification			Association with the Institution	Designation	Date on which Designated as Professor/ Associate Professor	Date of Joining the Institution	Department	Specialization	Academic Research			Currently Associated (Y/N) Date of Leaving (In case Currently Associated is	Nature of Association (Regular/Contract)
	Degree (highest degree) Degree	University	Year of attaining higher qualification							Research Paper	Ph.D Guidance	Faculty Receiving Ph.D. during the Assessment		
Dr. Channabasavara j.S	Ph.D	Bangalore	22/09/2014	2018	HOD	21/08/2018		Mech	Mechanical Engineering	11	03		yes	Regular
Dr Suresha C N	Ph.D	Bangalore	12/06/2013		Prof.	13/07/2022		Mech	Mechanical Engineering	07	01		yes	Regular
Dr.Amarnath G	Ph.D	Bangalore		2015	Asso Prof	27/07/2015	2015	Mech	Mechanical Engineering	01	-	-	yes	Regular
Mr. Shridhar Murthy H N	ME/M.Tech	VTU	25/06/2016		Asst. Prof.			Mech	Machine Design	0			yes	Regular
Mr.Nagesh Kumar R	ME/M.Tech	VTU	16/09/2013		Asst. Prof.			Mech	Thermal Power Engineering	0			yes	Regular
Mr.Lohith Kumar J Kondapura	ME/M.Tech	VTU	05/12/2016		Asst. Prof.			Mech	Machine Design	03			yes	Regular
Mr.Deepak A R	M.Tech	VTU	21/01/2017		Asst. Prof.			Mech	Thermal Power Engineering	02			yes	Regular
Mr.Keerthy Prasad	M.Tech	VTU	05/05/2016	2016	Asst. Prof.			Mech	Machine Design	0			yes	Regular
Mr.Kalburgi Bharath	M.Tech	VTU	09/01/2018		Asst. Prof.			Mech	Thermal Power Engineering	02			yes	Regular
Mr.Srinivas K R	M.Tech	VTU	30/12/2015		Asst. Prof.			Mech	Machine Design	01			yes	Regular
Mr.Manjunath G D	M.Tech	VTU	28/09/2011		Asst. Prof.			Mech		0			yes	Regular
Mr.Sunkappa	M.Tech	VTU	18/04/2011		Asst. Prof.			Mech	Thermal Power Engineering	0			yes	Regular
Mr.GIRISH T	M.Tech	VTU	12/09/2015		Asst. Prof.			Mech		0			yes	Regular
Dr.Manjunatha. G	Ph.D	VTU	08/02/2020	2023	Asst. Prof.	17/08/2020		Mech		5			No	Regular
Mr.Gururaj Naik	M.Tech	VTU	21/01/2017		Asst. Prof.			Mech		0			No	Regular
Mr.Srinivas M T	M.Tech	VTU	07/09/2013		Asst. Prof.			Mech	Machine Design	0			No	Regular

DEPARTMENT OF MECHANICAL ENGINEERING

Name of the Faculty Member	Qualification			Association with the Institution	Designation	Date on which Designated as Professor/ Associate Professor	Date of joining the Institution	Department	Specialization	Academic Research			Currently Associated (Y/N) Date of Leaving (In case Currently Associated is	Nature of Association (Regular/Contract)
	Degree (highest degree) Degree	University	Year of attaining higher qualification							Research Paper	Ph.D Guidance	Faculty Receiving Ph.D. during the Assessment		
Mr.Naveen .G	M.Tech		07/04/2012		Asst. Prof.	21/08/2018		Mech	Machine Design	0			No	Regular
Mrs.Shaila D Hosamani	M.Tech	VTU	23/02/2004		Asst. Prof.			Mech		0			No	Regular
Mr.Satish H B	M.Tech	VTU	05/04/2013		Asst. Prof.			Mech		0			No	Regular
Mr.Pavan Kumar Reddy	M.Tech	VTU	05/05/2016		Asst. Prof.			Mech	Thermal Power Engineering	0			No	Regular
Dr. Shivalingappa Kubsad	Ph.D		19/03/2014		Asst. Prof.			Mech		0			No	Regular
Mr.Puneeth M L	M.Tech	VTU	27/07/2013		Asst. Prof.			Mech	Machine Design	0			No	Regular
Mr.Yatish M	M.Tech	VTU	06/01/2018		Asst. Prof.			Mech	Machine Design	0			No	Regular
Mr.Jeevith T S	M.Tech	VTU	21/01/2017		Asst. Prof.			Mech	Machine Design	0			No	Regular
Mr.Sagar D	M.Tech	VTU	21/01/2012		Asst. Prof.			Mech	Machine Design	0			No	Regular

The cumulative information for all the shifts for three assessment years in above format is provided in Annexure V.

DEPARTMENT OF MECHANICAL ENGINEERING

5.1	Student-Faculty Ratio (SFR)	20
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S: F ratio = N/F; N = No. of students = 3x, where x is (approved intake + 20% lateral entry intake+ separate division, if any)

F = No. of faculty = (a + b – c) for every assessment year.

- a) Total number of full-time regular Faculty serving fully to 2nd, 3rd and 4th year of this program.
- b) Total number of full-time equivalent regular Faculty (considering fractional load) serving this program from other Program(s).
- c) Total number of full time equivalent regular Faculty (considering fractional load) of this program serving other program(s).

UG

No. of UG Programs in the Department: 1

MECHANICAL ENGINEERING						
YEAR OF STUDY	CAY (2023-24)		CAYm1 (2022-23)		CAYM2 (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
2 nd year	60	06	60	8	120	36
3 rd year	60	08	120	36	120	17
4 th year	120	36	120	17	120	05
Sub Total	240	50	300	61	360	58
Total	290		361		418	
Grand Total	290		361		418	

PG

No. of UG Programs in the Department: 0

SFR

No. of UG Programs in the Department: 1

Description	CAY(2023-24)	CAYm1(2022-23)	CAYm2(2021-22)
Total No. of Students in the Department(S)	290	361	418
No. of Faculty in the Department(F)	13	17	22
Student Faculty Ratio (SFR)	22.31 SFR1=S1/F1	21.23 SFR2=S2/F2	19 SFR3=S3/F3
Average SFR :20.85 SFR=(SFR1+SFR2+SFR3)/3			
F=Total Number of Faculty Members in the Department (excluding first year faculty)			

Regular Faculty means:

- ❖ Full time on roll with prescribed pay scale. An employee on contract for a period of not less than two years and drawing consolidated salary not less than applicable gross salary shall only be counted as a regular employee.
- ❖ Prescribed pay scales means pay scales notified by the AICTE/Central Government and implementation as prescribed by the State Government. In case State Government prescribes lesser consolidated salary for a particular cadre then same will be considered as reference while counting faculty as a regular faculty.

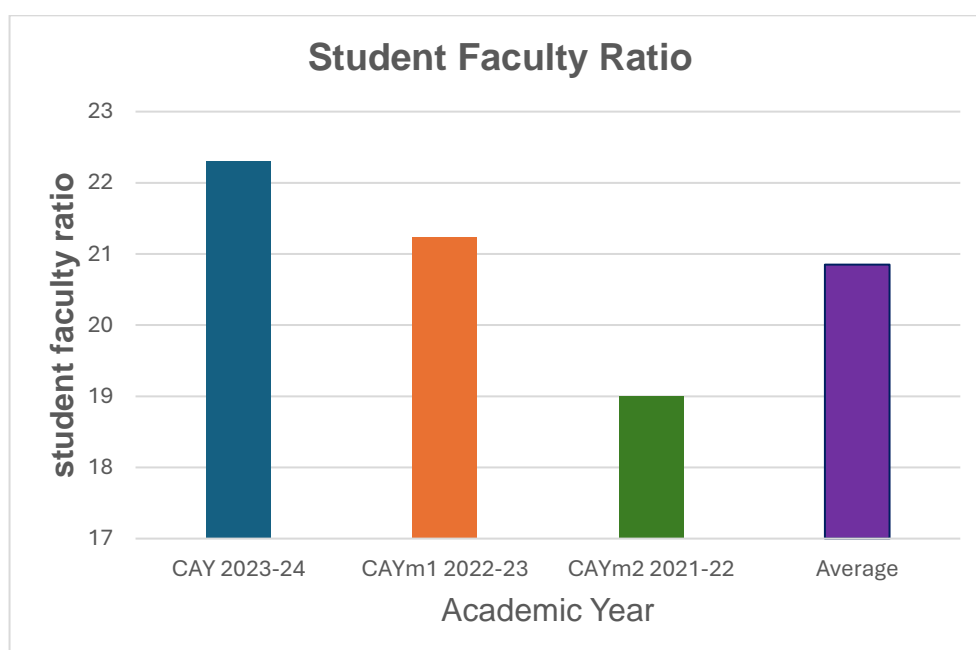


Fig. 5.1: Student – Faculty Ratio

5.2	Faculty Cadre Proportion	25
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The reference Faculty cadre proportion is 1(F1):2(F2):6(F3)

F1: Number of Professors required = $1/9 \times$ Number of Faculty required to comply with 20:1 Student-Faculty ratio based on no. of students (N) as per 5.1

F2: Number of Associate Professors required = $2/9 \times$ Number of Faculty required to comply with 20:1 Student-Faculty ratio based on no. of students (N) as per 5.1

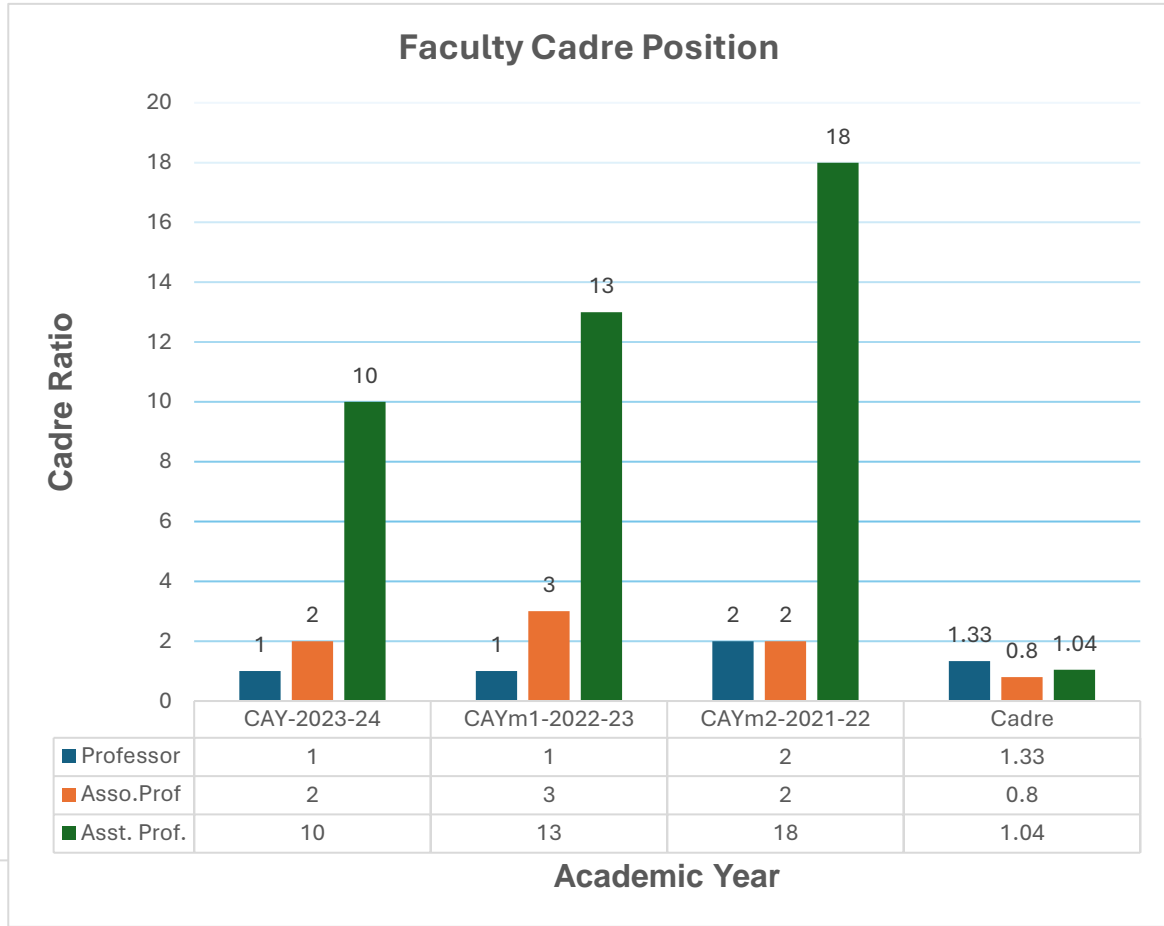
F3: Number of Assistant Professors required = $6/9 \times$ Number of Faculty required to comply with 20:1 Student-Faculty ratio based on no. of students (N) as per 5.1

Table 5.2: Faculty Cadre Position

Year	Professor		Associate Professor		Assistant Professor	
	Required	Available	Required	Available	Required	Available
CAY 2023-24	1	1	3	2	09	10
CAY m1 2022-23	2	1	4	3	12	13
CAY m2 2021-22	2	2	4	2	13	18
Average	RF1=1.67	AF1=1.33	RF2=3.67	AF2=2.33	RF3=11.33	AF3=13.67

$$\begin{aligned}
 & [(AF1 / RF1) + [(AF2 / RF2) * 0.6] + [(AF3 / RF3) * 0.4]] * 12.5 \\
 & = [(1)+[(0.67*0.6)]+[(1.18*0.4)]]*12.5 = 18.00
 \end{aligned}$$

Fig. 5.2: Faculty Cadre Position



5.3	Faculty Qualification	25
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FQ = 2.5 x [(10X + 4Y)/F] X = No. of regular faculty with Ph.D Y = No. of regular faculty with M.Tech. F = No. of regular faculty required to comply 20:1

FQ = 2.5 x [(10X + 6Y)/F] where x is no. of regular faculty with Ph.D., Y is no. of regular faculty with M.Tech., F is no. of regular faculty required to comply 1:15 Faculty Student ratio (Number of faculty and Number of students required are to be calculated as per 5.1)

Table 5.3: Faculty Qualification

Year	X	Y	F	FQ= 2.5[(10X + 4Y)/F]
CAY 2023-24	3	10	14	12.50
CAY m1 2022-23	4	13	18	12.78
CAY m2 2021-22	4	18	20	14.00
Average Assessment				13.09

