GOPALAN COLLEGE OF ENGINEERING AND MANAGEMENT

Aeronautical Engg.

Part A : Institutional Information

1 Name and Address of the Institution

GOPALAN COLLEGE OF ENGINEERING AND MANAGEMENT,
181/1, 182/1, Behind SAP Labs, Seetharam Palya, Basavanagar, Hoodi, Bangalore -560 048

2 Name and Address of Affiliating University

VISVESVARAYA TECHNOLOGICAL UNIVERISTY

3 Year of establishment of the Institution:

2010

4 Type of the Institution:

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

5 Ownership Status:

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

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

Name of Institutions	Year of Establishment	Programs of Study	Location
Gopalan College of Commerce	2015	Commerce	Hoodi Village, Sonnenahalli, K.R. Puram,, Bengaluru, Karnataka 560048
Gopalan School of Architecture and Planning	2014	B Architecture, M Architecture	Hoodi Village, Sonnenahalli, K.R. Puram,, Bengaluru, Karnataka 560048
Gopalan PU College	2013	Commerce & Science	Hoodi Village, Sonnenahalli, K.R. Puram,, Bengaluru, Karnataka 560048
Gopalan National School South	2018	SSLC	#31/1, Kumbalgudu, Gram Panchayat, Kengeri Hobli, Banglore South Taluk, Banglore.
Gopalan Twinler School	2017	10th ICSE	#42/1, Nalagulli, Nettegare gate, Kanakpura Road, Bangalore - 560082
Gopalan National School	2005	10th std	No.13, Brookefield Road, Garudachar Palya, Doddenakundi Phase 2 Mahadevapura Karnataka-560048
Gopalan International School	2004	10th std	Behind SAP Labs, Seetharam Palya, Basavanagar, Hoodi, Bengaluru- 560048
Gopalan National School North	2023	5th std	No.79 Mavallipura Kondashattihalli road, Hesaragatta, Hobli, Bngaluru, Karnataka 560089
Gopalan PU College North	2023	Commerce & Science	No.79 Mavallipura Kondashattihalli road, Hesaragatta, Hobli, Bngaluru, Karnataka 560089

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
Aeronautical Engineering	UG	2019	2019	60	No	60	Applying first time	--	--	Yes	4
Computer Science and Engineering	UG	2010	2010	60	Yes	180	Granted accreditation for 3 years for the period (specify period)	2010	2024	No	4

Sanctioned Intake for Last Five Years for the Computer Science and Engineering	
Academic Year	**Sanctioned Intake**
2024-25	180
2023-24	120
2022-23	60
2021-22	60
2020-21	60
2019-20	60

Electronics and Communication Engineering	UG	2010	2010	60	Yes	120	Granted accreditation for 3 years for the period (specify period)	2010	2024	0	4

Sanctioned Intake for Last Five Years for the Electronics and Communication Engineering	
Academic Year	**Sanctioned Intake**
2024-25	120
2023-24	60
2022-23	60
2021-22	60
2020-21	60
2019-20	60

Information Science and Engineering	UG	2023	2023	60	No	60	Not eligible for accreditation	--	--	0	4
Computer Science and Engineering (Artificial Intelligent and Machine Learning)	UG	2024	2024	60	No	60	Not eligible for accreditation	--	--	0	4
Mechanical Engineering	UG	2010	2010	60	Yes	30	Eligible but not applied	--	--	0	4

Sanctioned Intake for Last Five Years for the Mechanical Engineering	
Academic Year	**Sanctioned Intake**
2024-25	30
2023-24	30
2022-23	60
2021-22	60
2020-21	60
2019-20	60

8 Programs to be considered for Accreditation vide this application:

S No	Level	Discipline	Program
1	Under Graduate	Engineering & Technology	Aeronautical Engg.

9 Total number of employees in the institution:

A. Regular* Employees (Faculty and Staff):

Items	2024-25		2023-24		2022-23	
	MIN	MAX	MIN	MAX	MIN	MAX
Faculty in Engineering (Male)	32	40	29	32	29	38
Faculty in Engineering (Female)	12	17	13	13	12	19
Faculty in Maths, Science & Humanities (Male)	12	14	12	12	12	12
Faculty in Maths, Science & Humanities (FeMale)	15	17	10	10	10	10
Non-teaching staff (Male)	48	48	50	54	54	54
Non-teaching staff (FeMale)	28	28	31	33	29	33

B. Contractual* Employees (Faculty and Staff):

Items	2024-25		2023-24		2022-23	
	MIN	MAX	MIN	MAX	MIN	MAX
Faculty in Engineering (Male)	3	3	3	3	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	☑ Shift1	☐ Shift2
Engineering and Technology- PG	☐ Shift1	☐ Shift2
Engineering and Technology- Polytechnic	☐ Shift1	☐ Shift2
MBA	☐ Shift1	☐ Shift2
MCA	☐ Shift1	☐ Shift2

Engineering and Technology- UG Shift-1

Items	2024-25	2023-24	2022-23
Total no. of Boys	526	437	389
Total no. of Girls	510	358	276
Total	**1036**	**795**	**665**

11 Vision of the Institution:

To be the institution of choice with contemporary knowledge coupled with values contributes to the society through excellence in technical education and research by continuous innovation

12 Mission of the Institution:

- Achieving Excellence in Teaching Learning Process Using State-Of-The-Art Resources.
- Develop industrial collaborations to promote research and innovation capabilities of faculty and students.
- Inculcate entrepreneur skills with high integrity to serve the society

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

Head of the Institution	
Name	Dr. Arun Vikas Singh
Designation	Principal
Mobile No.	9980809408
Email ID	gcemprincipal@gopalancolleges.com

☑ **NBA Coordinator, If Designated**

Name	Dr. Manjunath S V
Designation	Associate Professor
Mobile No.	8951858040
Email ID	manjunath_aero@gopalancolleges.com

PART B: Criteria Summary

Critera No.	Criteria	Total Marks	Institute Marks
1	VISION, MISSION AND PROGRAM EDUCATIONAL OBJECTIVES	60	60.00
2	PROGRAM CURRICULUM AND TEACHING - LEARNING PROCESSES	120	120.00
3	COURSE OUTCOMES AND PROGRAM OUTCOMES	120	120.00
4	STUDENTS' PERFORMANCE	150	113.85
5	FACULTY INFORMATION AND CONTRIBUTIONS	200	171.59
6	FACILITIES AND TECHNICAL SUPPORT	80	80.00
7	CONTINUOUS IMPROVEMENT	50	50.00
8	FIRST YEAR ACADEMICS	50	44.49
9	STUDENT SUPPORT SYSTEMS	50	50.00
10	GOVERNANCE, INSTITUTIONAL SUPPORT AND FINANCIAL RESOURCES	120	120.00
	Total	**1000**	**930**

Part B

1 VISION, MISSION AND PROGRAM EDUCATIONAL OBJECTIVES (60)

Total Marks 60.00

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

Total Marks 5.00

Institute Marks : 5.00

Vision of the institute	To be the institution of choice with contemporary knowledge coupled with values contributes to the society through excellence in technical education and research by continuous innovation
Mission of the institute	• Achieving Excellence in Teaching Learning Process Using State-Of-The-Art Resources. • Develop industrial collaborations to promote research and innovation capabilities of faculty and students. • Inculcate entrepreneur skills with high integrity to serve the society
Vision of the Department	Strive and achieve to shape and bring out highly competent and confident Aeronautical Engineers with high ethical values and professional commitment to meet the national and global requirement of industry and society
Mission of the Department	

Mission No.	Mission Statements
M1	1. Imparting quality education leading to strong foundation in various fields of Aeronautical Engineering
M2	2. Through constant upgradation of teaching methods, tools and facilities, make them competent, confident to carry out research to face the rapidly advancing technological world
M3	3. To mould them as citizens of high moral, social and ethical values to fulfil their obligations

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

Total Marks 5.00

Institute Marks : 5.00

PEO No.	Program Educational Objectives Statements
PEO1	Gain competence and confidence to handle problems in theoretical and experimental aspects of various domains of aeronautical engineering
PEO2	Involve themselves in domain specific and inter disciplinary research in aeronautical engineering projects considering innovation in design, functionality safety, cost effectiveness and life cycle
PEO3	Able to function with a sense of professional and ethical responsibilities to exhibit good competency in their work culture

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

Total Marks 10.00

Institute Marks : 10.00

1. College Website https://www.gopalancolleges.com/gcem/aeronautical-engineering-department-vision-mission.html (https://www.gopalancolleges.com/gcem/aeronautical-engineering-department-vision-mission.html)

2. Display on Notice Boards

3. HoD Room

4. Faculty Rooms

5. Laboratories

6. Classrooms

7. Seminar Hall

8. Department Corridors

9. Department Library

10. Academic Records

11. Lab Records

The Vision, Mission and PEOs are also disseminated through: Meeting with staff members and email to staff members

Email to parents, and alumni

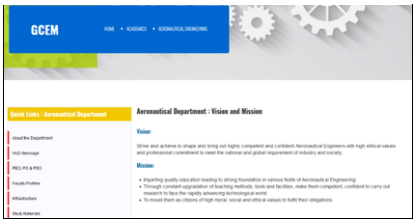


Fig. 1.3.1 Institute Website

Fig. 1.3.2 Corridors and Department staff room

Fig. 1.3.3 HOD's office

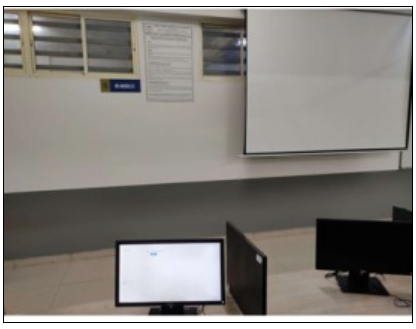


Fig. 1.3.4 In the laboratory

1.4 State the process for defining the Vision and Mission of the Department, and PEOs of the program (25) Total Marks 25.00

Institute Marks : 25.00

Basic process for the formation of Vision and Mission statements

Fig.1.4.1 Basic process for the formation of Vision and Mission statements

- A Department Advisory Board (DAB) committee consisting of department HOD / Program coordinator, senior faculty, academic expert, Industry experts and Alumni is formed in order to discuss and promote the department's vision and mission.
- HOD calls in for a departmental meeting (PAC) before the DAB committee's meet to discuss about the Vision and Mission statements collected from various prestigious Institutes/ Universities to coin up the Vision and Mission statement of the department

The vision statement is coined fulfilling the following terms

Fig.1.4.2 Components for the formation of Department Vision Statement

The Output -**Innovative leader in Aeronautical Engineering**

The Approach -**Through excellence in education**

The Motive -**High ethical values & professional commitment**

The Strategy - **National and global requirement of industry**

The Mission Statement is formed in accordance to the Vision statement of the department and it is formed with the view of:

- Mission should be clear so that it is easily understood.
- It specifies purpose and goals of the department.
- It should have achievable standards; neither too high nor too low.
- It should be precise; neither too narrow to limit organization's activities nor too broad to make it vague.

Fig.1.4.3 Components for the formation of Department Mission Statement

- The first meeting of DAB was conducted in the year 2019 - 20 in order to frame the Vision and Mission, PEO and PSO Statement of the Department.
- The committee consisting the members as mentioned below (fig1.8) will be gathered in for a meeting once a year from then on to discuss the improvisation or changes that can be incorporated in the Vision, Mission PEO and PSO statements of the department by implementing the ideas and the flaws noticed by the members in the DAB committee

DAB committee also holds the following responsibilities, along with above duties,

1. Internal assessment marks allotment and the maximum weightage of marks given to schemes.
2. Internal Test assessment procedure and the target level for various schemes.
3. Finalization of Assignment assessment procedures for different schemes.
4. Percentage allocation for Summative and Formative assessment.
5. Laboratory Conduction procedure and its assessment techniques.
6. Seminars and Final year projects assessment procedures.
7. Finalization of number of phases for project assessments and maximum weightage of marks.
8. Direct Assessment Calculations for Semester end Examination

- The process to be followed for the Co-relations between CO, PO and PSOs will be discussed during the meetings and changes will be included for that academic year.
- Department's vision and mission is framed in such a way that it is laid up with the vision and mission of the institution.
- It is then reviewed by the principal and finally sent to the college council for its approval.
- The Approved statements are then displayed as mentioned above.

Members of the Department Advisory Board (DAB)

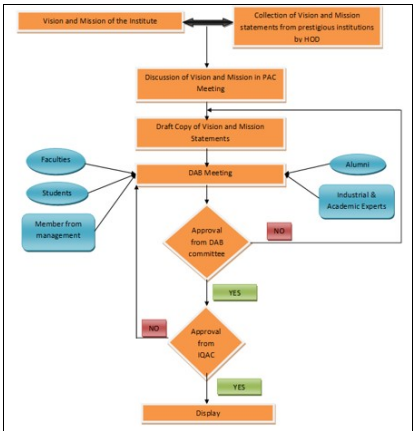


Fig.1.4.4 Process involved in the formation of Vision and Mission Statements

Fig.1.4.5 Responsibilities of PAC Committee

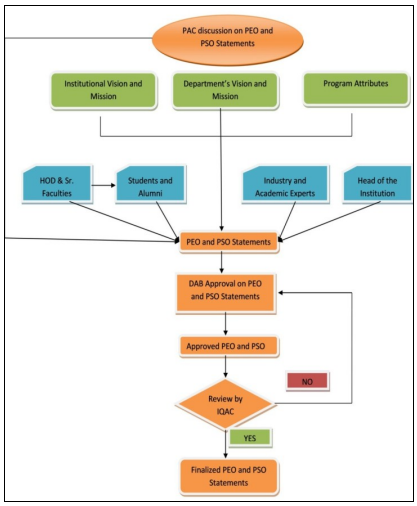


Fig.1.4.6 Flow chart for Formation of the PEO, PSO statements

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

Total Marks 15.00

Institute Marks : 15.00

PEO 1 speaks about the technical knowledge and successful career where the mission statements highlight

Level of Mapping	Reasons
3	Mission 1 highlights about the department delivering the technical and practical skill required for a successful engineer
2	Mission 2 aims the students to develop the passion over studies to focus on the necessary changes required to face the challenges
2	Mission 3 concentrates on the application-oriented views required for the courses.

PEO 2 can be mapped with the levels of 3, 2, 2 with mission statements 1, 2, 3 respectively and it is based on the clear over view that

PEO 2 shows analyze challenges and advancements in the focus areas of Aeronautics

Level of Mapping	Reasons
3	Mission 1 highlights about the department delivering the technical and practical skill required for a successful engineer
2	Mission 2 aims the students to develop the passion over studies to focus on the necessary changes required to face the challenges
2	Mission 3 concentrates on the application-oriented views required for the courses.

PEO 3 can be mapped with the levels of 3,2,2 with mission statements 1,2,3 respectively and it is based on the clear over view that

PEO 3 Overlook on motivating students towards research and higher studies whereas mission statements speak about

Level of Mapping	Reasons
3	Mission 1 highlights about the department delivering the technical and practical skill required for a successful engineer
2	Mission 2 aims the students to develop the passion over studies to focus on the necessary changes required to face the challenges
2	Mission 3 concentrates on the application-oriented views required for the courses.

PEO Statements	**M1**	**M2**	**M3**
Gain competence and confidence to handle problems in theoretical and experimental aspects of various domains of aeronautical engineering	3	2	2
Involve themselves in domain specific and inter disciplinary research in aeronautical engineering projects considering innovation in design, functionality safety, cost effectiveness and life cycle	3	2	2
Able to function with a sense of professional and ethical responsibilities to exhibit good competency in their work culture	3	2	2

2 PROGRAM CURRICULUM AND TEACHING - LEARNING PROCESSES (120)

Total Marks 120.00

2.1 Program Curriculum (20)

Total Marks 20.00

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

Institute Marks : 10.00

Curriculum prescribed by Visvesvaraya Technological University (VTU), Belagavi is followed for the program of Aeronautical Engineering. The VTU curriculum is used to develop course outcomes so that each course outcome contributes to the attainment of POs & PSOs. Different courses emphasize on contribution to different POs & PSOs leading to eventual attainment of POs & PSOs upon successful completion of all courses and hence the program.

Each course has sufficient weightage to fundamental concepts, tools and techniques and emphasis on practical implementations. Course syllabus provides a strong correlation between the course outcomes and program outcomes, developing necessary skills in students, making them proficient engineers

Program Outcomes are defined for Engineering Graduates by National Board of Accreditation and the same is adopted by the Program, namely

Table.2.1.1.1 Program Specific Outcomes (PSOs)are defined by the Department

PO1	**Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO2	**Problem analysis**: Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO3	**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.
PO4	**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.
PO5	**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.
PO6	**The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
PO7	**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
PO8	**Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO9	**Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO10	**Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO11	**Project management and finance**: Demonstrate knowledge and understanding of 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.
PO12	**Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.
At the end of the program, Aeronautical Engineering	
PSO1	Apply their knowledge in the domain areas of Aerodynamics, Aircraft Propulsion, Aircraft Structures and Flight mechanics by acquiring knowledge in basic engineering, mathematics, science and Aeronautical engineering.
PSO2	Graduates will exhibit professionalism, team work in their chosen profession and adapt to current trends, technologies, research and industrial scenarios by pursuing lifelong learning.

Process used to identify extent of compliance of the University curriculum for attaining the Program Outcomes and Program Specific Outcomes

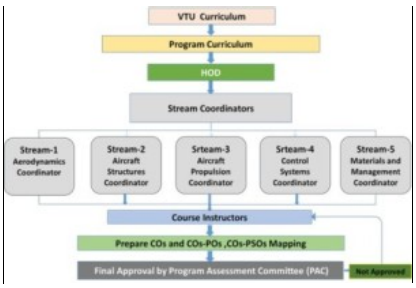


Fig. 2.1.1.1 The process involved to formulate COs, COs-POs and COs-PSOs mapping.