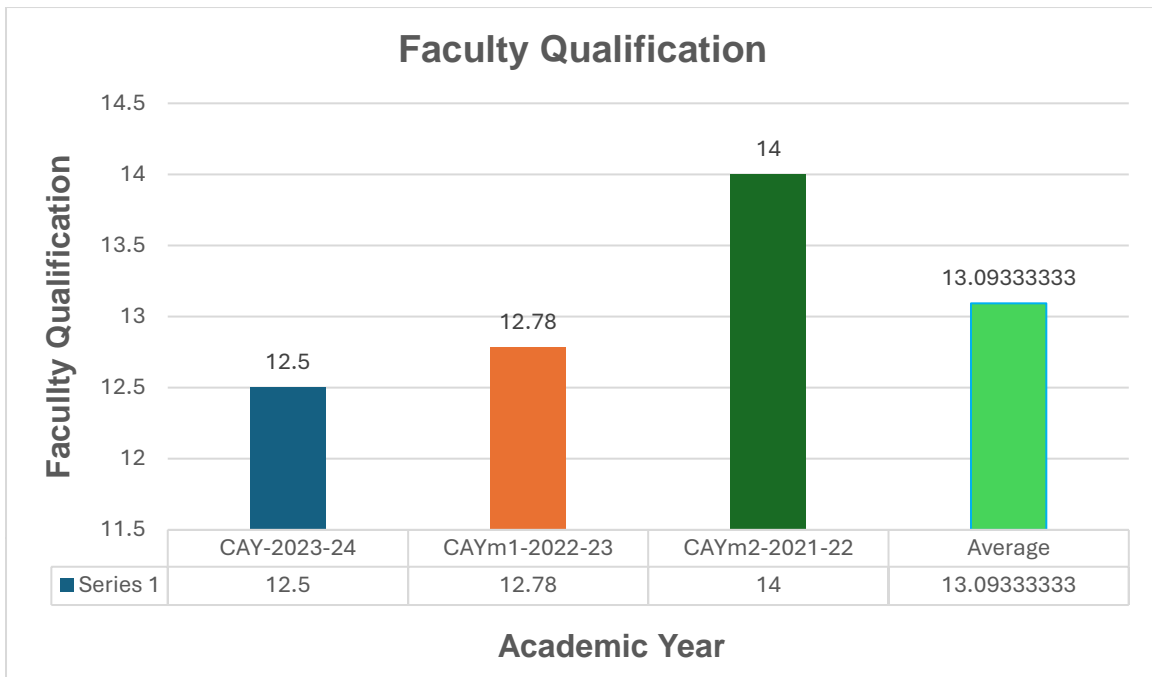


Fig. 5.3: Faculty Qualification

5.4	Faculty Retention	25
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No. of regular faculty members in	CAYm1(2022-23) = 20	CAY (2023-24) = 20
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Table 5.4 (a): Faculty Retention

Category	2022-23	2023-24
Number of faculty retained	16	10
Total No. of Faculties	20	20
Percentage of faculties Retained	80	50
Average	65%	

Assessment = $3 \times \text{RPI}/N$

Where RPI = Retention point index

= Points assigned to all faculty members

Where points assigned to a faculty member = 1 point for each year of experience at the institute but not exceeding 5.

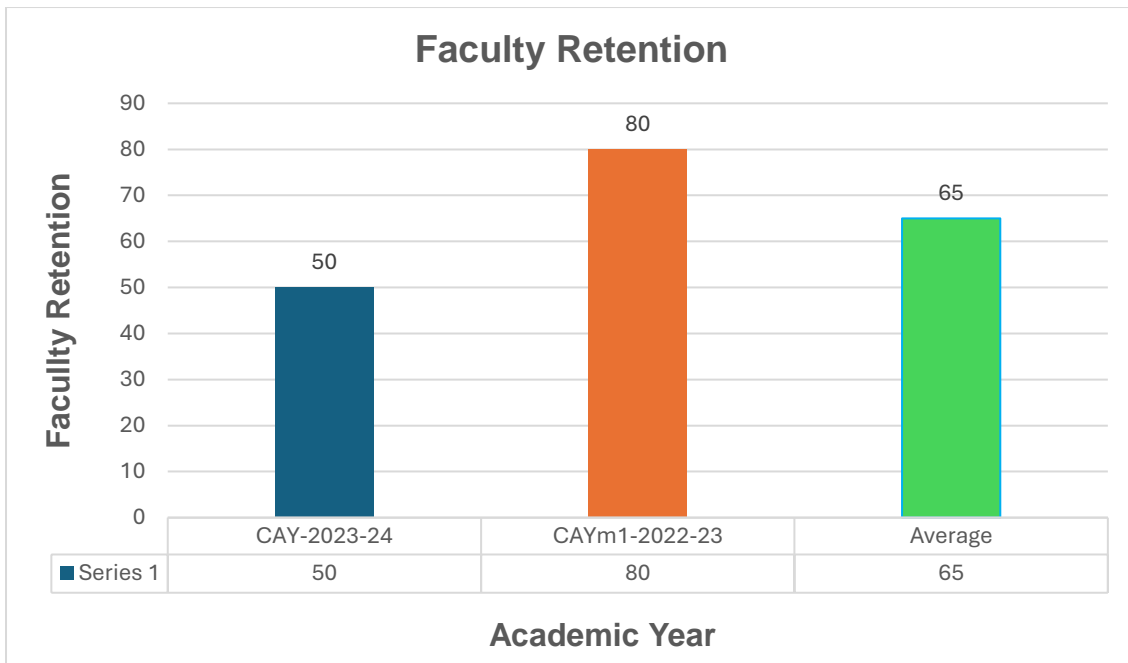


Fig. 5.4: Faculty Retention

5.5	Innovations by the Faculty in Teaching and Learning	20
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Using Innovative methods of Teaching is a crucial skill of a teachers. Innovative teaching methods & approaches can significantly enhance the student learning process. New technologies offer the possibility of developing new ways of teaching and learning, transforming the traditional educational model. Currently, traditional teaching transmitted from teacher to student is losing relevance as a consequence of the digital transformation of education.

In this context, digital tools have become a fundamental support for education professionals, as they allow them to store, process and share all teaching material through multiple electronic devices, and even create new content in a much more attractive way.

The various Innovative tools used by the faculty in Teaching & Learning processes.

1. ICT enabled Classroom: The Department uses ICT enabled classrooms which has provided unlimited access to resources and information and is a great support for teachers and it has improved the quality of student learning. The course coordinator prepares the PPT presentation for the course allotted & during the class hour the coordinator will also be able to show the AVI files of various topics that he will be doing in the class. This facilitates communication between teacher and students & increases classroom

productivity, collaborative learning & interaction between the Teacher & the students. In addition, the exchange of thoughts allows students to learn the concepts & latest technology, thus improving academic results and encouraging dynamism in the classroom.

2. **Smart Board Laboratory:** The Computer Aided Engineering Drawing Laboratory for first year is equipped with smart board, the course coordinator will be able to make the students understand the concepts of 3D & 2D drawings in a better way. The smart board has 2D & 3D geometric shapes the course coordinator can rotate the 2D object in any angle & the students will be able to visualise in 3D.

3. **Project-Based Learning:** The core idea of Project based learning is that real-world problems capture students' interest and provoke serious thinking, as the students acquire and apply new knowledge in a problem-solving context. In fact, this will integrate theory and practice. Students will be asked to design in solid Edge, generate a mathematical model and finally build and test the device. This method emphasizes research, critical thinking, problem-solving, and cooperation. Students build competence through the application of their knowledge rather than mere memorization. This active method of learning increases student engagement and satisfaction, especially when technology is utilized.

4. **Skill Based Learning:** Skill-based education is a type of education that focuses on developing specific skills and competencies that are useful and applicable in real-world situations. Unlike traditional education, which mainly emphasizes acquiring theoretical knowledge and information, skill-based education aims to equip learners with practical abilities and attitudes that can help them solve problems, create opportunities, and achieve their goals. The department conducts regularly the certificate programs based on the need of industry & technology. This will enhance their knowledge & employability.

Table 5.5: Innovations by the Faculty in Teaching and Learning

Sl. No	Name of the Faculty	Name of the Course	Topic	Links
1	Dr.Channabasavaraj.S	Elements of Mechanical Engineering	I C Engines	https://drchannabasavaraj.blogspot.com/2020/04/i-c-engine-ppt.html
2.			Properties And Compositions And Industrial Applications Of Engineering Materials	https://drchannabasavaraj.blogspot.com/2020/04/module4properties-and-compositions-and.html
3.			I.C Engines_ Refrigeration & Airconditioning	https://drchannabasavaraj.blogspot.com/2020/04/module3-ic-engines-refrigeration.html
4			Energy Sources & Basic Thermodynamics	https://drchannabasavaraj.blogspot.com/2020/04/module2-energy-sources-basic.html
5			Boilers & Turbines	https://drchannabasavaraj.blogspot.com/2020/04/module2-boilers-turbines.html
6		Computer Aided Machine Drawing	Couplings_Videos	https://drchannabasavaraj.blogspot.com/2020/04/couplingsvideoscamd.html
7			Couplings_Draft	https://drchannabasavaraj.blogspot.com/2020/04/couplingscamd-draft.html
8			Knuckle Joint	https://drchannabasavaraj.blogspot.com/2020/04/knuckle-joint-draft.html
9			Knuckle joint Video	https://drchannabasavaraj.blogspot.com/2020/04/knuckle-joint-video.html
10		Operations Management	Notes	PPT Presentation
11		Non-destructive Testing	Notes	PPT Presentation
12		Energy Engineering	Notes	PPT presentation
13		Dr.Amarnath G	Material Science	Notes
14	Non-destructive Testing		Notes	PPT Presentation
15	Mechatronics		Notes	PPT presentation

5.6	Faculty as participants in Faculty development / training activities / STTPs	15
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Table 5.6: Faculty as participants in Faculty Development / Training activities/ STTP's

Sl. No.	Name of the Faculty	Maximum 5 per faculty		
		CAY 2023-24	CAY m1 2022-23	CAY m2 2021-22
1	Dr.Channabasavaraj.S	5	5	5
2	Dr.Suresha.C N	5	0	0
3	Dr.Amarnath.G	5	5	5
4	Dr.Arulmani	0	3	5
5	Mr.ShridharMurthy	3	4	4
6	Mr.Nagesh Kumar	0	3	3
7	Mr. Kalburgi Bharth	3	5	5
8	Mr.Murali G E	4	4	5
9	Mr. Lohit Kumar	5	5	3
10	Mr.Srinivas	5	3	0
11	Mr. Deepak A R	5	5	0
12	Dr.Manjunatha G	5	5	4
13	Mr.Harish M R	5	4	4
14	Mr.Manjunath G D	3	5	5
SUM		53	55	48
RF = Number of Faculty Required to comply with 20:1 Student Faculty ratio as per 5.1		14.5	18.05	20.90
Assessment = 3 *(sum/0.5RF)		21.93	18.28	13.78
Average Assessment over three years (Marks Limited to 15)				17.99

5.7	Research and Development	30
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5.7.1	Academic Research	10
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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.

- ❖ Ph.D. guided /Ph.D. awarded during the assessment period while working in the institute.

List of Publications - 2022-2023			
Name of the Faculty	Title of the paper	Name of the publisher	ISSN/ISBN number
Dr. Channabasavaraj.S	“Investigating the influence of nanosilica and fiber layer sequence on interlaminar shear strength in carbon-Kevlar-epoxy polymer hybrid nanocomposite”	Revue des Composites et des Matériaux Avancés-Journal of Composite and Advanced Materials	Q4 Journal 1958-5799, Vol. 33, No. 1, pp. 1-6. DOI: https://doi.org/10.18280/rcma.330101
Dr. Channabasavaraj.S	Investigation of dynamic mechanical behavior of nanosilica filled carbon-Kevlar-epoxy polymer hybrid nanocomposite”,	Annales de Chimie - Science des Matériaux, International Information and Engineering Technology Association	Q3 journal, 0151-9107 Vol. 46, No. 3, pp. 141-146. DOI: https://doi.org/10.18280/acsm.460305
Dr. Channabasavaraj.S	Influence of nanosilica on tensile properties in fiber reinforced polymer hybrid composite carbon/kevlar/epoxy woven fiber.	AIP Conference Proceedings	Scopus Indexed journal 1551-7616 https://doi.org/10.1063/5.0117649
Dr. Channabasavaraj.S	Influence of wear parameter on Al7075 reinforced with TiO2 subjected to cryogenic treatment using Taguchi’s approach	American Institute of Physics Inc.(AIP)	Scopus Indexed journal 1551-7616 https://doi.org/10.1063/5.0117649
Dr Suresha C N	Assessment of Corrosion Performance of Hybrid-Al-B4c-RM Composites Through Taguchi Technique	European Chemical Bulletin	ISSN 2063-5346 doi: 10.48047/ecb/2023.12.9.150

List of Publications - 2020-2021			
Name of the Faculty	Title of the paper	Name of the publisher	ISSN/ISBN number
Dr. Channabasavaraj.S	Experimental investigation on compression and bending properties of epoxy composites reinforced with Al ₂ O ₃ , kenaf/hemp fibers for orthopaedic implants	IOP Conference Series: Materials Science and Engineering	Scopus Indexed journal 1013 (2021) 012016
Dr. Channabasavaraj.S	Investigations of tensile properties of modified epoxy-based composites reinforced with kenaf/hemp fibers for orthopaedic implants	IOP Conference Series: Materials Science and Engineering	Scopus Indexed journal 1013 (2021) 012016
Dr. Channabasavaraj.S	Effect of Reinforcement on Microstructure and Wear Properties of Al7475/Nbc Metal Matrix Composites	Journal of Scholastic Engineering Science and Management,	Volume 1, Issue 2 pp: 15-26
Dr. Channabasavaraj.S	Effect of Reinforcement on Mechanical and Wear of Al7475/MoS ₂ Metal Matrix Composites	Journal of Scholastic Engineering Science and Management	Volume 1, Issue 3 pp:1-18
Dr. Manjunatha G	Wear characteristics of double ceramic particulate hybrid aluminium matrix composite	IOP Conference Series: Materials Science and Engineering	Scopus Indexed journal 1013 (2021) 012016
Dr. Manjunatha G	Effect of dispersion and improper bonding of nanofiller polymer composites	IOP Conference Series: Materials Science and Engineering	Scopus Indexed journal 1013 (2021) 012016

List of Publications - 2018-2019			
Name of the Faculty	Title of the paper	Name of the publisher	ISSN/ISBN number
Dr. Channabasavaraj.S	Composite leaf spring for Automobile suspension	International Journal of Scientific Research & Review (IJSSR)	UGC-care 978-93-87793-87-3 Vol. 7, issue :5
Dr. Channabasavaraj.S	Natural Fibres Reinforced Polymer Composite Materials	International Journal of Scientific Research & Review (IJSSR)	UGC-care 978-93-87793-87-3 Vol. 7, issue :5
Mr.ShridharMurthy H N Dr.L.Arulmani	A review on investigation of microstructural analysis of duplex stainless steel	International Journal of Scientific Research & Review (IJSSR)	UGC-care 978-93-87793-87-3 Vol. 7, issue :5
Mr.Shridharmurthy H N Dr.L.Arulmani	A review on mechanical properties of duplex stainless steel	International Journal of Scientific Research & Review (IJSSR)	UGC-care 978-93-87793-87-3 Vol. 7, issue :5
Mr. Shridharmurthy H N Dr.L.Arulmani	A review on wear analysis and optical microscopy of super duplex stainless steels	International Journal of Scientific Research & Review (IJSSR)	UGC-care 978-93-87793-87-3 Vol. 7, issue :5
Dr. Amarnath G	Fabrication Of Solar Air Cooler	International Journal of Scientific Research & Review (IJSSR)	UGC-care 978-93-87793-87-3 Vol. 7, issue :5
Mr.Naveen G	Fabrication of multi purpose agricultural vehicle	International Journal of Scientific Research & Review (IJSSR)	UGC-care 978-93-87793-87-3 Vol. 7, issue :5
Mr. Keerthy Prasad B	A Review on fibre Reinforced composite	International Journal of Scientific Research & Review (IJSSR)	UGC-care 978-93-87793-87-3 Vol. 7, issue :5

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Mr. Murali G.E	Solar powered Automatic Cow dung Cleaning System for Cowshed	International Journal of Scientific Research & Review (IJSSR)	UGC-care 978-93-87793-87-3 Vol. 7, issue :5
Mr.Manjunatha G D	Experimental and numerical investigation of heat transfer coefficient for helical coiled heat exchanger	International Journal of Scientific Research & Review (IJSSR)	UGC-care 978-93-87793-87-3 Vol. 7, issue :5
Mr.Prashanth H.K.	An exploration of biogas for sustainable energy	International Journal of Scientific Research & Review (IJSSR)	UGC-care 978-93-87793-87-3 Vol. 7, issue :5
Dr. Channabasavaraj.S	Fabrication of ROV detecting the foreign bodies	International Journal of Scientific Research & Review (IJSSR)	UGC-care 978-93-87793-87-3 Vol. 7, issue :5
Dr. Channabasavaraj.S	Design and fabrication of solar robotic trolley	International Journal of Scientific Research & Review (IJSSR)	UGC-care 978-93-87793-87-3 Vol. 7, issue :5

Ph.D Guiding

**Table 5.8: Details of Ph.D Guiding
List of Research Scholars Pursuing Ph.D**

Sl.No	Name of the Research Guide	Name of the Research scholar	Registration Number	Title of the Research
1	Dr. Channabasavaraj.S	Mr.Kishore.H	1RI16PMJ04	Evaluation of Mechanical Properties for cryogenically treated Tio2 reinforced -Al7075 Metal matrix composites
2	Dr. Channabasavaraj.S	Mr.Sridharmurthy	1RI18PME01	Investigation of Thermo-Mechanical Fatigue Behaviour of Heat Treated Super-Duplex Stainless Steel
3	Dr.Suresha C N	Mr. Nagappa Pattanashetti	1RI20PME01	Studies on the Behavior of Friction Stir Processed Aluminium Composites
4	Dr.Suresha C N	Mrs.Asha P B	1RI17PME01	Development and characterization of cast Aluminium hybrid composite reinforced with Boron carbide and red mud particles
5	Dr.Amarnath.G	Mr.Shivakumar	1RI19TME01	Thermal Energy storage of Solar Energy for Industrial Applications using PCM materials
6	Dr.Amarnath.G	Mr.Venkatesh	1RI18PEM02	Experimental & Numerical investigation on Techno Economic Feasibility of Phase Change Materials for Energy storage in Domestic Airconditioning Applications
7	Dr.M.K.Muralidhar	Mr.Srinivasu N	1RI16PMJ03	Evaluation of Machinability of Austempered Ductile Iron Varying Heat Treatment & Machining Parameters

List of Ph.D Awarded during the Assessment Year

Table 5.7: List of Ph.D Awarded during the Assessment Year

Name of the Faculty	Department	Name of the Research Scholar	Research Title	College and affiliated university	Ph.D enrolment Year /month	Ph.D completion Year /month
Dr.K.V Mahendra	Mechanical	Mr.Pavan Kumar Reddy (1RI17PMA01)	Performance of organic Rankine cycle using zeotropic mixture of working fluids based on the parabolic solar collector	R R Institute of Technology/VTU, Belagavi	2017 February	2023 August
Dr.K.V Mahendra	Mechanical	Mr.Bommanna (1RI13PME05)	Study of Fibre attrition during Direct extrusion compression moulding of Natural fiber reinforced Thermoplastic composites".	R R Institute of Technology/VTU, Belagavi	2013	2023-October
Dr.Channa basavaraj.S	Mechanical	Mr. Pranesh KG (1RI16PMJ05)	"Investigation of the effect of Nano –Silica on Mechanical Properties in Fiber Reinforced Polymer Carbon/Kevlar/Epoxy hybrid Nano-Composites"	R R Institute of Technology/VTU, Belagavi	2016-February	2023-october
Dr.Channa basavaraj.S	Mechanical	Mr.Virupaksha Gouda (3VC17PMA05)	Charaterisation of Hybrid Polymer matrix Composites for Medical Implant applications	Rao Bahadur Y Mahabaleswarappa Engineering College, Cantonment, Ballari-583104. /VTU, Belagavi	2016-June	2022-March
Dr.Channa basavaraj.S	Mechanical	Mr. Chandru B.G (3VC17PMA03)	Development and Characterization of NbC and MoS ₂ Reinforced Hybrid Metal Matrix Composites for Enhanced Mechanical and Tribological Properties"	Rao Bahadur Y Mahabaleswarappa Engineering College, Cantonment, Ballari-583104. /Visveswaraya Technological University, Belagavi	2017-May	2023-June
Dr Suresha C N	Mechanical	Mr. Yogeeshac (5VX15PMJ36)	Studies on the performance of Welded Joints produced by Friction Stir Welding Process	VTU-RRC	2015-May	2023-june

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5.7.2	Sponsored Research	5
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2022-23 (CAYm1)			
Project Title	Duration	Funding Agency	Amount
Design & Fabrication of Gas atomiser to Produce Metal Powder from Industrial Waste	6 months	KSCST	6000.00
Development of device for Vehicle Monitoring at blind curves	6 Months	KSCST	6000.00
Total Amount(X): 12000.00			

2021-22 (CAYm2)			
Project Title	Duration	Funding Agency	Amount
Design & Fabrication of underwater ROV for detecting of foreign bodies	6 Months	KSCST	10000.00
Total Amount(Y): 10000.00			

2020-21 (CAYm3)			
Project Title	Duration	Funding Agency	Amount
Designing of UAV using Gyroscopic Gimbal frame work	6 months	KSCST	8000.00
Total Amount(Z): 8000.00			

Cumulative Amount (X + Y + Z) = 30000.00

5.7.3	Development activities	10
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a) Research Laboratory

- ❖ Research laboratories: Mechanical Engineering, VTU -Research Center - approved from the Academic year-2014-15
- ❖ Research laboratory is set up in order to enhance the knowledge and skill set of students:

Table .5.7.3(a): Details of Research Lab

Sl. No.	Research Laboratories	Facilities Available
1	Material Testing Lab	Universal Testing Machine.

Table .5.7.3(b) : Instructional materials			
Sl. No.	Scheme	Subjects	Availability of manual
1	2018	Material Testing Lab, Machine shop Lab, Foundry & Forging Lab, Metrology & Measurement Lab, Fluid Mechanics & Machinery Lab, Energy conversion Lab, Design Lab, CAMA Lab, CIM Lab,	Hard Copy are available.
2	2021	Manufacturing processes IPCC Lab, Material science & engineering IPCC Lab, CAMD Lab, Fluid Mechanics IPCC lab, MMM LAB, Thermo-fluids Engineering IPCC lab, Design Lab, Heat Transfer IPCC Lab,	Hard Copy are available.

b) Instructional Material

c) Charts : Charts are used as teaching aids in classroom teaching & in Laboratories.

Table: 5.7.3(c) : Shows few Charts that are displayed in the Laboratory

Sl.No	Name of the Lab	Name of the Charts
1	Mechanical Measurements Lab	Vernier Depth & Height Guage
2		Limit Gauges
3		External Micrometre
4		Limits Fits & Tolerances
5		Pressure Measurement
6	Machine shop Lab	Lathe Parts
7		Column & Knee type Milling Machine
8		Universal Dividing Head
9	Fluid Mechanics Lab	Centrifugal pump
10		Kaplan Turbine
11		Francis Turbine
12		Lobe Pump
13		Flow Measurement
14		Venturi meter
15		Flow Measurements
16	Design Lab	Gyroscope
17	Material Testing Lab	Metallurgical Microscope chart
18		T T T Diagram
19		Destructive Testing
20		Torsion testing machine chart
21		Rams bottom safety valve
22		Types of keys

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23	Computer Aided Machine Drawing	Types of Nut
24		Types of screw
25		Knuckle Joint
26		Bearings
27		Couplings

d) Working Models

Table: 5.7.3(d) : Shows few working models

Sl. No	Product Title	Product Description	Students Name	Year
1	3D-Printing	Fused deposition modeling (FDM) 3Dprinting, also known as fused filament fabrication (FFF), is an additive manufacturing (AM) process within the realm of material extrusion. FDM builds parts layer by layer by selectively depositing melted material in a predetermined path. It uses thermoplastic polymers that come in filaments to form the final physical objects	6th Sem Students Dr.Manjunath. G	2021-22
2	Design &Fabrication of earth auger Machine	Earth Auger machine is a mechanical device designed for efficient drilling & excavation of earth at various locations.	6 th semester students Dr. Amarnath.G	2022-23
3	Redesigning Of UAV Using Gyroscopic Gimbal Framework	The Unmanned Ariel Vehicle used to do Aerial survey of the objects.	Mr.Sooraj p, Mr Ullas K V, Mr.Sajjin Mr. Jithin Raj Mr.Shridharmurthy	2020-21

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5.7.4	Consultancy (from Industry)	5
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2022-23 (CAYm1)			
Project Title	Duration	Funding Agency	Amount
Automatic domestic waste segregation system	6 months	Canara steels Corporation	20000.00
Fabrication of drone & controlling using Virtual Reality	6 months	Canara steels Corporation	20,000.00
Design & Fabrication of Portable solar winnover	6 months	Canara steels Corporation	20,000.00
Automatic over-head tank cleaning & water monitoring system	6 months	Realm	15,000.00
Design & Development of cost effective universal Vibe rope tree shaker in harvesting by reverse Engineering Techniques	6 months	Realm	15,000.00
Total Amount(Y): 90,000.00			

2021-22 (CAYm2)			
Project Title	Duration	Funding Agency	Amount
Fabrication & Testing of Vacccum assisted smart floor cleaner Robot	6 months	Canara steels Corporation	20,000.00
Design & Fabrication of Foldable DIY Electric scooter	6 months	Canara steels Corporation	20,000.00
Greenhouse Monitoring system using IOT for Plant Nursery	6 months	Canara steels Corporation	20,000.00
Extraction of Crude oil from plastic waste	6 months	Realm	20,000.00
Design of Smart Helmet using Microcontroller	6 months	Realm	20,000.00
Total Amount(Y): 1,00,000.00			

2020-21 (CAYm3)			
Project Title	Duration	Funding Agency	Amount
0	0	0	0.00
Total Amount(Z): 0.00			

Cumulative Amount (X + Y + Z) = 1,90,000.00

5.8	Faculty Performance Appraisal and Development System (FPADS)	30
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At the end of every Academic year, Faculty Performance Appraisal is collected & evaluated in the API format, from each faculty in which they need to give the details of academic progress, research progress and other contributions for their self-renewal to cope up with changes in technology. Based on self-appraisal evaluation, the faculty will be recommended for the awards and annual increments. The following parameters are used to evaluate the faculty performance appraisal.

Sl. No	Parameters	Evidence
1	RESULTS: a. Course Results b. Mentorship Results	Consider courses both Theory/Practical of which results are announced in the duration mentioned for appraisal Result sheet of each Student under respective Proctor System
2	Guiding Students Projects/Research Students (Mention Not Applicable for c & d, for UG College) UG Projects (Sponsored) UG Project (non-sponsored)	<u>Sponsored Project</u> Acceptance Letter by funding Agency, Project Competition Letter <u>Non-sponsored:</u> First copy of Project, with Title, Student name and Faculty name Group Project will be single count
3	Number of Students guided for presentation of Papers / Posters/ Internship (not covered in Point.3)	Certificate on presentation by organizing committee Certificates of events organised by R R Institutions will not be considered. Certificates of Internship
4	Student Evaluation (Total no. of courses and Average X Ten Times)	Feedback sent by QAC recently to be considered Students Appraisal (feedback) scores Total no. of courses X 10 Number of subjects
5.	Number of Research activity (Papers Published) Note: (1st Author: full points, 2nd Author: points allotted X .5,	Journal: First Sheet of the paper displaying Title, Author Name, Journal Name and ISSN compulsory

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	3rd Author: points allotted X .25)- International Journals (ISSN) National Journals (ISSN) International Proceedings (ISBN) National Proceedings (ISBN) Books Authors (ISBN) Book Edited (ISBN)	Proceedings: Index sheet mentioning Title and Author Name Front & back cover page of proceeding showing ISBN number Book: Front and back cover displaying Title, Author's name and RR Institution affiliation and ISBN number
6.	MOU signed / Centre Of Excellence Established	MOU signed copies / Certificate of COE from companies
7.	Invited/Expert Lecture: <ul style="list-style-type: none"> • At Industry • Colleges (outside RR Institutions) • At RR Institutions (not in the respective college) 	Appreciation Letter / Certificate from Host Organization
8.	Membership of Professional Societies: Any Life member New Membership taken during the year	Memberships taken in Academic Year 2018-19 will be considered. Proof of Registration of membership with date
9.	University Assignments: Member of Academic Council Members of BOS / BOE External Examiner / External DCS Question Paper setting	Letter from University for allotted work
10.	Co-Ordinator for organizing Conference/Seminar/ Workshop /QIP/FDP Etc	Invitation copies displaying as convenor Certificates given by QAC for organizing events Multiple Coordinators for single event will not be considered Only main Coordinator will be considered
11	Attending Conference/Seminar/ Workshop/QIP/FDP Etc	Certificates of the events with faculty and college name
12	Awards: State level/ Regional Level National Level International Level	Certificates of Awards

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13	Additional Responsibilities (Given by Principal/Management)	Letter from College registered allotted work Events organizing will not be considered here
14	Committee In-charges	Members of committee Committee should be functional / conducting meetings / events etc.
15	Any other Contribution for Image building of College (not mentioned in any above)	Proofs for the same Considered which is not added in questions 1-14