The department has applied process as depicted in Figure 2.1 to define Course outcomes, map COs-POs & COs-PSOs for the university curriculum prescribed for the program. The program curriculum is divided in to five major streams based on the nature of courses. The Head of the department will appoint stream coordinators base on the specialization of faculty members. The senior professors are assigned as coordinators for each stream. The five streams identified as,

Stream 1: Aerodynamics

Stream 2: Aircraft structure

Stream 3: Aircraft Propulsion

Stream 4: Control Systems

Stream 5: Materials, Management and Allied engineering courses

The Courses prescribed by the University come under any one of the above specified streams. These respective stream coordinators conduct evaluation sessions with each individual course instructor for identifying and evaluate extent of compliance of the course

with POs and PSOs. The course instructor will frame the COs and establish the correlation between COs with POs and PSOs. Also, will discuss on identifying curriculum gaps and proposes the action to fulfill the curriculum gap by analyzing COs-POs & COs-PSOs matrix and forward it for further approval from Program Assessment Committee (PAC). Any improvements or suggestions from the PAC will be incorporated

Strategy followed to identify the compliance of University curriculum with POs and PSOs attainment

1. COs-POs and COs-PSOs mapping is done based on number of hours allotted for each POs and PSOs

   ≥30%, graded as HIGH (3)

   ≥15% and <30%, graded as MODERATE (2)

<15% and > 0 %, graded as LOW (1)

2. A consolidated Course Outcomes-POs/PSOs mapping table is prepared by considering COs correlation with POs and PSOs for each core and Elective subjects of the Program.
3. Course-PO/PSO mapping table is used to compute:

- **S**, The sum of the average level the COs of the courses contributing for the respective POs and PSOs.
- **T,** Total number of Courses addressing each POs and PSOs.
- The average weightage/level value of mapping of all courses with POs and PSOs.

The University curriculum is significant enough to attain POs and PSOs if the following conditions (**a** and **b**) are satisfied

a. (T ≥ 3 and S ≥ 9) This means that at least three or more courses from the entire Program address the respective PO/PSO and the Sum of the weighted Average of the courses are at least nine or more for the respective POs/PSOs. If the above condition is not satisfied, It means that University Curriculum is not significant enough to attain POs/PSOs, hence curriculum gap percentage G is computed using expression **G = [(9-S)/9]*100** for the weakly addressed POs and PSOs (where **S<9**).

b. (A ≥ 1.8) This means that the average weightage/level **(A)** of mapping of COs of all courses with POs and PSOs is taken as 60 Percent of highest level (3) i.e. A=**1.8**. If this condition is not satisfied, it means that University Curriculum is weakly addressing the POs and PSOs, hence Curriculum Gap percentage **G** is computed using expression **G = [(1.8-A)/1.8]*100** for the weakly addressed POs and PSOs (where **A<1.8**).

4. Gaps in University Curriculum is listed for the weakly addressed POs and PSOs

5. (where S<9 and if A<1.8) then actions are planned to address the gap.

6. Detail deliberation of curriculum gaps and appropriateness is discussed in the Departmental staff meeting.

7. The final list of curriculum gaps and implementation of various activities to address the identified gaps and its appropriateness in achieving POs and PSOs are presented to Program Assessment Committee (PAC) for suggestion.

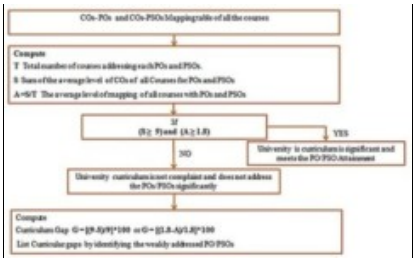


Fig. 2.1.1.2 Process to identify compliance of the University curriculum to attain POs/PSOs and identification of curriculum gaps

Table 2.1.1.2 Program level CO-PO matrix of all courses including first year courses for CAY m1 2023-24

Course Code	Course Index	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
BMATM101	C101	1.80	2.80			3.00						1.00	1.00		
BCHEM102	C102	3.00	1.00	1.00											
BCEDK103	C103	3.00	2.50	2.67		2.67	2.00			2.00	3.00		2.00	2.75	3.00
BSC1K104E	C104	3.00	3.00					3.00		2.00				2.00	
BETCK105E	C105	3.00	2.20	2.40					3.00	3.00	2.80	2.00		3.00	2.20
BENGK106	C106										2.40				
BKSKK107	C107						1.00		1.00		2.00		1.00		
BKBKK107	C108						1.00		1.00		2.00		1.00		
BSFHK258	C109						2.00								
BMATM201	C110	2.60	2.20	1.60		0.20									
BPHYE202	C111	3.00	2.00	1.00		2.00			3.00	3.00			2.00		
BEMEM203	C112	3.00	2.00				1.00	1.00			1.00		1.00		
BPLCK205B	C113			3.00		2.25	2.00		1.00	1.50			2.25		2.15
BESCK205C	C114	3.00	2.80	3.00		2.60		3.00						3.00	2.40
BPWSK206	C115									2.00	2.33		1.00		
BICOK207	C116								3.00	1.00					
BIDTK258	C117	2.75	3.00	2.50		2.50		2.00						2.75	2.25
BAE301	C201	2.20	1.40	1.00			1.00	1.00	1.00					1.40	2.00
BAE302	C202	3.00	1.20	1.00										3.00	2.00
BAE303	C203	2.70	2.33	1.22	2.00	2.84	1.00			1.33	1.50	1.00	1.50	1.58	2.00
BAE304	C204	3.00	2.00	1.00										2.00	1.00
BAEL305	C205	2.67	2.33	1.67		2.67							1.67	2.33	1.67
BAE306A	C206	3.00	2.00	2.00		1.00	1.33	1.80		1.00	1.00	1.00	1.00	3.00	1.40
BSCK307	C207	1.00	2.00	2.00			2.00	1.60					1.00		
BAE358A	C208	1.00					1.00			1.00	1.00	1.00	1.00	1.00	
BAE401	C209	2.80	2.00	2.60	2.00									1.00	
BAE402	C210	2.00	1.20	2.00	1.00									3.00	1.00
BAE403	C211	2.60	2.20	1.80	2.00	1.00	1.00			1.00			2.00	3.00	2.00
BAEL404	C212	2.20	2.40	2.80	2.60	3.00	1.20	2.00	2.00			1.00	2.00	2.60	2.00
BAE405A	C213	2.80	1.80	2.20		2.60								1.00	2.00
BAE456A	C214	1.00	2.00	1.80		2.00							2.00	3.00	2.00
BBOK407	C215	3.00	2.80	2.60										3.00	2.60
BUHK408	C216						1.75	1.25	3.00				1.00	1.00	
21AE51	C301	3.00	2.00	1.00	1.00									2.00	1.00
21AE52	C302	2.60	2.20	1.80	2.00	1.00	1.00			1.00			2.00	3.00	2.00
21AE53	C303	3.00	1.80	1.80										1.00	1.00
21AE54	C304	3.00	2.40	3.00	2.60	2.00								3.00	2.00
21AEL55	C305	3.00	2.00	2.00	2.00	3.00				1.00	1.00	1.00	1.00	2.00	1.00
21AE56	C306	3.00	3.00	2.20		1.00	1.00		2.00				2.00	1.00	3.00
21CIV57	C307		2.50				2.00	1.75			1.25				
21AE581	C308	1.00								1.00		1.00	1.00	1.00	1.00
21AE61	C309	1.00							2.00	2.00	1.00	1.00		1.00	2.00
21AE62	C310	1.80	1.60	1.80		2.00				2.00	2.00		1.00	1.00	2.00
21AE63	C311	3.00	2.40	2.20	2.40	2.00				1.00	1.00		1.00	1.00	
21AE642	C312	2.80	2.00	1.00				2.00					1.00	2.00	1.00
21ME652	C313	3.00	2.80	2.50				2.60						2.80	
21ME653	C314	3.00	2.40	2.67		2.75				2.00			2.20	3.00	
21AEMP67	C315	2.00				3.00			3.00	1.00	3.00	3.00	1.00	3.00	3.00
21INT68	C316	0.60	1.20	1.20	2.00	0.60	0.60	1.20	0.60	0.60	0.60	0.60	0.60	1.40	0.40
18AE71	C401	3.00	2.00				1.00							3.00	1.00
18 AE 72	C402	3.00	2.60	2.00	1.00	1.00				1.00			1.00	2.00	1.00
18AE732	C403	2.40	2.60			1.40							1.00	1.80	1.00
18AE743	C404	1.80	1.60	1.80		2.00				2.00	1.00		1.00	1.00	1.00
18CS752	C405	3.00	2.00	2.00		1.00								1.00	1.00
18CV753	C406	3.00	2.67					3.00		3.00	2.00	3.00			2.67