CRITERION 6	FACILITIES AND TECHNICAL SUPPORT	80
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6.1	Adequate and well-equipped laboratories and technical man power	30
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Sl. No	Name of the Laboratory	Number of Students per setup (Batch size)	Name of the Equipment	Weekly utilization status (all courses for which the lab is utilized)	Technical manpower support		
					Name of the technical staff	Designation	qualification
1	Computer Aided Engineering Drawing	60 Students	Computers Smart Board	6 hrs /day	Mr.Chandru	Foremen	B.E., B.PED
2	Foundry & Forging Lab	8	Coal Fired Furnace	6Hrs	Mr. Honnappa	Instructor	Diploma
3	Material Testing Lab	8	Universal Testing Machine, Impact testing machine, Brinel Hardness , Rockwell hardness Testing Machine	6 hrs	Mr.Chandru	Foremen	B.E., B.PED
49	Machine Shop	8	Lathe, Milling, Shaping, surface Grinding	6 hrs	Mr.Mohan	Instructor	ITI
5	Metrology & Measurements Lab	8	Profile Projector, Surface Gauge, Slip Gauges	6 hrs	Mr. Honnappa	Instructor	Diploma
6	Design Lab	12	Governor, Balancing of Masses, Whirling of Shaft	6 hrs	Mr.Chandru	Foremen	B.E., B.PED
7	Fluid Mechanics & Machinery Lab	12	Kaplan, Francis & Pelton wheel Turbine	6 hrs	Mr.Mohan	Instructor	ITI
8	Computer Aided Modelling & Analysis Lab	12	Projector, Systems, Autocad Fusion 360	6 hrs	Mr.Chandru	Foremen	B.E., B.PED
9	Energy conversion Lab	12	4-Stroke Single cylinder petrol engine, 4-S multi Cylinder Petrol Engine, VCR Engine	6 hrs	Mr.Mohan	Instructor	ITI
10	Heat & Mass Transfer Lab	12	Refrigeration , Airconditioning, Forced flow Convection	6 hrs	Mr. Honnappa	Instructor	Diploma

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11	Computer Integrated Manufacturing Lab	13	Projector, Systems,	6 hrs	Mr.Chandru	Foremen	B.E., B.PED
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6.2		Additional facilities created for improving the quality of learning experience in laboratories				25
Sl. 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	R & D centre	High end configured system with internet facility	To access E-Journals,	Research Scholars & Guide	Materials, E-Journals	PO3
2	EDUSAT training	Technical videos by experts	To enhance student knowledge / Exposures to various experts	Free lab batch	Curriculum specified subjects	PO1 / PO2
3	Proctor System	Each staff is assigned a set of 15 students	To Counsel and to motivate students	Before and after the internal tests	Know their weaknesses and strengths and improve	PO12
4	Smart Board classroom	Presentation / Seminars	To demonstrate	As Needed	Presentation / Seminars	-
5	Tutorial Classes	Conducted for Weak students	To improve Weak Students	As Needed	Subjects opted by students	PO1
6	Seminar Hall	Smart Board	For conducting Workshops/ Seminars/ Conferences/ Dept Level extra-curricular events	As Needed	Exposure to current technologies	PO1 / PO2
7	Department Library	VTU Specified, Program Specific textbooks and	Additional support for students not	As Needed	Curriculum specified subjects	PO1/PO2
8	Internet Facility	SYSTEMS.INTERNET	Self learning / Seminars / Presentations / Solve assignments	Up to 40GB Per month	Web Programming/ Software engineering/ Computer Networks	PO12
9	Communication Lab	Language software	Enhance Communication Skill	Free lab batch	English	PO8
10	D BOOK STORE	Online access of books	VTU Specified, Program Specific text books and reference books	Students & Faculties	Additional support for students not under Book-Bank scheme	PO5

6.2.2	Digital Library
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Availability of digital library content:

If available, mention number of courses etc.	:	10
Availability of an exclusive server	:	Yes
Availability over Intranet/Internet	:	Yes
Availability of exclusive space/room	:	Yes
Number of users per login session	:	20

6.2.3	Internet
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Table 6.13: List of Internet Service provider

2023-24	
Name of the Internet provider	BSNL / Airtel
Available bandwidth	10 Mbps
Access speed	100 Mbps
Availability of Internet as an exclusive lab	Yes
Availability in most computing lab	Yes
Availability in Departments and other units	Yes
Availability in Faculty rooms	Yes

6.3	Laboratories: maintenance and overall ambiance	10
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6.3.1	Academic Infrastructure & Facilities Maintenance details
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Table 6.14: Academic Infrastructure & Facilities Maintenance detail.

Infrastructure & Facility	Maintenance Description
Laboratories	Housing Keeping Staff will Clean the laboratories regularly & the Instructors will maintain the equipment's regularly. Preventive maintenance is carried out by the foremen & lab incharge. For Breakdown maintenance, Quotations are taken from various suppliers & comparative statement is prepared by

	the HOD & submitted to the Principal for Approval. finally, Budget is prepared based on lowest quotation.
Seminar Halls	Seminar hall coordinator along with assistant staff will takes care of activities.
Tutorial Rooms	Tutorial rooms are well maintained for academic ambience.
Equipment	Each lab instructor will maintain the records of equipment's and their maintenance.
Computers	A programmer / lab instructor of each computer laboratory are responsible for maintenance of systems and software. Programmer carryout maintenance at regular intervals.
Department Library	A Faculty member is assigned as in-charge of Department Library. Students and Faculty members of department will make use of the books available. Books are either donated by outgoing students or complementary copies received by staff from various publishers.
Internet /Intranet	Internet related matters are maintained by System Administrator
Electricity	Electrical maintenance will be carried by the Maintenance Department

6.3.2 Ambience of the mechanical Department.

- ❖ Department has required number of laboratories as per academic requirement.
- ❖ Faculty members are provided with cabins with all the necessary facilities.
- ❖ The lab premises and the experimental setup/equipments are kept in good working conditions.
- ❖ Display of statutory and non statutory and PO's and PEO's and display charts of the laboratories is maintained.
- ❖ Preventive maintain of the equipments carried out on regular basis. In case of major failure / repair, the service is carried out from external service providers.
- ❖ The overall ambience of the laboratories is congenial and in proper conditions.

- ❖ The industrial roofing with heat resistant coating to avoid over heating during summer and to maintain congenial temperature.
- ❖ The labs are provided with power backup facilities wherever necessary and student baggage counters, drinking water facilities. And first aid facility is maintained.

6.3.3	Cleanliness
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- ❖ Cleanliness is maintained in the Department by disposing all the waste material on a daily basis with the help of sufficient man-power.
- ❖ Maintenance: 5 attenders and 4 maintenance workers maintain the regular cleaning & maintaining job.

6.4	Project laboratories	05
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- ❖ Special lab with systems is provided for carrying out project work..
- ❖ Training programs are conducted to initiate their project work.
- ❖ Every project batch has been allotted with guide in order to pursue with their project work.
- ❖ Network and internet facilities are provided to students.
- ❖ A project lab with an area of 75 Sq Mtr is ear marked exclusively for the purpose of planning/ preparation /development of student project work and allied purposes.
- ❖ The project lab is located near the workshop lab and machines lab as well as energy conversion lab, so that students can make use of fabrication, testing, facilities and so on for the development of their project works.
- ❖ The old project reports and the project models are kept in the project lab premises.

Project Laboratories:

1) Material Testing Laboratory:

The Department of Mechanical engineering has a Material Testing laboratory where the students can study the Material properries of various Engineering materials by making use of Equipment's such as

- 1) Tensile Testing machine with Electronic data aquisition system,
- 2) Torsion Testing Machine
- 3) Impact testing Machine
- 4) Brinell hardness testing Machine.
- 5) metallurgical Microscopy

2) Project laboratory:

The Department of Mechanical Engineering has a project laboratory where the KSCST funded projects & all the previous academic years student projects are displayed. The students will visit the project laboratory & study the concepts & technical know how of various projects.

6.5	Safety measures in laboratories	10
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Sl. No	Laboratory Name	Safety Measures
1	Machine Shop	1) Display of Do's & Dont's 2) Fire extinguisher 3) First Aid Box 4) MCB's
2	Energy engineering Lab	1) Display of Do's & Dont's, 2) Fire extinguisher 3) First Aid Box 4) MCB's
3	Foundry & forging Lab	1) Display of Do's & Dont's 2) Fire extinguisher 3) First Aid Box 4) MCB's
4	Design Lab	1) Display of Do's & Dont's 2) First Aid Box 3) MCB's
5	Material Testing Lab	1) Display of Do's & Dont's 2) Fire extinguisher 3) First Aid Box 4) Gaurd for Impact testing Machine 5) MCB's

CRITERION 7	CONTINUOUS IMPROVEMENT	50
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7.1	Actions taken based on the results of evaluation of each of the POs	20
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Identify the areas of weaknesses in the program based on the analysis of evaluation of POs attainment levels. Planned measures identified and implemented to improve POs attainment levels for the assessment years.

PO Attainment Levels and Actions for improvement: current Academic year- 2023-24
Attainment Level greater than 1.8 of the target level is considered as attained.

Table 7.1: Program outcome Attainment and Actions for improvement - 2023-24

PO'S	Target level	Attainment Level	Observation
PO1 Engineering Knowledge	2.1	2.35	Target is attained
Actions:			
NIL			
PO2 Problem Analysis	2.1	2.10	Target is attained
Actions:			
NIL			
PO3 Design/ Development of Solutions	1.8	1.87	Target is attained
Actions			
NIL			

DEPARTMENT OF MECHANICAL ENGINEERING

PO4 Conduct investigations of complex problems	1.8	1.69	Achieved Attainment is low
Actions			
No Action taken			
PO5 Modern tool usage	1.8	1.84	Target is attained
Actions:			
PO6 The engineer and society	1.8	1.82	Target is attained
Actions:			
PO7 Environment and sustainability	1.8	1.80	Achieved Attainment
Actions:			
PO8 Ethics	1.8	1.84	Target is attained
Actions:			
. No Action taken			

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PO9 Individual and team work	1.8	1.94	Target is attained
Actions:			
PO10 Communication	1.8	1.82	Target is attained
Actions:			
PO11 Project management and finance	1.8	1.66	Achieved Attainment is low
Actions:			
The students have less exposure to Project Management & Finance in the course curriculum, hence industrial visits is organized.			
PO12 Life-long learning	1.8	1.80	Target is attained
Actions:			
PSO'S Attainment level and Actions for improvement (2022-23)			

PSO1 Demonstrate the basic knowledge of science, mathematics, material Science, Engineering and technology to formulate and solve mechanical engineering problems.	1.8	2.02	Target is attained
Actions: Actions:			
PSO2 Design, synthesis and analyze mechanical, fluid, thermal and multidisciplinary component or systems by adopting analytical, numerical and experimental techniques.	1.8	1.82	Target is attained
Actions:			
No Action taken			

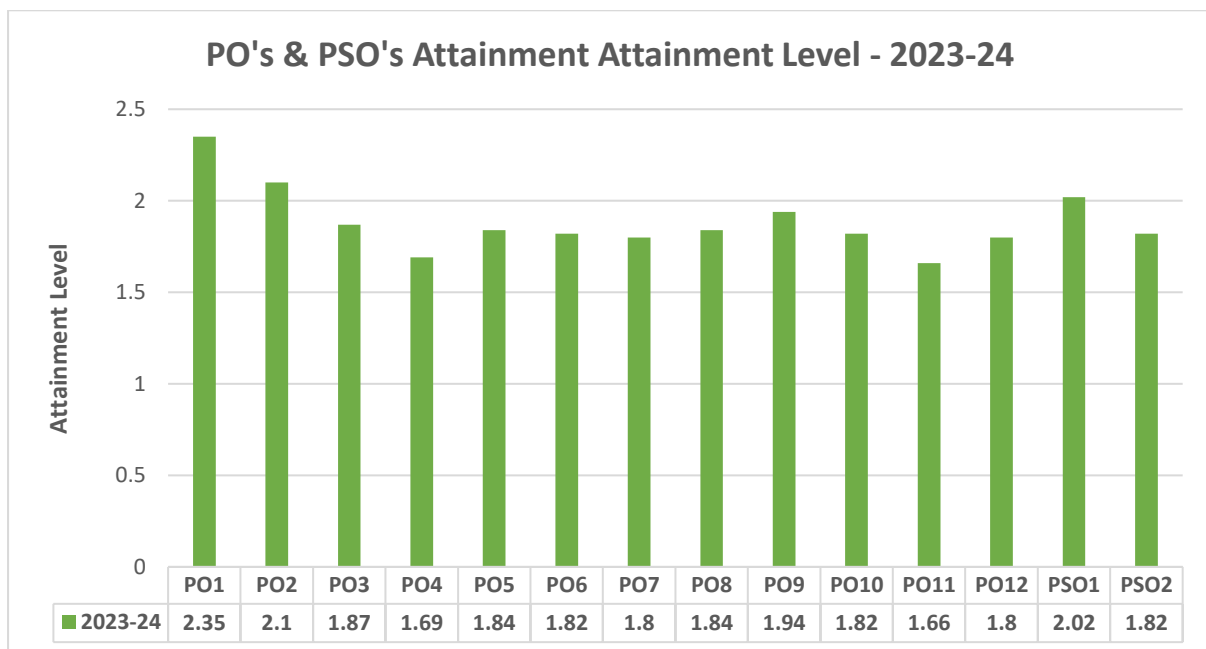


Fig: 7.1 PO'S Attainment Level 2023-24

DEPARTMENT OF MECHANICAL ENGINEERING

**Table 7.2: Program outcome Attainment for 2022 -23 CAYm1:
(Current Academic Year minus one Year)**

PO	PO	Target level	Attainment level	Observation	Action 1	Action 2
PO1	Apply the knowledge of mathematics, science, engineering fundamentals and an engineering specialization to the solution of complex engineering problems.	2.1	2.25	Excellent	Nil	Nil
PO2	Identify, formulate, review research, literature and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences.	2.1	2.07	Excellent	Additional classes were allotted for numerical courses.	Nil
PO3	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 consideration.	1.8	1.95	Excellent	Nil	Nil
PO4	Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of information to provide valid conclusions.	1.8	1.78	Moderately Attained	Nil	Nil

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PO5	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 limitations.	1.8	1.96	Excellent	Nil	Nil
PO6	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.	1.8	1.91	Excellent	Nil	Nil
PO7	Understand the impact of professional engineering solutions in societal and environmental context, and demonstrate the knowledge of, and need for sustainable development.	1.8	1.75	Moderately attained	Seminar & workshops are conducted to attain the target to create awareness about various Indian standards, door to door campaign was organised in association with BIS	Nil
PO8	Apply ethical principles and commit to professional ethics and responsibilities and norms of engineering practice.	1.8	1.91	Excellent	Nil	Nil
PO9	Function effectively as an individual, and as a member or leader in diverse teams and in multidisciplinary settings.	1.8	1.94	Excellent	Nil	Nil

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PO10	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.	1.8	1.91	Excellent	Nil	Nil
PO11	Demonstrate knowledge and understanding of the engineering and management principles and apply these at once own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.	1.8	1.55	Good	The students have less exposure to the Project Management & Finance in the course curriculum, hence industrial visits is organised. Standard writing competition was organised in association with Bureau of Indian Standards to enhance the knowledge of Finance & Management.	Nil
PO12	Recognize the need for and have the preparation and ability to engage in independent and life-long learning in broadest context of technological change.	1.8	1.89	Excellent	Nil	Nil
PSO1	Demonstrate the basic knowledge of science, mathematics, material Science, Engineering and technology to formulate and solve mechanical engineering problems.	1.8	2.2	Excellent	Nil	Nil

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PSO2	Design, synthesis and analyze mechanical, fluid, thermal and multidisciplinary component or systems by adopting analytical, numerical and experimental techniques.	1.8	2.05	Excellent	Nil	Nil
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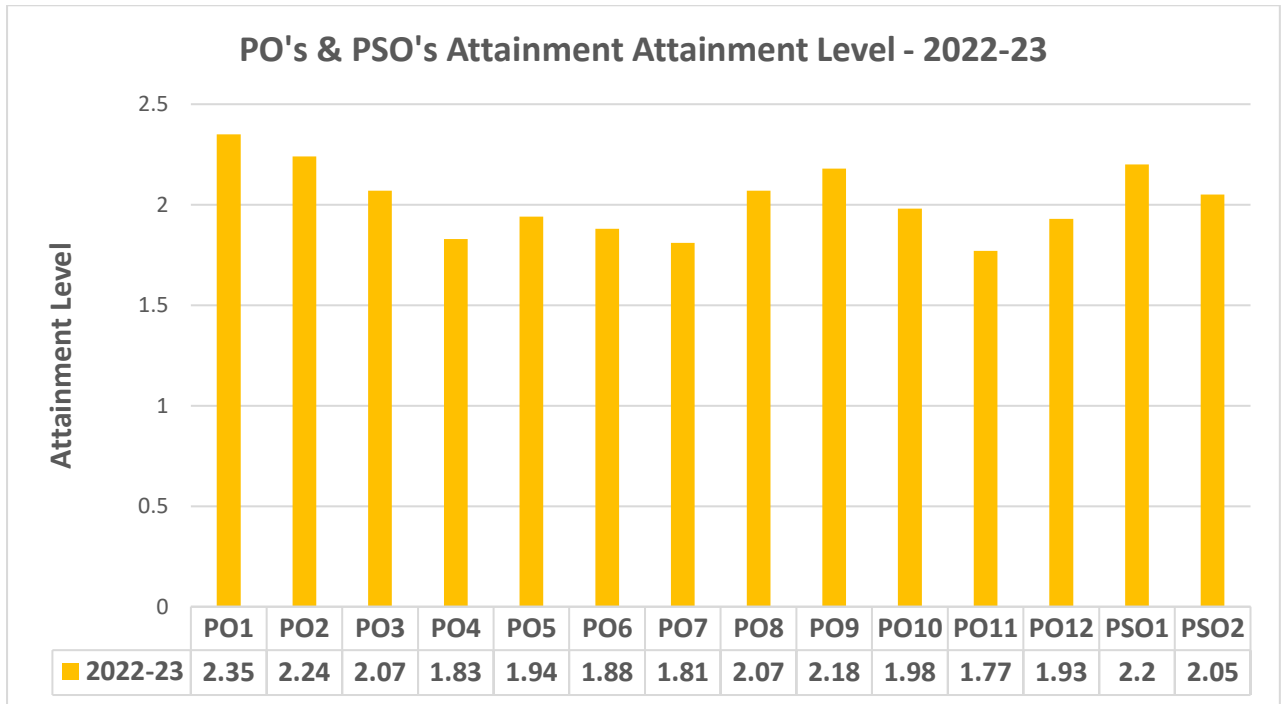


Fig.7.2 Graph Analysis for PO & PSO Attainment Level for 2022-23

Table 7.3: Program outcome Attainment for 2021 -22 CAYm2:

(Current Academic Year minus Two Year)

PO	PO	Target level	Attainment level	Observation	Action 1	Action 2
PO1	Apply the knowledge of mathematics, science, engineering fundamentals and an engineering specialization to the solution of complex engineering problems.	2.1	2.25	Excellent	Nil	Nil

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PO2	Identify, formulate, review research, literature and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences.	2.1	2.07	Excellent	Nil	Nil
PO3	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 consideration.	1.8	1.96	Excellent	Nil	Nil
PO4	Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of information to provide valid conclusions.	1.8	1.77	Excellent	Nil	Nil
PO5	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 limitations.	1.8	1.97	Excellent	Nil	Nil
PO6	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.	1.8	1.91	Excellent	Nil	Nil
PO7	Understand the impact of professional engineering solutions in societal and environmental context, and demonstrate the knowledge of, and need for sustainable development.	1.8	1.75	Excellent	Nil	Nil

DEPARTMENT OF MECHANICAL ENGINEERING

PO8	Apply ethical principles and commit to professional ethics and responsibilities and norms of engineering practice.	1.8	1.91	Excellent	Nil	Nil
PO9	Function effectively as an individual, and as a member or leader in diverse teams and in multidisciplinary settings.	1.8	1.94	Excellent	Nil	Nil
PO10	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.	1.8	1.92	Excellent	Nil	Nil
PO11	Demonstrate knowledge and understanding of the engineering and management principles and apply these at once own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.	1.8	1.55	Excellent	Nil	Nil
PO12	Recognize the need for, and have the preparation and ability to engage in independent and life- long learning in broadest context of technological change.	1.8	1.89	Excellent	Nil	Nil
PSO1	Demonstrate the basic knowledge of science, mathematics, material Science, Engineering and technology to formulate and solve mechanical engineering problems.	1.8	2.21	Excellent	Nil	Nil
PSO2	Design, synthesis and analyze mechanical, fluid, thermal and multidisciplinary component or systems by adopting analytical, numerical and experimental techniques	1.8	1.95	Excellent	Nil	Nil

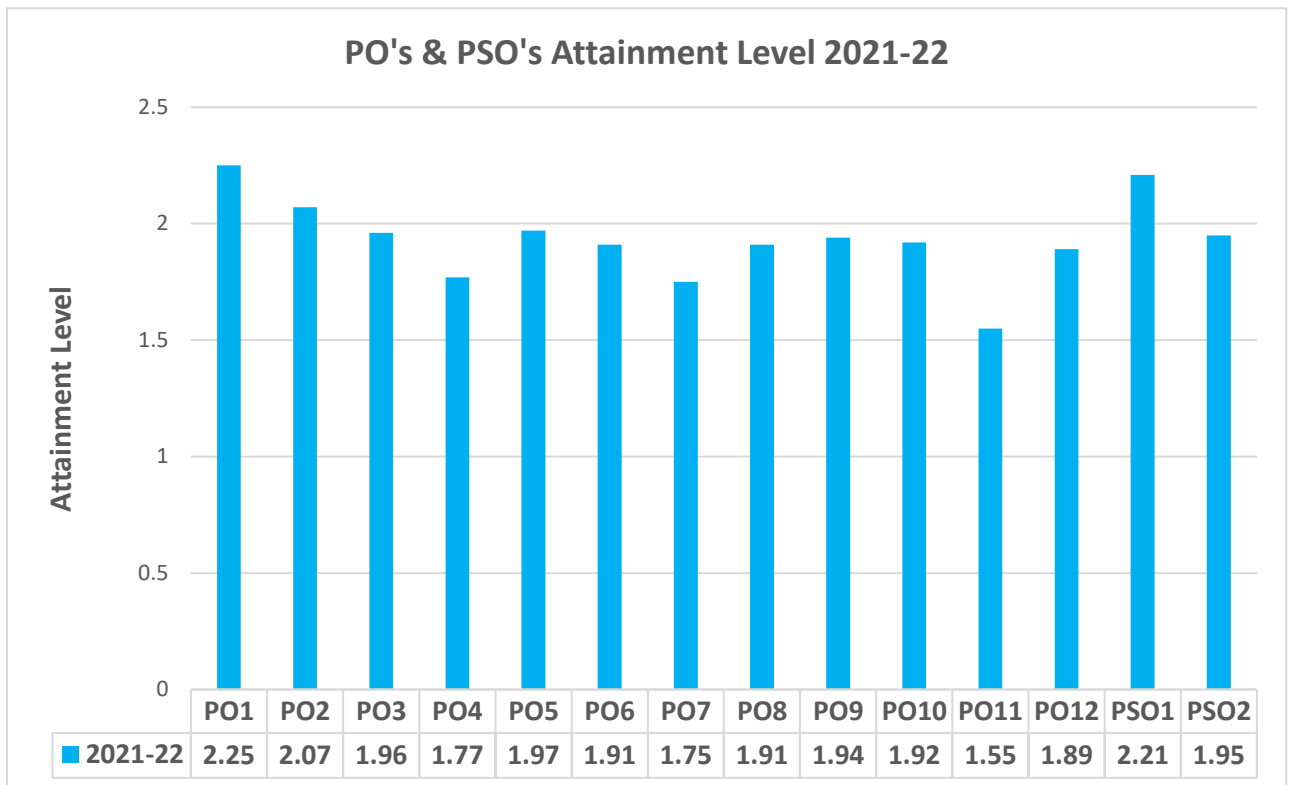


Fig.7.3 Graph Analysis for PO & PSO Attainment Level for 2021-22

7.2	Academic Audit and Action Taken therefore during the period of Assessment	10
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ACADEMIC AUDITING

The objective of academic auditing includes the assessment of course delivery as per the curriculum and syllabus prescribed by Visveswaraya Technological University, Belgavi, the co-curricular and extra-curricular activities of students, monitoring of the academic activities referring to the academic calendar, CIE, attainment of the Program outcomes, student welfare and grievances etc.

The Academic Audit is conducted at the end of the every semester. The Internal Quality Assurance Cell (IQAC) will submit the format of the Audit to the Audit committee constituted by the Principal. The Audit committee visits various Departments & conducts Audit within the stipulated time as per the direction of the Principal. & submit the Audit report to the Pricipal. For proper functioning of academics and to quantify the efforts dispensed by the faculty and students, some assessment components have been designed.

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

Action: Faculty to incorporate all the suggestions/comments from the committee

Table: 7.4 Internal Audit report Format (ODD & EVEN)

 Since 1993	PKM Educational Trust © R. R. Institute of Technology Affiliated to VTU Belgaum and Approved by AICTE, New Delhi, Recognised by Govt. of Karnataka, Accredited by NAAC with 'B+' Raja Reddy Layout, Chikkabanavara, Bengaluru – 560 090	Internal Quality Assurance Cell
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Department: **MECHANICAL**

Academic Audit (ODD SEM)

Date:

Sl. No	Contents	Content Present / write Y/ N Y-Yes N-No										Reviewremarks
		Faculty 1	Faculty 2	Faculty 3	Faculty 4	Faculty 5	Faculty 6	Faculty 7	Faculty 8	Faculty 9	Faculty 10	
	Faculty Name											
	Present semester											
1.	Vision, Mission of Institution & Department											
2.	Student List											
3.	Calendar of events											
	• Dept											
	• College											
4.	University											
	Time table											
	• Class Timetable											
5.	Individual Timetable											
	Lesson Plan											
	Introduction of the subject Significance of the Subject Programme Outcomes Programme Specific Outcomes Course Outcomes											
6.	Syllabus copy											
7.	• Course Articulation Matrix											

	• Subject Gap Analysis												
8.	Previous Semester Result Analysis												
9.	Proctor list, proctor book												
10.	Question Bank												
11.	Question Paper & Schemes												
12.	Old Question Paper												
13.	Course Material (Class PowerPoint Presentations/Handouts/Worksheets)												
14.	Assignments, Quizzes, Class Tasks if any												
15.	IA marks												
16.	Attendance Sheet / Register												
17.	Completed / Filled Lesson plans												
18.	CO-PO attainment for 2018-19 batch (Final attainment of the course Hard copy)												
19.	Lesson plan (Soft Copy)												
20.	COPO Mapping for 2019-20 (soft copy for 17 & 18 Scheme)												

Audited By 1.

2.

NOTE: Seminar and Project Auditing will not be included for the odd semester

- External Auditing is through LIC

7.3	Improvement in Placement, Higher Studies and Entrepreneur	10
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The table shows the number of students placed for academic year 2022-23, 2021-22 & 2020-21. There is an improvement in the placement year on year as the college is located near to peenya industrial area.

7.3.1	Placement Details :
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Table 7.5: Placement Details:

Sl.No	Item	CAYm1 (2022-23)	CAYm2 (2021-22)	CAYm3 (2020-21)
1	Total no. of Final year Students	17	20	18
2	Number of students placed	17	15	11
3	Number of students admitted to higher education	-	-	-
4	Number of students turned entrepreneur	-	-	-
5	Highest Package	3.5 Lakh	2.58Lakh	2.58Lakh
6	Lowest Package	1.08 Lakh	1.68Lakh	2.58Lakh

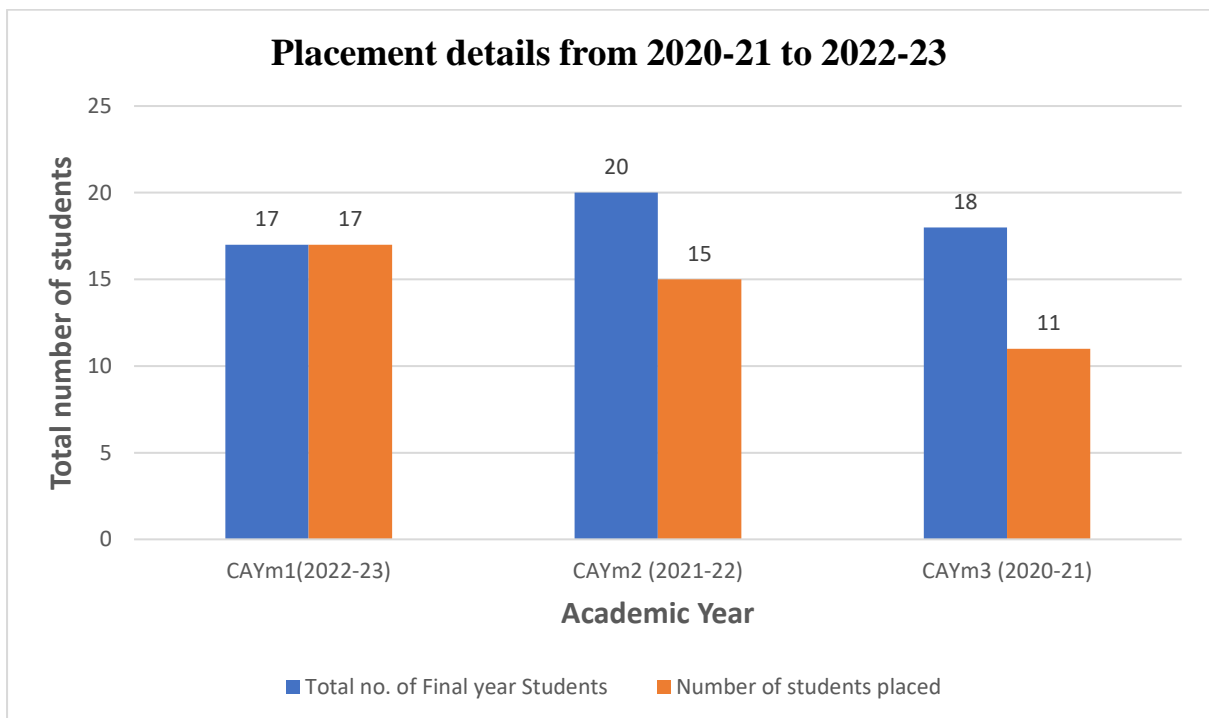


Fig:7.4 Placement details from 2020-21 to 2022-23

7.4	Improvement in the quality of students admitted to the programme	10
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Assessment is based on improvement in terms of ranks/score in qualifying state level / national level entrances tests, percentage Physics, Chemistry and mathematics marks in 12th Standard and percentage marks of the lateral entry student.