18ME753	**C407**						1.75	1.80	3.00				1.00	1.00	1.00
18 AE L76	**C408**	2.00		1.50		2.25							2.25	1.50	1.75
18 AE L77	**C409**	2.00		1.50		2.25							2.25	1.50	1.75
18AEP78	**C410**	2.00				3.00			3.00	1.00	3.00	3.00	1.00	3.00	3.00
18AE81	**C411**	1.80	1.20	1.00	1.00			1.00					1.00	2.80	2.00
18AE821	**C412**	1.80	1.40	2.00			2.00						1.00	2.00	1.00
18AEP83	**C413**	2.00				3.00			3.00	1.00	3.00	3.00	1.00	3.00	3.00
18 AE S84	**C414**					3.00	3.00	3.00	3.00	3.00	3.00		3.00	1.00	3.00
18AEI85	**C415**	2.33	2.67	2.00					2.00	1.00	1.00	1.00		2.33	2.67
	Sum	129.05	98.20	79.83	23.60	66.58	31.63	33.00	39.60	42.43	41.88	23.60	52.72	100.54	79.91
Average		2.43	2.13	1.90	1.82	2.08	1.44	1.94	2.20	1.57	1.82	1.57	1.39	2.05	1.82
No. course mapped		53	46	42	13	32	22	17	18	27	23	15	38	49	44
Gap in %							20.1			12.7		12.6	22.9		

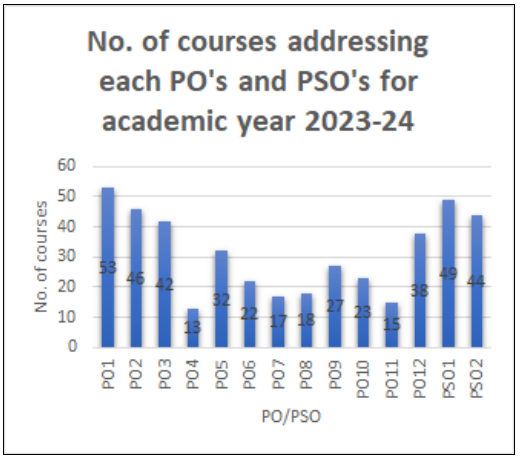


Fig. 2.1.1.3 Number of courses mapped against POs and PSOs for academic year 2023-24

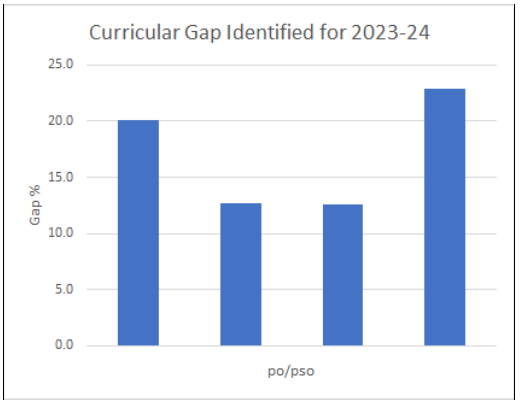


Fig. 2.1.1.4 Curricular gap identified for the academic year 2023-24

Table 2.1.1.3 Identification of Curriculum Gaps for the Academic Year 2023-24

Gap	PO/PSO	Avg(A)/	Gap (G) in %	Action Planned for identified Gaps
Gap 1	PO6: The engineer and society	1.44	20.1	Invited Talks/ Awareness campaigns
Gap 2	PO9: Individual and team work	1.57	12.7	Workshops
Gap 3	PO11: Project management and finance	1.57	12.6	Workshops
Gap 4	PO12: Life-long learning.	1.39	22.9	Hands on Workshop/Technical Talks/ seminar

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

Institute Marks : 10.00

A. **Steps taken to get identified gaps included in the curriculum.**

Institute/Department will communicate the curricular gaps identified in particular course or requirement of bridge courses to the affiliating University through proper channel for further action.

B. **Delivery details of content beyond syllabus**

The department is keen on the content beyond syllabus and has taken several measures to provide additional training and hands-on practice to the topics required for attainment of POs and PSOs, since its inception. The department is coordinating with the Training & Placement cell of the institution to bridge the gap between academia and the industry. Certification courses are offered with industry orientation through the MoUs.

Fig.2.1.2.1 Workshops and Technical talks conducted in department.

Fig.2.1.2.2 Department MoUs

2023-24

S.No	Gap	Action Taken	Date-Month-Year	Resource Person with Designation	% of students	Relevance to POs, PSOs
1	Gap1 Gap2	No Tobacco Day, Awareness program on tobacco free lifestyle	31/05/2024	Aster Hospital, Bengaluru Traffic Police	95	PO6,PO9
2	Gap 1 Gap 2 Gap3 Gap 4	Spark-Tank, Intra-Collegiate Startup Pitch and Poster Presentation contests	27/05/2024	Dr. G Ramesh, Dean Research, GCEM Mr. Suprith M Assistant Professor, GCEM	60	PO6,PO7,PO11,PO12
3	Gap 2 Gap 3	Project Exhibition	24/05/2024	Mr. Hemesh M, Engineering Manager & IPTL, Adv Structures Collins Aerospace	100	PO9,PO11
4	Gap 1 Gap 4	Technical Talk-RADIANCE, Celebrating National Science Day	28/02/2024	Dr. P V Venkitakrishnan Retd. Distinguished Scientist, Ex-Director, CBPO, ISRO HQ, Professor, IIT Madras	96	PO6,PO12
5	Gap 4	Workshop on “Open VSP”	27/01/2024	Mr. Gowtham Y V Mr. Shekar G C Ms. Kirankumari Bhatt, students V Sem AE	98	PO1,PO5,PO12
6	Gap 2 Gap 3 Gap 4	Workshop on “RC AEROMODELING”	16/01/2024	Mr. Tharun Surya DJ Mr. Varun Reddy Mr. Gagan D, students VII Sem AE	100	PO1,PO9,PO11,PO12
7	Gap 4	Workshop on “Basics and Applications of AURDINO”	13/01/2024	Dr. G Ramesh Dean Research, GCEM	95	PO1,PO5,PO12
8	Gap 1 Gap3 Gap 4	Technical Talk	09/12/2023	Mr. Harsha R M Lead Systems Engineer, Boeing India	88	PO1,PO2,PO3,PO6,PO9,PO11,PO12
9	Gap 4	“Mold & Build”, A practical session on composite fabrication	02/12/2023	Mr. Prasanth & Team NextLeap Aeronautics, Bangalore	80	PO1,PO12
10	Gap 1 Gap 3Gap 4	Technical Talk	01/12/2023	Dr. Rama Chandra C G Professor, Presidency University, Bangalore Technical Talk by Dr. G Purushotham Professor & HOD-AE, GCEM	80	PO1,PO6,PO11,PO12
11	Gap 4	4-Week Offline Internship Program on “MATLAB, SIMULINK, PYTHON, SOLIDWORKS & ANSYS”	25/10/2023	Mr. Adarsh Krishnamurthy Assistant Professor, GCEM Mr. Suprith M Assistant Professor, GCEM Mr. Likhith Raj R Assistant Professor, GCEM	96	PO1,PO5,PO12
12	Gap 4	Workshop	15/10/2023	Mr. Tharun Surya DJ,Mr. Gagan D, Mr. Rishith , Mr. Karan, Mr. Skanda Navada, students 4th year , Dept. of AE	92	PO1,PO5,PO12
13	Gap 1 Gap 3 Gap 4	Technical Talk	17/10/2023	Shri B Sankar Madaswamy, Scientist/Engineer, ISRO	94	PO6,PO12

2022-23

S.No	Gap	Action Taken	Date-Month-Year	Resource Person with Designation	% of students	Relevance to POs, PSOs
1	Gap1Gap2 Gap3	CATIA software Training Workshop	09/12/2022	Mr. Rajashekharreddy H G, Assistant Professor, GCEM.	90	PO10 PO8, PSO2
2	Gap1 Gap2 Gap4	Matlab For Aeronautical/ Aerospace Applications Workshop	16/12/2022	Mr. Praveen N, Assistant Professor, Dept. of Aeronautical Engineering, GCEM	90	PO3, PO7, PO10, PO11, PS01
3	Gap1 Gap2	GATE: Preparation And Future Prospects Technical Talk	14/12/2022	Mr. Saviraj A S, Assistant Professor, Dept. of Aeronautical Engineering, GCEM	85	P03,PO4,PSO1
4	Gap3	Advanced Vibration Analysis Workshop	16/06/2023	Dr. V Shankar, Ex - scientist from NAL, Mr. D.S. Ramakrishna, Chief Technology Officer at Enmaz Engineering Services Pvt. Ltd. in Bangalore	85	PO6, PO10,PSO2
5	Gap1 Gap4	Aeromodelling RC Aircraft workshop in collaboration with VIT, Bhopal University	04/10/2023	Ms. Gouthami T S AEROGO INDIA, Bangalore Mr. Varun Reddy Mr. Kavansagar 7th Sem AE, GCEM	80	PO1,PO9,PO11,PO12

2021-22

S.No	Gap	Action Taken	Date-Month-Year	Resource Person with Designation	% of students	Relevance to POs, PSOs
1	Gap1 Gap 2	Workshop	15/10/2022	Mr. Prashanth Radhakrishnan, CEO & Founder, Dautya Aerospace Pvt. Ltd. Goa & Bengaluru	90	PO3,PO4,PO11,P012,PSO1
2	Gap1Gap2 Gap3	Guest lecture	15/11/2022	Professor Igors Tipans, Deputy Rector of Riga Technical University, Latvia	85	PO1,PO2PO3,PO4,PO10 PO11,PSO1
3	Gap3	Technical Talk	13/12/2022	Professor Elangovan Rajgopalan, former ISRO Scientist.	84	P06, PO8, PO10,PO12,PSO2

2.2 Teaching - Learning Processes (100) Total Marks 100.00

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

Institute Marks : 25.00

A. ADHERENCE TO THE ACADEMIC CALENDER

Fig.2.2.1.1 Academic Calendar Adherence

University delivers the academic calendar at the dawn of every semester which includes all the vital dates for the approaching semester (Ex.: the commencement and end term dates, list of public holidays etc.).