TOTAL INTAKE : - 60

Table: 7.7 Consolidate Total Intake

SL NO	ACADEMIC YEAR	SANCTIONED INTAKE	NO OF STUDENTS ADMITED TO PROGRAM	PERCENTAGE
1	2023-24	60	12	20.0
2	2022-23	60	35	58.33
3	2021-22	60	24	40.0
4	2020-21	120	13	10.83

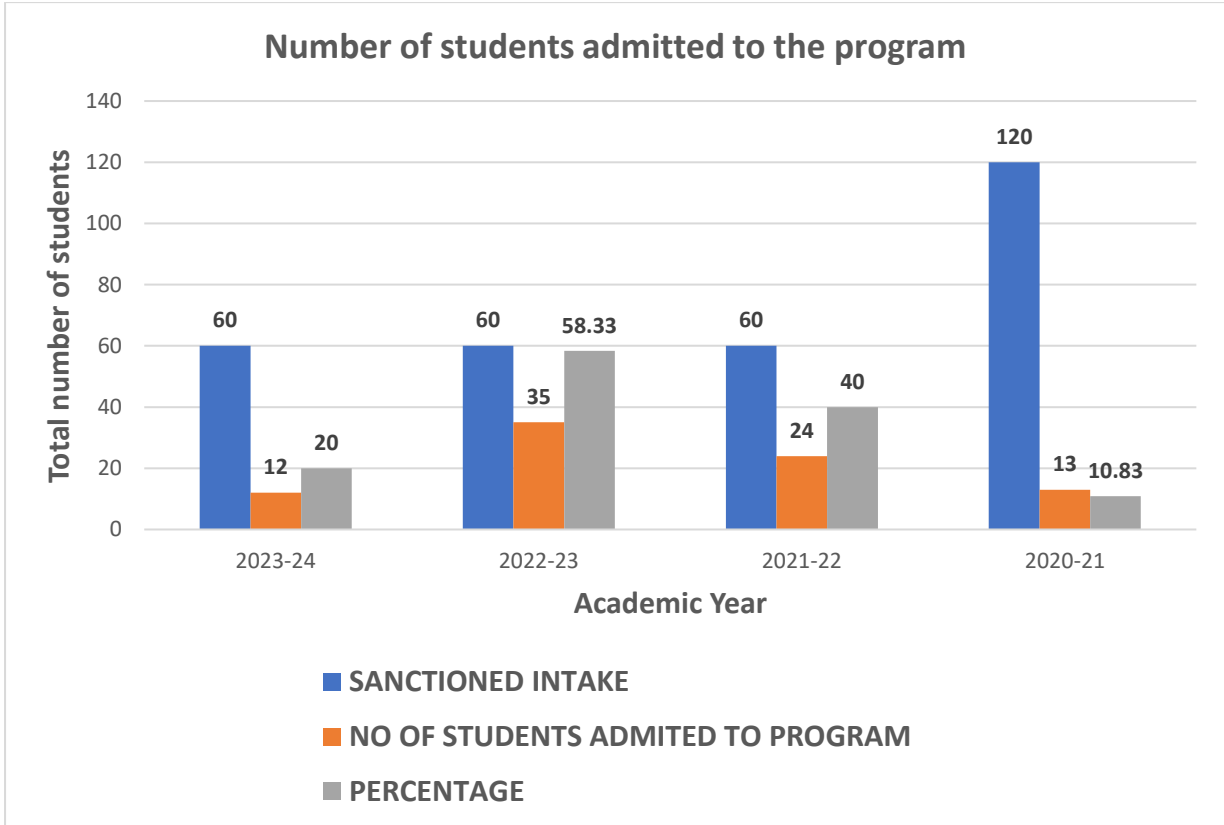


Fig. 7.7 Number of Students Admitted to the program

TOTAL INTAKE (LE): -

Table: 7.8 Consolidate List of Students Admitted To Program

SL NO	ACADEMIC YEAR	NO OF STUDENTS ADMITTED TO PROGRAM
1	2023-24	06
2	2022-23	08
3	2021-22	36
4	2020-21	18

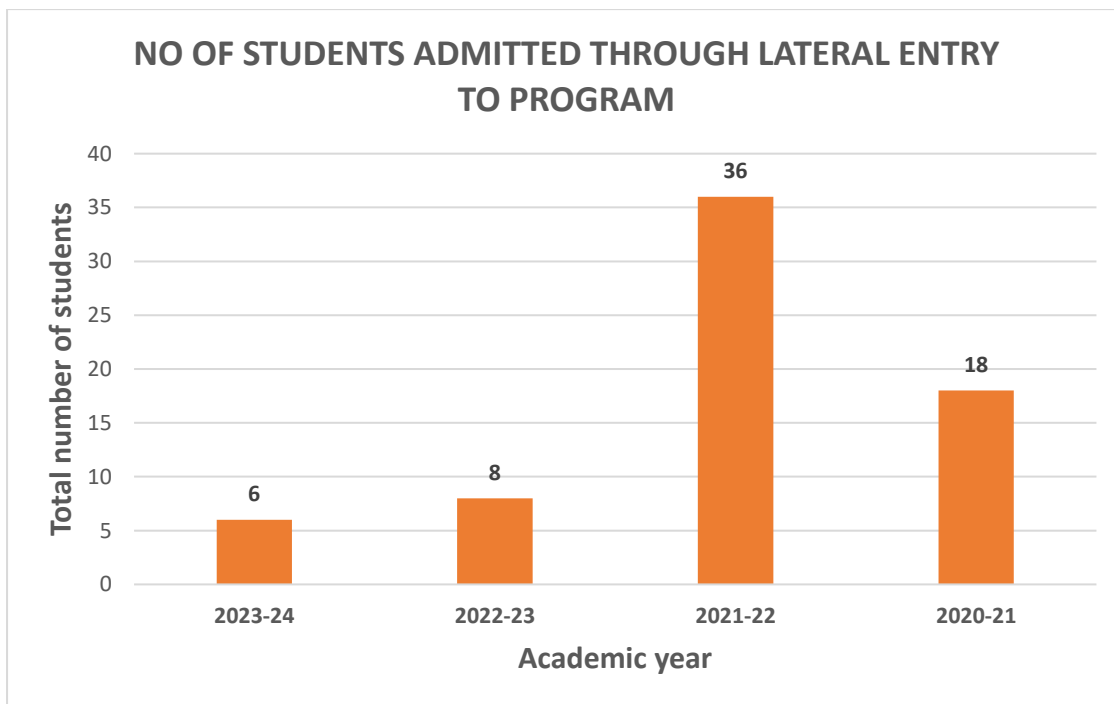


Fig. 7.8 Number of Students Admitted to the program

Consolidated CET Rank Details

Table: 7.9 Starting Rank and Ending Rank of the Students Admitted to the program

Sl no	Academic year	Number of students admitted in 1 st year	Starting rank	Ending rank
1	2023-24	NIL	NIL	NIL
2	2022-23	NIL	NIL	NIL
3	2021-22	NIL	NIL	NIL
4	2020-21	NIL	NIL	NIL

Lateral Entry Students List for the Academic Year: - 2020-21 TO 2023-24

Table: 8 Lateral Entry Students List for the Academic Year: - 2020-21 TO 2023-24

Sl no	Academic year	Number of students admitted through DCET	Starting rank (LE)	Ending rank (LE)
1	2023-24	01	166947	166947
2	2022-23	NIL	NIL	NIL
3	2021-22	NIL	NIL	NIL
4	2020-21	NIL	NIL	NIL



8. FIRST YEAR ACADEMICS (50)

Total Marks 41.56

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

Total Marks 5.

Institute Marks : 5.

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 Associate is 'No')
							CAY	CAYm1	CAYm2			
Ms. SRIVALLI	JUCPS6835L	M.Sc	20/03/2022	MATHEMATICS	Assistant Professor	07/11/2022	20	0	0	Yes	Regular	
Ms.CHAMANT	OSAPS1160M	M.Sc	11/04/2022	MATHEMATICS	Assistant Professor	13/12/2021	20	20	0	Yes	Regular	
Mrs.THEJASW	BHGPD4257E	M.Sc	26/10/2010	CHEMISTRY	Assistant Professor	19/08/2019	25	25	0	Yes	Regular	
Ms.ARCHANA	DFTPA3911M	M.Sc	12/05/2020	CHEMISTRY	Assistant Professor	05/07/2021	20	0	0	Yes	Regular	
Mrs. PALLAVI	FRWPP8319H	M.Sc	20/05/2022	PHYSICS	Assistant Professor	11/03/2023	15	0	0	Yes	Regular	
Dr.ANITA R SH	DSDPS6126R	M.Sc. and PhD	10/06/2013	PHYSICS	Associate Professor	23/07/2018	50	100	0	Yes	Regular	
RAKSHITH KU	CFIPR1395Q	M.E/M.Tech	11/12/2014	MECH	Assistant Professor	08/01/2023	20	0	0	Yes	Regular	
VIJAYALAKSH	AMVPV0448C	M.E/M.Tech	22/07/2012	ECE	Assistant Professor	08/03/2011	20	0	10	Yes	Regular	
Dr. RAGHU K	AUFPR9779Q	ME/M. Tech and PhD	14/07/2023	CIVIL	Associate Professor	13/07/2023	50	0	0	Yes	Regular	
Mrs. J MARYM	BJLPM9910J	M.Phil	06/11/2011	ENGLISH	Assistant Professor	16/05/2022	20	0	0	Yes	Regular	
Mrs.JAYASHE	ASCPJ4070F	MA	06/06/2016	KANNADA	Assistant Professor	06/10/2022	20	0	0	Yes	Regular	
AISHWARYA V	CIPPA7559B	M.E/M.Tech	19/02/2021	CIVIL	Assistant Professor	13/09/2021	20	0	0	Yes	Regular	

Mr. PRASHAN	CZBPP8523R	M.Sc	22/10/2019	MATHEMATICS	Assistant Professor	16/07/2022	0	25	0	No	Regular	31/07/2023
Mrs.NAGASHR	BUAPN7952B	M.Sc	12/10/2020	CHEMISTRY	Assistant Professor	13/09/2021	0	20	15	No	Regular	31/07/2023
HARISH M R	AOGPH5810R	M.E/M.Tech	01/09/2018	MECH	Assistant Professor	31/08/2020	0	25	10	Yes	Regular	
Mrs. MALA N	BSCPM8903P	MA	13/03/2018	ENGLISH	Assistant Professor	16/12/2021	0	10	0	No	Regular	12/06/2023
Mr.VINOD K.L	AWNPL3713A	MA	26/10/2017	KANNADA	Assistant Professor	23/10/2019	0	10	0	No	Regular	31/07/2023
ABHISHEK M	GDUOM4932G	M.E/M.Tech	12/05/2020	CIVIL	Assistant Professor	15/12/2021	0	20	0	Yes	Regular	
SUSHMA R K	FTTPS4424K	M.E/M.Tech	17/07/2018	CIVIL	Assistant Professor	14/02/2021	0	20	0	Yes	Regular	
Mrs.PARVATH	BXHPR1426C	M.Sc	12/01/2019	PHYSICS	Assistant Professor	18/01/2021	0	0	15	No	Regular	30/07/2022
Dr. NAVEEN K	AFZPM8606D	M.Sc. and PhD	11/01/2020	CHEMISTRY	Professor	04/11/2019	0	0	90	No	Regular	30/07/2022
Dr NIRANJAN	AJDPC4679F	ME/M. Tech and PhD	06/12/2020	CSE	Associate Professor	01/07/2021	0	0	100	Yes	Regular	
Mrs. SHWETH	DASPS5573K	M.Sc	24/03/2008	MATHEMATICS	Assistant Professor	03/04/2017	0	0	20	Yes	Regular	
Mr. PAVAN SA	DJMPB2334G	MA	06/06/2019	ENGLISH	Assistant Professor	23/10/2019	0	0	10	No	Regular	30/07/2022
MALASHREE	CRXPM6899M	M.E/M.Tech	12/11/2013	EEE	Assistant Professor	22/03/2021	0	0	10	Yes	Regular	
RAVI PATIL	AWQPR0045L	M.E/M.Tech	05/12/2014	CIVIL	Assistant Professor	16/01/2015	0	0	10	Yes	Regular	
MURALI G E	CWAPM9182K	M.E/M.Tech	05/09/2015	MECH	Assistant Professor	04/02/2018	0	0	10	Yes	Regular	
MADHAVI DAS	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	3	20	5
2022-23(CAYm1)	60	3	20	5
2023-24(CAY)	60	3	20	5
Average	60	3	20	5

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

Total

Marks 2.33 Institute Marks : 2.33

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	1	1	3	2.00
2022- 23	1	1	3	2.00
2023- 24	1	2	3	3.00

Average Assessment: 2.33

8.3 First Year Academic Performance (10)

Total Marks 4.23

Institute Marks : 4.23

Academic Performance	2023-24	2022-23	2021-22
Mean of CGPA or mean percentage of all successful students(X)	4.90	4.60	6.60
Total Number of successful students(Y)	10.00	18.00	13.00
Total Number of students appeared in the examination(Z)	35.00	24.00	13.00
API [X*(Y/Z)]	1.29	5.02	6.38

Average API [(AP1+AP2+AP3)/3] : 4.23

Assessment [1.5 * Average API] : 4.23

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

Total Marks 10.

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 : 5.00

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)

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

Semester End Examination (SEE)

Sl.No	Assessment Methods
1	Theory examination
2	Laboratory examination

Direct Assessment of Theory & Lab:

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

Direct Assessment Methods are formative as well as summative:

For some of the POs that are abstract, rubrics has been designed using performance indicators and shared with the students in advance. This helps students to understand against which parameter their work will be judged. These rubrics can be used by students in revising and judging their own work and progress.

Internal Assessment Test	Qualitative performance assessment tool such as Class tests are conducted by course coordinator to assess student's knowledge and problem-solving skills.
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End semester exam (theory + practical)	Semester End examination is the metric for assessing whether all the POs are attained or not. Examination is more focused on attainment of course outcomes and program outcomes.
Lab Internal Test	This is mainly to assess student's practical knowledge with their design thinking or logical analysis capabilities.
Indirect Assessment Methods	
Course end survey	To evaluate the success of program in providing students with opportunities to achieve the program outcome - every semester

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

Parameters	High	Marks	Medium	Marks	Low	Marks
Writeup	Student is able to design//tabulate / write appropriate formula used for calculation / write algorithm		Partially Able to draw circuit but doesn't design / write a program doesn't know the		No knowledge of the given experimental setup & problem statement	
	Draw/ Tabulate or write Program / Computation and		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			
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	2		
	Obtain the result as expected	2	Partially obtain the result as expected	1		
	Total: 10 Marks		Total: 5 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

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

• Final test marks will be reduced to 10

Total Marks	CIE	15
	Internal	10
	Final IA	25

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

Institute Marks : 5.00

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

			Target Set	Attained				
Sl.No.	Subject Code	Subject Name		CO 1	CO 2	CO 3	CO 4	CO 5
1	21MAT11	CALCULUS AND LINEAR ALGEBRA	2.800	2.27	2.32	2.24	2.32	2.33
2	21CHE12	ENGINEERING CHEMISTRY	2.800	2.88	1.44	1.44	1.43	1.42
3	21PSP13	PROBLEM SOLVING THROUGH PROGRAMING	2.700	2.85	2.43	2.64	1.98	2.52
4	21ELN14	BASIC ELECTRONICS AND COMMUNICATION	2.600	2.14	2.21	2.12	2.26	2.28
5	21EME15	ENGINEERING	2.800	2.62	2.68	2.03	1.87	1.95
6	21CHEL16	ENGINEERING CHEMISTRY LABORATORY	2.800	2.88	2.95	2.35	2.35	2.35
7	21CPL17	C PROGARMING LAB	2.700	2.29	2.44	2.44	2.14	
8	21EGH18	COMMUNICATIVE ENGLISH	2.800	2.84	2.84	2.83	2.81	2.72
9	21IDT19	INNOVATION AND DESIGN THINKING	2.800	2.34	2.22	2.22	2.34	
10	21MAT21	ADVANCED CALCULUS AND NUMERICAL METHODS	2.800	1.86	1.90	1.86	2.02	2.06
11	21PHY22	ENGINEERING PHYSICS	2.800	2.14	2.29	2.17	2.35	1.59

12	21ELE23	BASIC ELECTRICAL ENGINEERING	1.800	1.94	2.00	1.97	1.93	
13	21CIV24	ELEMENTS OF CIVIL ENGINEERING AND MECHANICIS	2.800	2.11	2.82	2.93	2.25	2.96
14	21EVNL25	ENGINEERING VISUALIZATION	2.700	2.94	2.94	2.95	2.94	2.94
15	21PHYL26	ENGINEERING PHYSICS LABORATORY	2.800	2.88	2.78	2.76		
16	21ELEL27	BASIC ELECTRICAL ENGINEERING LABORATORY	2.100	2.88	2.95	2.35	2.35	2.35
17	21EGH28	PROFESSIONAL WRITING SKILLS IN ENGLISH	2.800	2.66	2.66	2.67	2.65	2.54
18	21SFH29	SCIENTIFIC FOUNDATIONS OF HEALTH	1.800	1.76	1.76	1.60	1.80	1.64

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

Total Marks 20.00

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	2.19	1.74	1.65	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	1.59
21CHE12	1.44	1.44	1.44	PO4	PO5	PO6	0.60	PO8	PO9	PO10	PO11	0.60
21PSP13	1.47	1.29	1.47	0.36	PO5	0.18	PO7	PO8	PO9	PO10	PO11	1.83
21ELN14	2.07	1.62	1.56	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	1.50
21EME15	2.16	0.60	0.60	PO4	1.02	0.72	1.20	PO8	PO9	0.72	PO11	0.72
21CHEL16	PO1	2.92	1.94	0.97	PO5	PO6	0.90	PO8	PO9	PO10	PO11	PO12
21CPL17	1.77	1.77	PO3	PO4	PO5	PO6	PO7	PO8	0.78	0.78	PO11	PO12
21EGH18	PO1	PO2	1.89	PO4	PO5	2.34	PO7	PO8	1.56	2.43	PO11	1.86
21IDT19	1.53	1.53	0.75	0.75	PO5	PO6	PO7	PO8	PO9	PO10	PO11	1.53
21MAT21	1.77	1.29	1.05	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	0.96
21PHY22	1.32	1.08	0.75	0.72	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
21ELE23	1.65	1.65	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
21CIV24	2.46	2.29	2.46	2.58	2.58	2.46	2.35	2.56	1.92	2.46	2.00	1.92
21EVLN25	2.94	1.96	PO3	PO4	2.94	0.98	0.98	0.98	PO9	2.94	PO11	1.96
21PHYL26	2.81	2.81	2.19	0.94	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
21ELEL27	PO1	2.92	1.94	0.97	PO5	PO6	0.97	PO8	PO9	PO10	PO11	PO12
21EGH28	PO1	PO2	1.77	PO4	PO5	2.19	PO7	PO8	1.47	2.28	PO11	1.77
21SFH29	PO1	PO2	1.47	PO4	PO5	PO6	PO7	1.02	PO9	PO10	PO11	1.71

PO Attainment Level

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
Direct Attainment	1.97	1.79	1.53	1.04	2.18	1.48	1.17	1.52	1.43	1.94	2.00	1.50
CO Attainment	1.97	1.79	1.53	1.04	2.18	1.48	1.17	1.52	1.43	1.94	2.00	1.50

PSOs Attainment:

Course	PSO1	PSO2
21MAT11	1.26	1.47
21CHE12	PSO1	PSO2
21PSP13	2.49	1.32
21ELN14	1.20	1.44
21EME15	1.44	1.44
21CHEL16	PSO1	PSO2
21CPL17	PSO1	PSO2
21EGH18	PSO1	PSO2
21IDT19	1.53	1.53
21MAT21	1.41	1.41
21PHY22	PSO1	PSO2
21ELE23	PSO1	PSO2
21CIV24	2.46	2.46
21EVLN25	2.94	2.94
21PHYL26	PSO1	PSO2
21ELEL27	3	3
21EGH28	PSO1	PSO2
21SFH29	1.14	1.14

PSO Attainment Level

Course	PSO1	PSO2
Direct Attainment	1.89	1.82
CO Attainment	1.89	1.82

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

POs	Target Level	Attainment Level	Observations
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PO 1 : Engineering Knowledge

PO 1	1.8	1.97	ATTAINED
1.Science Fiction video play were held on 30-05-2023 2. Session on Emerging Trends in Electronics were held on 01-06-2023			

PO 2 : Problem Analysis

PO 2	1.8	1.79	NEARLY ATTAINED
1. Idea pitching competition for students 2. Guest lecture on computational physics were conducted on conducted on 19-11-22			

PO 3 : Design/development of Solutions

PO 3	1.8	1.53	NOT ATTAINED
Seminar on “Physics Of Sensors And Sensor Industry” were held on 22-7-2023			

PO 4 : Conduct Investigations of Complex Problems

PO 4	1.8	1.04	NOT ATTAINED
Vedic Mathematics session were conducted on 02-12-2022 and 27-05-2023			

PO 5 : Modern Tool Usage

PO 5	1.8	2.18	ATTAINED
1. Proficiency, Exposure to computer Skills: Ms Office Data Science were held on 05-12-2022 2. Virtual lab session were conducted on 05-12-2022			

PO 6 : The Engineer and Society

PO 6	1.8	1.48	NOT ATTAINED
Talk on Role of Engineer on 27th May 2023			

PO 7 : Environment and Sustainability

PO 7	1.8	1.17	NOT ATTAINED
Talk on Role of Engineer on 27th May 2023			

PO 8 : Ethics

PO 8	1.8	1.52	NOT ATTAINED
1.Universal Human Values sessions were held on 03-12-2022 and 05-12-2022 2.Session on Anti-ragging were held on 25-05-2023 3.Session on Anti sexual Harassment were held on 30-05-2023			

PO 9 : Individual and Team Work

PO 9	1.8	1.43	NOT ATTAINED
Idea pitching competition for students on 3rd December 2022			

PO 10 : Communication

PO 10	1.8	1.94	ATTAINED
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	1.8	2	ATTAINED
Time management session were held on 09-12-2022			

PO 12 : Life-long Learning

PO 12	1.8	1.5	NOT ATTAINED
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
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PSO 1 : Demonstrate the basic knowledge of science, mathematics, material Science, Engineering and technology to formulate and solve mechanical engineering problems.

PSO 1	1.50	1.89	ATTAINED
NO ACTION			

PSO 2 : Design, synthesis and analyze mechanical, fluid, thermal and multidisciplinary component or systems by adopting analytical, numerical and experimental techniques.

PSO 2	1.5	1.82	ATTAINED
NO ACTION			

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 **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.

9.1.2.1 **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.

9.1.2.2 **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 stakeholders 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 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.
- 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

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

9.3.1 Procedure:

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

9.3.2 Parameters of Exit survey:

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

9.3.3 : Feedback Analysis:

1. The feedback given by the students is consolidated and analyzed by the IQAC. The report of the same will be submitted to the Principal.
2. The Principal in consultaion with the Heads of the departments plans and prepares plan of action
3. All the department executes the plan as discussed

9.4 Self-Learning (5)

Total Marks 5.00

Institute Marks : 5.00

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

- Project Work
 - Mini project
 - NPTEL videos
 - Internship programs
 - Enrolment in NPTEL courses
 - Enrolment for Honors and Minors degree
 - Innovation and Product development
 - Seminars and Group discussion
 - Virtual Labs
 - Students are also encouraged to participate in Technical fests, Ideathon, project competitions, paper presentations in conferences and becoming members of professional bodies which provide scope for learning beyond the syllabus.
- Further, students are encouraged to participate in student competitions, hackathons, technical paper presentations etc which provide scope for learning beyond the prescribed syllabus.

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

- The primary mission of the library is to support the educational and teaching programs with self-learning activities for which, the library is equipped with collection of books on General literature, Competitive exams like GATE, CAT, GRE, and personality development books.
- The library comprises of 21,944 volumes of Books with 2,488 Titles and 7 National printed Magazines, 36 journals. The Library subscribes to about 10,692 full text E-journals from ASCE, IEEE, Springer Link, Taylor & Francis, Elsevier Science Direct, Knimbus, Proquest (Engg & Mgt.) & DELNET.
- Member of VTU e-consortium
- The E-Books Subscription package includes around 1035 from Taylor & Francis-CRC Netbase, Knimbus, delnet &

McGrawhill Education. In addition, there are 109 Bound volumes of journals, Project Reports, 1,149 CD's/DVD's.

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

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

9.5 Career Guidance, Training, Placement (10)

Total Marks 9.00

Institute 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
AY 2023-2024			
1	Placement- Communication skills & how to crack the interview	30/3/2024	1. Mrs.Anshu Deepak Assistant professor Dept of ECE, RRIT 2. Mrs.Vijayalakshmi Assistant professor Dept of ECE RRIT
AY 2022-2023			
2	Digital awareness and placements	13/2/2023	Mr.V Jayanth VP-Training Rooman Technologies Pvt ltd Rajajinagar, Bengaluru
3	Seminar on "Career awareness on what next?"	4/12/2022	Dr.Ravishankar C V Vice-Chairman, IETE, Bangalore
4	Placement training	2/11/2022 to 15/11/2022	RRIT
5	Workshop on Entrepreneurship & innovation as career opportunity & Ideathon	17/10/2022	Mr.Nagarjun M G, Project Associate, KSCST
AY 2021-2022			
6	Seminar on "Career opportunities in VLSI & Embedded systems in industry	20/6/2022	Arun John Mathias Manager Coreel technologies India Pvt.Ltd
7	Communication for placement II	8/4/2022 to 23/6/2022	RRIT
8	Upskilling program	6/4/2022	Diverge solutions pvt limited
9	Exclusive prospect of career counselling and innovation abroad educational programs.	4/4/2022	Texas review
10	Career Guidance	1/12/2021	Mr.Ramesh P Assistant Professor ACE Engineering college, Bengaluru
11	Placement training-Communication for placement I	8/10/2021 to 24/12/2021	Basic science department, language lab, RRIT
AY 2020-2021			
12	Career options and opportunities for electronic graduates	7/7/2021	Mr.Ranjith C V Electrical architect/product designer, Philips India pvt ltd
13	Online seminar on "Tips to crack interview"	22/05/2021	Mr.Shreyas Nadig .S Q.Q. Engineer, Encora Innovation labz
14	Preplacement talk	8/4/2021	RRIT
15	Seminar on "Career opportunities & overseas education"	23/12/2020	Mr.Prasanna Poojar, Managing Director Lokahh International India
16	Study abroad opportunities & VISA guidance	19/10/2020	IDP, Bangalore
AY 2019-2020			
17	Seminar on "career opportunities in VLSI & AI	20/6/2020	Mr.G S Krishna Semiconductor Professional Inohmic Technologies 2. Mr.Ganesh Machine learning professional Inohmic technologies

18	Talk on "Career opportunities in core electronics, industry, product development & IoT training	26/2/2020	Mr. Karunakaran S SchemaZen Technologies pvt ltd Bengaluru
19	Test by LIVEWIRE	16/10/2019	LIVEWIRE, Bengaluru
20	Job opportunities in India & abroad	31/8/2019	Ranganathan B A Associate Professor, Dept of civil Engg RRIT

Entrepreneurship Cell

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 programmes regarding Entrepreneurship development.

B. Objective of the Cell:

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

C. Functions

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

Table: 9.6.1 List of entrepreneurship events conducted in the college

Slno	Name of the event	Date	Resource
AY 2023-2024			
1	2nd Idea pitching competition	10-02-2024	Institute Innovation Council(IIC),RRIT
2	Intellectual property rights and patent procedure	05-04-2023	Dr.Ramesh Shahabadkar, Professor,CSE,AMC college of Engineering
3	Seminar on Data Warehousing	28-02-2023	Mr.Madhu J, Senior Engineer, London stock group exchange
4	Idea Pitching competition	03-12-2022	IIC, RRIT
AY 2022-2023			
5	Innovation and design thinking	21-03-2022	Mr.Jayathirtha M patil, Jyothi Institute of Technology, Bangalore
6	Entrepreneurship and Innovation as career opportunity and ideation	17-10-2022	Mr.Vivek Anand sagar, Patent Information centre,KSCST,IISC

7	2 days workshop on "Entrepreneurship and electric vehicles"-Innovation for future trend	23/12/2021 to	Mr.Naveen Chander, Founder & Director, 3Q Sutantra LLP, Bangalore
		24/12/2021	Mr.Shravan, Managing Director, Mastiebikes Pvt Limited, Bangalore
AY 2021-2022			
8	Company law and IPR	24-07-2021	Mr.Rajagopal CR, Practicing High court advocate

Table: 9.6.2 List of Entrepreneurs

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

- 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
2022-2023				
2.	Mega Health and blood Donation Camp	NSS-RRIT/Mediscope/Lions blood bank/Himalaya Pvt. Ltd./NRR Hospital/Sapthagiri Medical college/Partha Dental/Sparsh Hospital/Eye Foundation/Embiotic laboratories	Blood Donation & Health camp	2022-23
3	Environment and Social Awareness program in government school near haroketanahalli	NSS-RRIT	Awareness program	2022-23
4	Health awarenesss campaign	NSS/Red cross/Lions Club/Prakriya hospital/Partha Dental clinic	Health campaign	2022-23
5	Plantation drive	NSS/Bank of Baroda	Plantation	2022-23
2021-2022				
6	Awareness on Save soil	NSS/IQAC	Awareness program	2021-22
7	Awareness campaign on swachhta/covid	Mechanical Engineering/MSME	Swachh Bharat	2021-22
8	UNNAT BHARAT ABHIYAN	UBA committee/PDO (Panchayat Development Office)	UNNAT BHARAT ABHIYAN	2021-22
9	National youths day	NSS	Awareness program	2021-22
10	Awareness on National voters day	NSS	Awareness program	2021-22
11	Earth day	Green club	Awareness program	2021-22
12	Save soil	Green club	Awareness program	2021-22
13	Svasthya Jagruti	NSS/Red cross/Lions Club/Prakriya hospital/Partha Dental clinic	Walkathon, Blood Donation & Health camp	2021-22
14	Yoga: Relax, Replenish, Revive	Electronics Dept./Swami Vivekananda Yoga Shala	Awareness program	2021-22
15	Vaccination Drive	IQAC	Vaccination against COVID	2021-22
16	Women Hygiene and Safety	IQAC & ICC	Awareness program	2021-22

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

Table 9.7.1- Kalatarranga Organized dates

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

The Vision of the Institution

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

Mission :

Mission of the Institution

M1	To consistently strive for Academic Excellence
M2	To promote collaborative Research & Innovation
M3	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

The Governing Body:

- The Governing Council is the superlative administrative body of the college, It is constituted as per the norms given by AICTE, New Delhi; University affiliated and Govt. of Karnataka.
- 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 Vision and Mission 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 two times a year or whenever needed.