The Institution plans the academic calendar in adherence with the university calendar which encompasses the internal assessment dates, dates for extracurricular activities, test marks and attendance display dates, necessary changes in the working days in order to meet the attainment of the curriculum etc., which is then finalized and circulated to heads and faculties of all the department.

The Department formulates its calendar with the perfect blend of institute's academic calendar where the tentative dates / weeks for technical activities, Industrial visits, Department association's activities, Value added programs etc. are planned.

The department calendar will be finalized by head of the department which is then followed for the preparation of lesson plans and course completion techniques by the individual faculties and the same is approved by HOD.

Fig.2.2.1.2 Academic Calendar of the University_2023-24_4th sem

Fig.2.2.1.3 Academic Calendar of the Institute

Fig.2.2.1.4 Department Calendar of events 2023-24 (Even sem)

B. Use of Various Instructional Methods and Pedagogical Initiatives.

Fig.2.2.1.5 Process of Teaching learning process

- The finalized list of subjects allotted to the faculties is circulated among the faculty and the final copy is approved by HOD.
- Faculties reinforce their thoughts, outline, Lesson design and strategies for conveyance about the corresponding course and submit the same, which then will be reviewed by a team of expertise.
- Faculties plans course outcomes and mapping of CO-PO and PSO of their courses which will be delivered and discussed with stream coordinators/ facilitators for advance clarifications
- Faculty members register for NPTEL courses which upgrades the instructing aids.
- Aside from classroom sessions and PPT conveyed by the staff, students are urged to take an interest in multi-disciplinary exercises, course sessions by the students will be directed to help up their confidence level.
- Students are taken for industrial visits for enriching the practical experiences.
- Courses which are closely related to laboratory-oriented topics, practical demonstration of the equipment and experiments along with classroom teaching will be imparted.
- The teaching-learning Process to be student centric. Faculty undergoes training and workshops on modern teaching methodologies and those are incorporated to enhance learning
- Modern tools such as Flip class rooms, Brain storming sessions, and group discussions are introduced in order to enhance the learning skills and capability of the students.
- Assignments are given to enhance problem solving aptitude.
- Students are encouraged to conduct seminars in the classrooms on theme relating to educational modules and ongoing advances which upgrades their insight and certainty
- Group discussions are conducted in classrooms and laboratories on regular basis.
- Remedial classes are arranged for Slow learners.
- PPT, PDF and Videos related to academics and courses are uploaded to Institute's website for easy access.
- Bridge courses are conducted to the students with the goal that the course can be made more straightforward over the semester.
- The Dept. of Aeronautical Engineering has a completely ICT enabled classrooms that has Wi-Fi connectivity with projectors, Smart-board.

The Faculties of Aeronautical department prepares the PPT, written notes, Videos (downloaded) that are appropriate for the university curriculum, the same will be circulated among the students for better understandings. It is also made available in the Institute's website, so that it is made easily available for the students.

Department Page in the Institute Website:

URL: https://www.gopalancolleges.com/gcem/aeronautical-engineering-department.html

C. Methodologies to Support Slow learners and Encourage Bright Students

C.1 Guidelines to identify Weak/ Bright students:

Faculties are given additional responsibilities as class advisor by the HOD.

Roles of the class advisors are as Follows,

- Each faculty advisor will be allotted with a batch of 18-22 students
- Faculty advisor maintains a record of individual student which contains all the necessary details of the student.
- All his/her academic progress will be monitored and informed to their parents on a regular basis.
- Based on his/her academic performances, they are segregated into weak or bright students.
- Following which the appropriate actions mentioned below are taken.

Responsibilities of the class advisors are as fallows,

- Demonstrates a concerned and caring attitude toward advisees
- Exhibits effective interpersonal and communication skills
- Frequent contact with advisees whenever required
- Knowledgeable of institutional regulations, policies, offerings, and procedures
- Monitors student progress

Fig.2.2.1.6 Students performance report sample

C.2 Slow learners

- Identify student's learning abilities, backgrounds at the beginning of the semester.
- Slow learners are identified based on the marks scored during an internal examination (Marks scored less than 50% of Max marks)
- Provide extra material or exercises for students who lack essential background knowledge or skills.
- Usage of different activities out of the class – videos, discussions, assignment methods – written and oral.
- Remedial classes are conducted to push up the under performers with the goal that they comprehend the subjects effectively.
- Give students a real-world problem to solve that has multiple solutions. Provide examples and questions to guide them.
- Periodically discuss how well the class is doing during the course of the semester.
- Conduction of unit tests / weekly tests in each subject for weaker students
- Assignments are given in each topic.

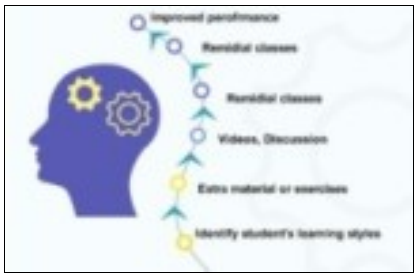


Fig.2.2.1.7 Support for Slow learners

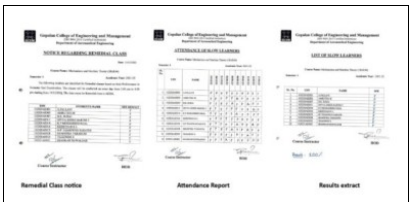


Fig.2.2.1.8 Remedial class notice, attendance and result extract sample.

Fig.2.2.1.9 Handwritten notes from faculty.

C.3 BRIGHT STUDENTS:

- Bright Students are identified by their marks scored during their Internal and External examinations (Marks scored is greater than 80% of Max marks) and by their involvement toward Extracurricular and department level activities.
- Class Toppers will be awarded with cash prizes and honored on college day.
- Encouraging the use of professional journals.
- Encourage use of internships, study abroad, service learning and clinical opportunities
- Small group discussions, collaborative projects in and out of class, group presentations, and case study analysis.
- Use technology to make resources easily available to students.
- Bright students are encouraged to take up technical concept-based application projects in addition to regular classes after college working hours.
- Career guidance classes are included in regular timetable.
- Bright students are encouraged to write various competitive examinations and motivated to participate in extracurricular activities.

Club Activities:

- The department supports the formation of aeronautical clubs for technical, Co-curricular and Extra Curricular activities.
- The students for various positions held in the club will be nominated / Selected based on their academic performance and active participations in various events.
- Currently Aeronautical department having Aeromodelling, UAV & Astronomy clubs started by the students with the insight, guidance of HOD and faculty Coordinator are conducting activities and participating in national wide events with the support of the Institution and the department.
- Few activities conducted by Department association to enhance the brilliances and opportunities of bright students are listed below.

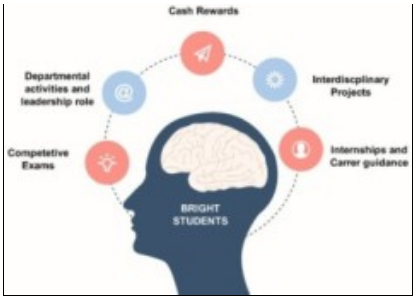


Fig.2.2.1.10 Support for Bright Students

AEROMODELLING CLUB

- **ENVICTUS** club was started in the year 2023 by the student of Aeronautical Engineering under the guidance of faculty members with the vision as,
- The department supports it by providing adequate space, faculty guidance, Awareness about Exhibitions and workshops, Funds from the institution etc.
- Students who thrive the passion and talent towards the dream world of making RC planes, Aircraft Miniatures, Water Rockets, etc. can join the club after clearing the interview process.
- They successfully organized a workshop on RC Modelling which had a huge response throughout the department/ Institution.

The Department of Aeronautical Engineering guide and motivate the **students to take up the quality projects which provides a good cluster of technology** and Environment. The team selected for the **funding from Gopalan Foundation**.

Table.2.2.1.1 Student Achievents Participation in National/International Conferences

TITLE	STUDENTS	YEAR/ SEMESTER	GUIDE
MEDIFLY: AI POWERED SMART DRONE FOR PRECISION AERIAL MEDICAL DELIVERY	K S HARISHA	2024-25	Dr. Manjunath S V
	MAHESHWARI M		
	PAVITHRA V		
	SWATHI O		
C.U.T.E (COGNITIVE UNMANNED TRACK EXAMINER)	ANKITH KUMAR PADHY	2024-25	Dr. Manjunath S V
	RITHIK P		
	STEVEN JOEL		
	SURAJ		

Table.2.2.1.2 Students' Publication Details

Sl. No.	Date	Event	Organizing Institute	Students' Name	USN	Achievement/ Role/ Position
1	27th & 28th of April, 2023	International Conference on ***Recent Trends in Science, Engineering and Management (ICRTSEM 2023)***	Er. Perumal Manimekalai College of Engineering, Hosur, TN	Ms. Gouthami N	1GD19AE010	**Presentation of Paper entitled "Design and Structural Analysis of Hexacopter Frame"**
				Mr. Manoj M R	1GD19AE018	
				Ms. Aishwarya J S	1GD20AE400	
2	23rd & 24th of May, 2023	National Virtual Conference on ***"Advances in Materials, Manufacturing and Simulation (AMMS 3.0)"***	Department of Aeronautical Engineering, Bannari Amman Institute of Technology, Sathyamangalam, TN	Mr. Anil Kumar Nayaka M	1GD19AE002	**Presentation of Paper entitled "Experimental Investigation of Mechanical Properties and Corrosion Behavior of Metallic and Composite Panel for Aerospace Applications"**
				Ms. Ganavi G	1GD19AE009	
				Ms. Sneha	1GD19AE037	
				Mr. Tharun M	1GD19AE014	**Presentation of Paper entitled "Study of Mechanical Properties and Characterization of Natural Fiber Composites Hybridized with Carbon Fiber"**
				Mr. Praveen R	1GD19AE027	
				Mr. Rangaswamy S R	1GD19AE031	
3	16th & 17th of June, 2022	***GETOCS V2.0***, the Intercollegiate Technical Fest	Department of Electronics and Communication Engineering, Gopalan College of Engineering and Management, Bangalore	Mr. Rishith R Kumar	1GD20AE022	**First Place in Technical Paper Presentation**
				Mr. S Karan	1GD20AE023	
				Mr. Rishith R Kumar	1GD20AE022	**Participation in Technical Paper Presentation**
				Mr. S Karan	1GD20AE023	

1.

Table.2.2.1.3 International/National Level Events

Sl. No.	Date	Event	Organizing Institute	Students' Name	USN	Achievement/ Role/ Position
1	27th & 28th of January, 2023	***Boeing IIT National Aeromodelling Competition***	Boeing and IIT Madras at IITDM Kancheepuram	Mr. Dhana Raj D R	1GD20AE010	**Participation**
2	15th of September, 2021	***Engineers' Day*** Celebrations	Rajalaxmi Engineering College, Chennai	Mr. Gagan D	1GD20AE012	**First Prize in Idea Presentation for paper titled "Hybrid Power Connate"**
				Mr. Tharun Surya D J	1GD20AE033	
3	8th of September, 2021	National Level Project Competition ***"INNOVATIONS – 2021"***	CMR Institute of Technology, Bangalore	Mr. Gagan D	1GD20AE012	**Second Place**
				Mr. Rishith R Kumar	1GD20AE022	
				Mr. S Karan	1GD20AE023	
				Mr. Tharun Surya D J	1GD20AE033	
4	10th & 11th of April, 2023	***"GOAERO 2K23"*** – A National Level Intercollegiate Aero Techno-Cultural Fest	Department of Aeronautical Engineering, Gopalan College of Engineering and Management, Bangalore	Mr. Shekar G C	1GD21AE034	**Second Prize in Aircraftistry – 3D Modeling**
				Mr. S Karan	1GD20AE023	**Second Prize in Group Dance**
5	28th of November, 2022	***National Science Day Event – 2K22***	Agni College of Technology, Chennai	Mr. Gagan D	1GD20AE012	**Third Place in Poster Presentation**
				Mr. Rishith R Kumar	1GD20AE022	
				Ms. Hemashree D S	1GD20AE013	**Third Place in Quiz**

				Mr. Rishith R Kumar	1GD20AE022	
				Mr. Tharun Surya D J	1GD20AE033	
6	28th of February, 2022	***National Science Day*** Event	Department of Aerospace Engineering, Agni College of Technology	Ms. Hemashree D S	1GD20AE013	**Third Place in Quiz**
				Mr. Rishith R Kumar	1GD20AE022	
				Mr. Tharun Surya D J	1GD20AE033	
				Mr. Rishith R Kumar	1GD20AE022	**Third Place in Poster Presentation**
7	15th of February, 2023	***Garuda's 1st National Drone Quiz Contest 2023***	Garuda Aerospace Pvt. Ltd., Chennai, Indian Drone Association and Aerospace and Aviation Sector Skill Council	Mr. Abdul Razak	1GD20AE002	**Participation**
				Mr. Neeraj P S	1GD20AE020	
				Mr. Rishith R Kumar	1GD20AE022	
				Mr. Shabaaz Khan N	1GD20AE027	
8	10th & 11th of April, 2023	***"GOAERO 2K23"*** – A National Level Intercollegiate Aero Techno-Cultural Fest	Department of Aeronautical Engineering, Gopalan College of Engineering and Management, Bangalore	Mr. Neeraj P S	1GD20AE020	**Organizer**
				Ms. A Pallavi	1GD20AE001	**Event Coordinator**
				Mr. Abdul Razak	1GD20AE002	
				Mr. Dhana Raj D R	1GD20AE010	
				Ms. Divyashree Harthi T	1GD20AE011	
				Mr. Keerthan K L	1GD20AE016	
				Ms. Kumari Menaka B	1GD20AE018	
				Mr. Rishith R Kumar	1GD20AE022	
				Mr. S Karan	1GD20AE023	
				Mr. Shabaaz Khan N	1GD20AE027	
				Ms. Shaestha Taranum	1GD20AE028	
				Mr. Tharun Surya D J	1GD20AE033	
				Mr. Anil Umesh Bhat	1GD21AE400	
				Ms. K J Harshitha	1GD21AE015	**Participation**
				Ms. K S Harisha	1GD21AE016	
				Ms. Maheshwari	1GD21AE019	
				Ms. Manasa S	1GD21AE020	
				Ms. Prity Sonar	1GD21AE027	
				Ms. Shambhavi	1GD21AE032	
				Mr. Shashikumar H S	1GD21AE033	
				Mr. Shekar G C	1GD21AE034	
				Mr. Simiyon Raj	1GD21AE035	
				Ms. A Pallavi	1GD20AE001	
				Ms. Divyashree Harthi T	1GD20AE011	
				Mr. Gagan D	1GD20AE012	
				Ms. Kumari Menaka B	1GD20AE018	
				Mr. Neeraj P S	1GD20AE020	
				Mr. Rishith R Kumar	1GD20AE022	
				Mr. S Karan	1GD20AE023	
				Mr. Syed Sulthan K	1GD20AE031	
				Mr. Anil Umesh Bhat	1GD21AE400	
9	18th & 19th of May, 2023	***Vertechx 11.0*** – An Intercollegiate National Level Technical Fest	MVJ College of Engineering, Bangalore	Mr. Gowtham Y V	1GD21AE011	**Participation**
				Mr. Shashi Kumar H S	1GD21AE033	
				Mr. Shekar G C	1GD21AE034	
10	15th of October, 2021	***KALAM 2021***	Aeronautical Engineering Association, Kumaraguru College of Technology	Mr. Tharun Surya D J	1GD20AE033	**Participation**
11	11th & 12th of August, 2021	Two days National Level Webinar on ***"Advances in Mathematical Sciences and its Applications in Engineering and Research (AMSAER) – 2021"***	Department of Mathematics, Bapuji Institute of Engineering & Technology, Davanagere	Mr. Abdul Razak	1GD20AE002	**Participation**
12	25th & 26th of June, 2021	**GOAERO** – A Two Days National Level Webinar on ***"Enabling Technologies & Opportunities in Aerospace Engineering"***	Department of Aeronautical Engineering, Gopalan College of Engineering and Management, Bangalore	Mr. Neeraj P S	1GD20AE020	**Participation**
				Mr. Rishith R Kumar	1GD20AE022	
				Mr. Tharun Surya D J	1GD20AE033	

Date	Name of the Event	Type of the Event	Students Participated	Rewards
25th May 2024	. IRoC-U 2024 ISRO Robotic Challenge	National Level	Mr. Skanda Navada Mr. Rishith K Mr. S. Karan Mr. Tharun Surya D. J. Mr. Gagan D. Mr. Neeraj	Selected for prelims out of 1500 participants.

9th Aug 2024	KSCST SPP 47TH Series	State Level	Mr. GAGAN D. Ms. HEMASHREE D. S. Mr. SYED SULTHAN K. Mr. VARUN REDDY	Best Aeronautical Engineering Project and cash prize of 1500 for each student.
31th Aug 2024	NACDeC-VII	National Level	Mr. Gowtham Y V Ms. Kirankumari Bhatt Mr. Pratish Gudalkar Mr. Shekar G C Mr. Shashank P	Top 5 out of 45 competitors
25th -27th October 2024	Fixed Wing UAV competition. Advances in UAV Technology, IIAEM, Jain University.	National Level	Mr. Abhishek S Mr. Dilip N Ms. Revathi M Ms. Karanam Vaishnavi Ms. Anushree	Best Innovation award.