Organization chart

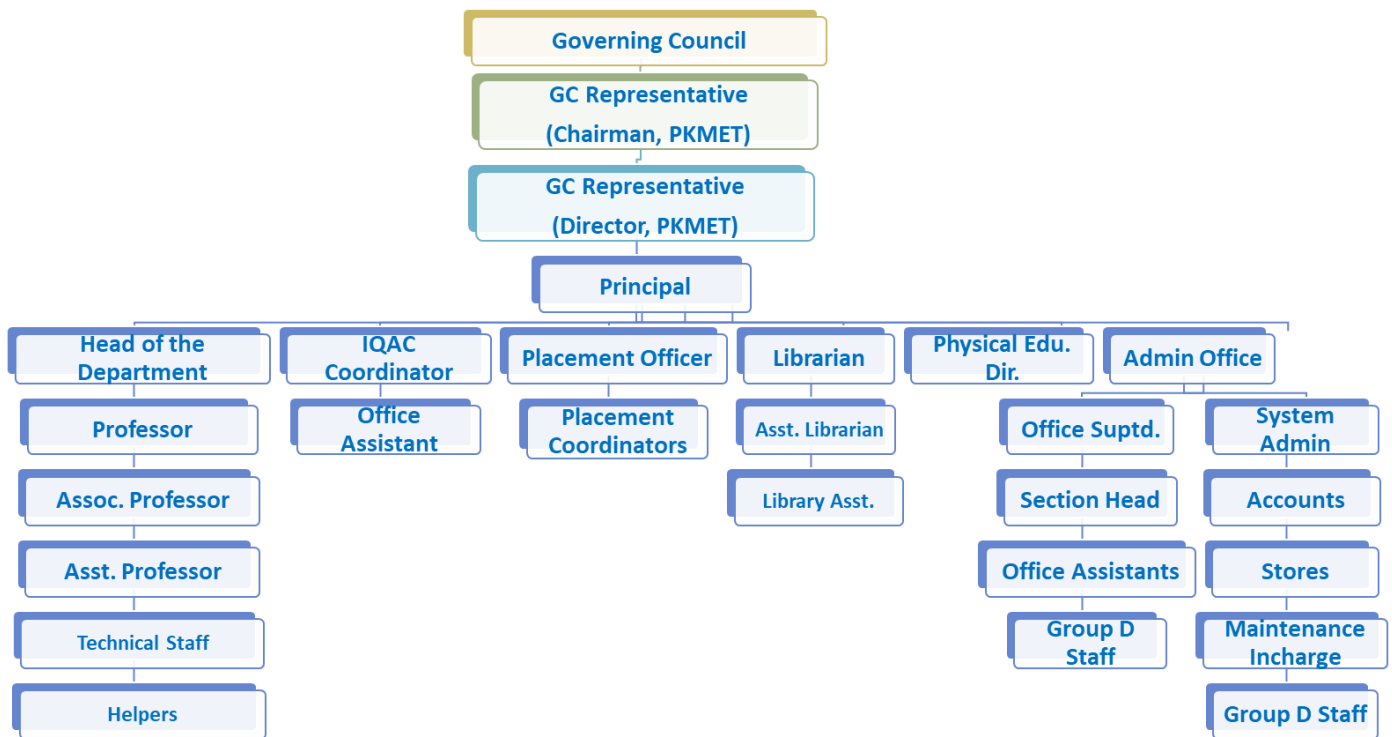


Figure 10.1: Organogram of the institute

Table 10.1: Structure of Governing Body

Sl. No.	Name	Designation & Affiliation	Role
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.	Industry list
7	Prof. Ramalingaiah	Professor, Mechanical Engineering, MRIT Mandya	Member, VTU nominee
8	Dr. S.G.Sreekanteswara Swamy	Former Executive Secretary, KSCST	Member
9	Commissionerate	Department of Collegiate Education, Bengaluru	Member, DTE Nominee
10	Nominee of AICTE	Regional 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

Functions of Various Bodies:

Table 10.2: Governing Council and its Functionalities

Position	Functions
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Governing Council	<ul style="list-style-type: none"> • Frame directive principles and policies Amend and approve policies from time to time • Approve budgets
G C Representative Director	<ul style="list-style-type: none"> • To look after the over all development of the institute Mobilize external resources to strengthen the institute • Plan & provide for necessary facilities/ equipments for development
Principal	<ul style="list-style-type: none"> • Design & define organization structure. • Delegates responsibilities of various positions in the organization. • Ensure periodic monitoring & evaluation of various processes & sub-processes. • Ensure effective purchase procedure. Define quality policy and objectives. • Conduct periodic meeting of various bodies such as Governing Council, Women's Grievances Redressal Committee etc. • Manage accounts and finance • Employee recruitment process
Head of the Departments	<ul style="list-style-type: none"> • Plan and execute academic activities of the department Maintain discipline and culture in the department Maintain the department neat and clean • Pick and promote strengths of students / faculty / staff Monitor academic activities of the department Propose Department Budget • Maintain records of departmental activities and achievements
IQAC	<ul style="list-style-type: none"> • IQAC provides strategic support, helps in planning and implementing many strategic initiatives aimed at imparting quality of education and attainment of POs, PSOs and PEOs. • IQAC strives for Achieving Excellence, Building Competencies and nurturing Global Professionals. • IQAC constantly monitors,suggests changes to be made in academic and administrative activities. • The compliance of academic, administrative procedures and continual improvement is ensured through systematic audit by IQAC.
Training and Placement Officer	<ul style="list-style-type: none"> • Liaison with industry • Identify and provide for training needs of students Arrange campus interviews • Proposing annual T & P budget
Office Superintendent	<ul style="list-style-type: none"> • Corresponding with AICTE, DTE, VTU, etc College roster • Service Books Faculty personal files Recruitment process • Maintain minutes of meeting • Co – ordinate day to day activities of office AICTE, DTE, VTU, etc • committee preparation Annual College budget
Librarian	<ul style="list-style-type: none"> • Plan and execute modus operandi of routine activity of the library • Plan and propose expansion / development Maintain library discipline and culture • Prepare annual budget for library
Alumni Association	<ul style="list-style-type: none"> • Arrange periodic meetings of student council. Ensure alumni registration. • Prepare alumni news letter. Arrange annual alumni meet. • Proposing annual budget

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

slno	Name of the member	Affiliation	Position
1	Shri Y. Raja Reddy	Chairman, PKM Educational Trust	Chairman
2	Shri. H. R. Kiran	Secretary, PKM Educational Trust	Member

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

Table 10.3: List of GC members (2021-22)

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

Table 10.4: Frequency of GC meetings

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

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.

Recruitment Procedure:

- The approval to the required posts for various departments as per statutory norms is taken from the Governing council and notification in the news papers, to invite applications as per AICTE norms.
- After receiving the applications, scrutinizing and short listing of eligible candidates is done on merit basis for various departments. ◦ Panel of experts comprise of VTU Nominee, Principal, HOD, subject expert will interview the eligible candidates.
- The selected candidates are appointed and orders are issued.
- Appointed Candidates should report to the duty on or before the given time.

Procedures and Promotional Policies:

- Policies regarding promotion are as per AICTE.

- Additional increments are given to faculty who excel in academics and research.

10.1.3 Decentralization in working and grievance redressal mechanism (10)

Institute Marks : 9.00

Decentralization in working:

1. The Principal is the Head of the Institution and takes care of all the academic and nonacademic requirements of the institution.
2. As per the University Norms College has also constituted various statutory and non-statutory Committees including Anti Ragging Cell, Internal Complaint Committee and Grievance Redressal Committee for effective and efficient functioning and enjoys autonomy in many of its activities.
3. The college has a clearly defined organizational hierarchy and structure to support decision making processes that are clear and consistent with its purposes. The Institute has a wellstructured Service Rules, consisting of recruitment, promotional and other various procedures which is approved by the Governing Council.

10.1.3.1 Grievance redressal committee:

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

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

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

Grievance redressal committee (AY 2023-2024):

Sino	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.

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

10.1.3.3 ICC(Internal Compliance Committee):

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

Sexual Harassment is any unwelcome:

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

Objectives:

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

Sno	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	1R121EC042
12	Ms.Supreetha B	Student	Member	Female	1R122IS056
13	Dr.Padmakshi Lokesh	Member, NGO	Member	Female	-

10.1.4. Delegation of financial powers (10)

Institute Marks : 9.00

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

The optimal utilization of funds is done as shown below:

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

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

Information to stakeholders is made available on the website:

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

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

:

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		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
Miscellaneous	51504395	49051805	30911508	28621767	23291343	21767611	25749670	24523496
Others, specify	0	0	0	0	0	0	0	0
Total	114348732	108903556	84407857	78155426	62853617	58557551	59990927	56920198

10.2.1. Adequacy of budget allocation (10)

Institute Marks : 10.00

Budget is allotted to each department towards up-gradation of laboratories, for purchasing of laboratory consumables and repair & Calibration of laboratory equipment etc. Each practical laboratory maintains its own record in the form of stock register which records the information related to new purchases, repairs etc. The allocated budget is adequate, and the budget gets sanctioned based on the budget predictions given by the department for every academic year.

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

The allocated funds are Utilized towards

- 1) Staff Salaries
- 2) infrastructure upgradation.
- 3) Procurement and maintenance of common utilities.
- 4) House Keeping
- 5) Procurement of Furniture's
- 6) Expenses towards consumables & Contingencies, repairs, calibration of equipment 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.

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

Institute Marks : 5.00

Audited statements are available on

RRIT website Weblink:

<https://www.rrit.ac.in/audit.php>

10.3 Program Specific Budget Allocation, Utilization (30)

Total Marks 26.00

Institute Marks :

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

Table 1 :: CFY 2023-24

26281098		Actual expenditure (till...): 24334351		Total No. Of Students 66
Non Recurring	Recurring	Non Recurring	Recurring	Expenditure per student
6039229	20241869	5591879	18742472	368702.29

Table 2 :: CFYm1 2022-23

15663831		Actual expenditure (till...): 14503548		Total No. Of Students 103
Non Recurring	Recurring	Non Recurring	Recurring	Expenditure per student
1545347	14118484	1430877	13072671	140811.15

Table 3 :: CFYm2 2021-22

18930630		Actual expenditure (till...): 17528362		Total No. Of Students 110
Non Recurring	Recurring	Non Recurring	Recurring	Expenditure per student
8205003	10725627	7597225	9931137	159348.75

Table 4 :: CFYm3 2020-21

11298716		Actual expenditure (till...): 10461775		Total No. Of Students 120
Non Recurring	Recurring	Non Recurring	Recurring	Expenditure per student
893363	10405353	827188	9634587	87181.46

Items	Budgeted in 2023-24	Actual Expenses in 2023-24 till	Budgeted in 2022-23	Actual Expenses in 2022-23 till	Budgeted in 2021-22	Actual Expenses in 2021-22 till	Budgeted in 2020-21	Actual Expenses in 2020-21 till
Laboratory equipment	0	0	0	0	178678	165443	0	0
Software	0	0	0	0	0	0	0	0
Laboratory consumable	0	0	0	0	6659	6166	3240	3000
Maintenance and spares	8559	7925	1736135	1607533	585703	542318	1088202	1007595
R & D	0	0	0	0	0	0	0	0
Training and Travel	763824	707245	110705	102505	272831	252622	991855	918385
Miscellaneous	8829325	8175301	5151917	4770294	3918169	3627935	4414228	4087249
Total	9601708	8890471	6998757	6480332	4962040	4594484	6497525	6016229

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	Budget (in RS)	Expenditure (in RS)	Remarks
2023-24	9601708	8890471	Adequate
2022-23	6998757	6480332	Adequate
2021-22	4962040	4594484	Adequate
2020-21	6497525	6016229	Adequate

10.3.2. Utilization of allocated funds (20)

Institute Marks : 16.00

The Department of Mechanical Engineering utilised the allocated funds towards

- 1) For Conducting Conferences, workshops, Faculty Development Program, Seminars, Industrial visits etc
- 2) Faculty Sponsor for attending Workshops, FDP, Conferences.
- 3) Faculty Development Program
- 4) Lab Manuals
- 5) Travel Expenses for Industrial Visits

Academic Year	Budget (in RS)	Expenditure (in RS)	Adequate Amount (in Rs)
2023-24	9601708	8890471	711237
2022-23	6998757	6480332	518425
2021-22	4962040	4594484	367556
2020-21	6497525	6016229	481296

10.4. Library and Internet (20)

Total Marks 18.00

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

Institute Marks : 8.00

Library statistics & services			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				
5	E-Journals	21,883	3	Springer Nature(ME, CV, CS, EC, ME and allied branches)	690	14309
6	Newspapers	7	4	Tata McGraw Hill	-	505
7	Magazines	5	5	DELNET Database (IM 7401)		10849
8	Print Journals	13	6	Mint Books	-	3469
9	Project reports	296	7	PACKT BOOKS	-	3000
10	Reading Room Capacity	160	8	ProQuest	4900	-
11	Digital Library	D- Space	9	IEEE ASPP	198	
12	Library Automation	Integrated Institutions Management software (IIMS), V-2.1.3	10	Emerald	212	-
13	Computers	17	11	New Age International	-	3415
14	Area	540m2	12	Knimbus	15000 +	
15	Library Working hours	Monday to Friday	13	NDLI (National Digital Library Membership) Reg. No INKANC42BYZHWWZ	-	-
		9.00 AM to 5.00 PM				
		Saturday		Total	21,883	40,933
		9:00 AM to 1:30 PM				

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

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

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

Name of the Internet provider	Citi online services
Available band width	1GBPS
WiFi availability	Tplink Wifi Access Points and omada Wifi controller.15 access point installation
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	Demonstrate the basic knowledge of science, mathematics, material Science, Engineering and technology to formulate and solve mechanical engineering problems.
PSO2	Design, synthesis and analyze mechanical, fluid, thermal and multidisciplinary component or systems by adopting analytical, numerical and experimental techniques.

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.

Head of the Institute Name : Mahendra K V Designation :

Principal Signature :



PRINCIPAL
R. R. INSTITUTE OF TECHNOLOGY
Chikkabanevara, Bangalore-560090

Seal of The Institution :

Place : Bangalore



Date : 20-05-2024 15:33:39