D. QUALITY OF CLASS ROOM TEACHING

- Students are encouraged to take up seminars in the classroom.
- Brainstorming sessions are conducted among students
- The faculty defines the instructional methods, selects the methods needed to assess the effectiveness of the instruction with pedagogy and learning assessment
- The academic work diary is maintained to record the course objectives, lecture and course outcomes covered and list of possible questions for each lecture.
- The attendance of students is monitored continuously.
- The students are encouraged to summarize the topics covered and discussions are made to analyze the practical applications of topics in real applications.
- Students are asked to workout in alternative solutions on the topics covered

E. CONDUCT OF EXPERIMENTS

Fig.2.2.1.11 Process of conduction of experiments

- HOD, Aeronautical Engineering allots the faculty in charge for each laboratory.
- Faculty in charge prepares/revise the lab manual in accordance with the syllabus prescribed by the university.
- Faculty Instructor prepares the lesson and CO-PO mapping file for the respective laboratory which will be latter approved by the HOD.
- Each class is separated into sets of batches based on the strength of the class, maximum of 18-22 students per batch.
- Each batch is then separated into minor group with a maximum of 5 students per group.
- Laboratory CO and the safety procedures are described and discussed by the faculty members to the students.
- The results of the conducted experiments are then entered in the observation books which is verified by the lab in charge on the same day.
- Questionnaires regarding the experiments or viva voce or group discussions will be conducted to enhance the knowledge of the students.
- Results will be later entered in the record book along with the necessary figures/ graphs and submitted to the faculty in charge in the following week for validation
- The Allocation and distribution of marks are carried as per the instructions from DAB committee and Approved allocation of marks is shown below
- The Assessment process for laboratories will be followed in accordance with DAB approved techniques.

F. CONTINUOUS ASSESSMENT IN LABORATORIES:

Continuous evaluation of marks is categorized based on the scheme released by the university as follows,

Table.2.2.1.4 Marks distribution on Assessment of laboratories

Continuous evaluation in every lab session			Lab Test	Total Marks
Scheme	**Evaluation Parameter**	**Maximum Marks**	**Maximum Marks**	**Maximum Marks**
2018	**Conduction**	**10**	**16**	**40**
	Viva	**4**		
	Record Writing	**10**		
2021	**Conduction**	**10**	**20**	**50**
	Viva	**10**		
	Record Writing	**10**		
2022	**Conduction**	**10**	**20**	**50**
	Viva	**10**		
	Record Writing	**10**		

- The theoretical concepts are verified by the conduction of practical experiments in the laboratories and the results are interpreted for better understanding of the concepts
- The conduction, record and Viva Voce marks will be evaluated on successful submission of the student's record on or before the succeeding laboratory class.
- Viva Voce will be conducted on the same day or on the successive laboratory over the concluded experiments.
- Students must get the approvals from the faculty in charges of the lab on both records and the observation books.
- Lab demos are conducted prior of the Internal assessments or Final external examinations
- Delay in submission will lead to the reduction of marks.

G. STUDENT FEEDBACK OF TEACHING LEARNING PROCESS AND ACTIONS TAKEN.

- During the academic year as per the action plan the faculty evaluation was done twice, that is one in the odd semester and other was done in the even semester.
- Questionnaires for the feedback form are prepared by the HOD and senior faculty members of the department.
- The forms are circulated to the students during the class hours by HOD.
- Students are advised to give liable feedbacks about the faculty engaging the courses.
- Responses are sought on a scale of "Excellent", "Good" and "Average".
- The collected forms are then analyzed by HOD for further actions.
- All the comments written by the students in the feedback forms are communicated to the respective faculty members along with their feedback levels to know their strengths and weaknesses and to enhance their teaching skills. The feedback report prepared by HOD on individual faculty will then be analyzed by the Principal for further actions. In case of occurrence of low scores on feedback report, Principal and HOD guides the faculty for better execution in the rest of the semester.
- Based on the Summary of External Examination results the feedbacks on the faculties will be considered and necessary actions will be taken.

Fig.2.2.1.12 Process of student Feedback on faculty

Fig.2.2.1.13 Summary of Feedback form filled by the students, Feedback analysis by HOD, Meeting Convened by HOD & Response letter from faculty.

After which results will be extracted after semester end exam for the subject handled by faculty and result analysis will be done by HOD for observing the improvement.

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

Institute Marks : 20.00

GCEM follows the general practice of internal assessment as prescribed by the University along with its norms and guidelines,

A. **Process of internal question paper setting.**

- Dean examination of Institution and a faculty per branch/ section will shape the examination advisory group who will hold the duties regarding conduction of examination.
- After commencement of the course, the centralized college examination cell will conduct three internal assessment tests at the end of 6th, 10th and 14th weeks of the semester as per scheduled in accordance with college calendar of events.
- The entire exam process will be monitored by the dean examination fallowed by the department examination coordinator. As on now three different Schemes were followed as per the revision of schemes by the Visvesvaraya Technological University.
- The Time table of IA displayed it in the Notice Board.
- The number of modules or units to be covered for the internal assessment will be circulated in advance to the faculty members by Dean of Examination.
- The Maximum weightage of marks given to Non-CBCS and CBCS scheme as fallows
- **Choice Based Credit System (2018 scheme):** There shall be a maximum of 40 internal assessment marks
- **Choice Based Credit System (2021 scheme):** There shall be a maximum of 50 internal assessment marks.
- **Choice Based Credit System (2022 scheme):** There shall be a maximum of 50 internal assessment marks
- Faculty prepares the internal assessment question paper in accordance with blooms taxonomy in line with approved COs where the same must be mentioned in the question paper
- Three assessments are conducted per semester which covers all the COs approved by the Stream Coordinator.
- The staff additionally prepares the scheme of evaluation for the question paper which will be entered in the academic record later
- The Question paper will be sent to the Examination Evaluation Committee consisting of HOD of the department and Stream Coordinators for scrutinization based on Syllabus coverage, course outcome attainment, desired Blooms Learning levels, distribution of allotted marks as per the assessment plan.
- On the fulfillment three IAs, the final marks will be figured based on the average of IA (2018) scheme.
- On the fulfillment three IAs, the final marks will be figured based on the average of IA (2021) scheme.
- On the fulfillment three IAs, the final marks will be figured based on the average of the best of two IA (2022) scheme
- For 2018 scheme IA will be conducted for 30 marks, where the assignment 10 marks adds up to make it to total of 40.
- For the 2021 scheme three IA will be conducted for 40 marks on either or choice basis and later the same will be converted to 30 marks where the Assignment and Activity (Module test, Mini projects etc.) comprising of 20 marks adds up to make it to total of 50.
- For 2022 scheme two IA will be conducted for 40 marks and later same will be converted to 25 marks, the assignment 25 marks and activity 25 marks adds up to make it 50 which is converted to 25 finally making to total of 50.
- The assessment level process and valuation procedure will be followed as per the instruction given by DAB Committee
- The Flow Chart shown below explains the Internal assessment process in detail

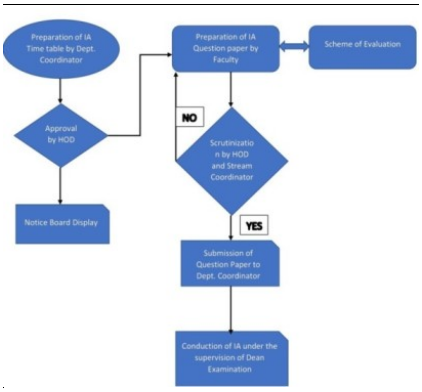


Fig.2.2.2.1 Flow chart explaining the process of Internal Assessment

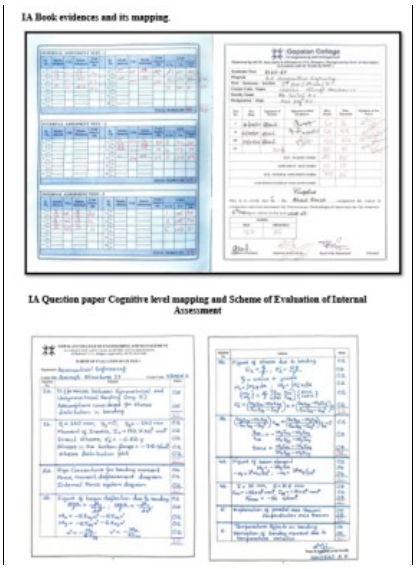


Fig.2.2.2.2 Book evidences and its mapping.

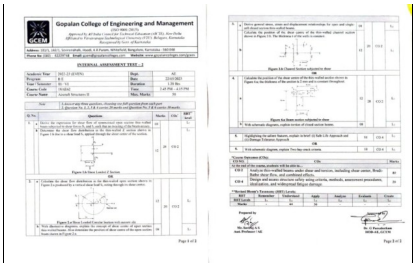


Fig.2.2.2.3 IA Question paper Cognitive level mapping

Quality of Assignments:

- Assignments are given to enhance problem solving aptitude.
- Faculty prepares course assignment questions, mapped with COs, POs and Blooms Taxonomy Learning levels, which are given before the commencement of Internal assessment

- Assignment book valuation procedures and assessment techniques are followed as forwarded by DAB committee.
- Assignments are Written based (Question Bank) or Activity based (Seminars, Quiz, mini-projects, paper/poster presentation, case study, problem solving, self-learning etc).
- Student's Written Assignments are evaluated.
- Written assignment will be evaluated under different modes.
    1. Assignments or class tests that are conducted during the class hours as open book assignments/ unit tests/problem solving techniques.
    2. Assignments that are asked to be written within a week of time by the students after class hours, which will be evaluated later by the faculty.


Gopalan College of engineering and management

Fig.2.2.2.4 Assignment book Sample/ Format

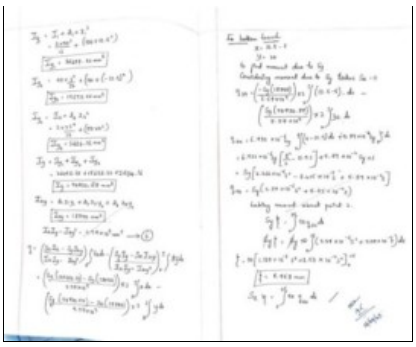


Fig.2.2.2.5 Assignments submitted by Student

2.2.3 Quality of student projects (25)

Institute Marks : 25.00

A. **Identification of project and allocation methodology**

- According to the curriculum of the university, every student must submit their project work by the end of 8thsem of the program.
- The project work takes place for a span of two semesters, where the formation of batches takes place over the mid of 6th semester.
- Sixth semester students are informed about the project and batch formation during the first week of April.
- Students are given an option to form the batches of their choice, comprising of maximum four members per group.
- Students are given a seminar by a senior faculty regarding the selection of project and the ideas it should be related to. (Eg: it can be of societal / Environmental issues or themes stated by the funding agencies or of current trends). The approved thrust areas include but are not limited to:

Advanced Aircraft Structural Health Monitoring-Digital Twin

Next-Generation Air Traffic Management with AI Integration

Modular UAV for Disaster Relief/ Surveillance operations

Design and Testing of Aircraft Composite Materials

Winglet Design for Fuel Efficiency Improvement

Supersonic Airfoil Design

Drone Swarm Coordination System

Thrust Test Rig

Design and testing of Ducted fan

Design of Morphing Wings for Improved Flight Efficiency

- All the project batches are instructed to submit their areas of interest, in which they intend to carry out the further work.
- The areas of interest or tentative title of the project will be finalized either by the students or after discussing with the faculty addressing the specific area.
- The tentative title is then submitted to the project and seminar coordinator.
- A department meeting will be scheduled by the end of 6thsemester to allocate the respective guides, with necessary specializations to match the areas of interest given by the students.
- If the titles or the topics doesn't meet the above aspects students are asked to re submit their tentative titles within a span of week.
- Students are then informed about the guides allocated to their respective groups by the project coordinator.
- The project guide along with project coordinator conducts 3 project reviews during 7th and 8thsemester and submits the Internal Assessment marks to the Head of the Department.
- External Project Viva voce is conducted by the panel of examiners deputed by the University. Based on the project work and viva voce performance the marks are awarded to the students and submitted to University.
- A Project exhibition "AVISHKAAR" is being organized by the institution in the month of May every year to encourage the students and the best projects will be awarded to motivate the students to do innovative projects.
- The department will encourage students to participate in Technical Expo and the project guides motivate and guide the students to publish in standard conference/journal forums.

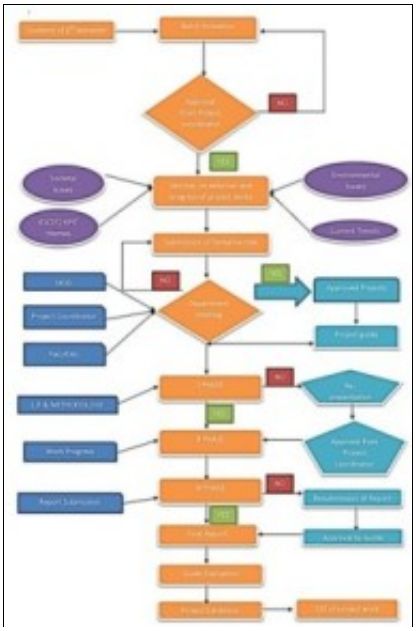


Fig.2.2.3.1 Flow Chart for Identification of Project and Methodology

B. Types and relevance of Project

Table.2.2.3.1 CAY m1 MAJOR PROJECT 2023-2024

CAY m1 MAJOR PROJECT 2023-2024						
Group No.	USN	Name	Title	Guide	POS	PSOS
1	1GD20AE003	Abhishek S	Experiment determination of Mechanical and Chemical properties of Natural Hybrid Composite	Dr. G Purushotham	PO1, PO4, PO5, PO7	PSO1
	1GD20AE004	Afreen S				
2	1GD20AE028	Shaestha Taranum	Design and Development of Drover	Mr. Saviraj A S	PO3, PO5, PO9, PO11	PSO1, PSO2
	1GD20AE034	V R Roopesh				
3	1GD20AE022	Rishith R Kumar	Modular Electric Propulsion System for Aircraft: An Adaptive and Interchangeable Power Plant	Mr. Suprith M	PO3, PO4, PO6, PO7	PSO1
	1GD20AE023	S Karan				
	1GD20AE030	Skanda Navada P				
	1GD20AE033	Tharun Surya DJ				
4	1GD20AE007	B R Suraj	A Study on the Effect of Stacking Sequence on Hybrid Composite Properties for Automotive/Aerospace Applications	Dr. G Purushotham	PO2, PO4, PO6	PSO1
	1GD20AE011	Divyashree Harthi				
	1GD21AE400	Anil Umesh Bhat				
	1GD21AE401	Shankar R Hawaldar				
5	1GD20AE009	Dhamini S	Investigation of Mechanical Properties of FRP's Reinforced with Graphitic Carbon Nitrate for Aeronautical Application	Dr. Konada Sirikonda Mallik	PO1, PO4, PO5, PO7	PSO1
	1GD20AE025	Sandeep P Salimath				
	1GD20AE026	Sandhya				
	1GD20AE032	Tejaswini S				
6	1GD20AE016	Keerthan K L	Design and Development of Intelligent Pesticide Spraying System in Agriculture Drones	Dr. Manjunath S V	PO3, PO5, PO9	PSO1, PSO2
	1GD20AE017	Kiran C S				
	1GD20AE027	Shabaaz Khan N				
7	1GD20AE001	A Pallavi	Air Pollution Monitoring System using Unmanned Aerial Vehicle	Mr. Likith Raj	PO6, PO7, PO10	PSO1, PSO2
	1GD20AE014	KP Mohammed Nijal				

	1GD20AE018	Kumari Menaka Bharathi				
	1GD20AE020	Neeraj P S				
8	1GD20AE012	Gagan D	Design and Development of a Six Degrees of Freedom Testing Mechanism for Assessing Attitude Angles and Propulsion Performance in RC Planes and Drones	Mr. Suprith M	PO3, PO5, PO9	PSO1
	1GD20AE013	Hemashree DS				
	1GD20AE031	Syed Sultan K				
	1GD20AE036	Varun Reddy				
9	1GD20AE010	Dhanraj	Design and Structural Analysis of Fixed Wing Micro Aerial Vehicle (MAV)	Mr. Saviraj A S	PO1, PO3, PO4, PO5	PSO1
	1GD20AE008	Bhuvan Kumar R				
	1GD20AE015	Kavan Sagar				
	1GD20AE021	Puneeth M				
10	1GD20AE005	Amrutha	Design and Development of Robust and Adaptive Spherical UAV Frame and Structure Capable of Absorbing and Dissipating Collision Forces, Minimizing the Risk of Critical Damage to the Aircraft	Dr. Manjunath S V	PO3, PO6, PO7, PO8, PO11	PSO1, PSO2
	1GD20AE019	M P Thashwan Sarathi				
	1GD20AE024	Sahana Ghorpade				
	1GD20AE035	Varshini A R				

Table.2.2.3.2 CAY m2 MAJOR PROJECT 2022-2023

CAY m2 MAJOR PROJECT 2022-2023						
BATCH	TITLE	GUIDE	TEAM MEMBERS		POS	PSOS
			USN	NAME		
1	Design Of Uav Test Bench For Engine/Motor Characterization	Rajashekharareddy H G	1GD19AE019	Manoj N S	PO1, PO2, PO5, PO11	PSO1, PSO2
			1GD19AE028	Priyanka G		
			1GD19AE034	Saba Afshaan A		
			1GD19AE042	Venu N		
2	Design, Fabrication and Testing of Omnidirectional Wind Turbine	Dr. Ramesh G	1GD19AE012	Kishore K	PO1, PO2, PO3, PO7, PO5	PSO1, PSO2
			1GD19AE015	Madhava Naidu H A		
			1GD19AE045	Yashwanth Kumar K		
			1GD19AE036	Shyamala C N		
3	Test Bench for Quadcopter Stabilization	Dr. Ramesh G	1GD19AE003	Anupama	PO1, PO2, PO4, PO5	PSO1, PSO2
			1GD19AE022	Omkaresh		
			1GD19AE024	Pooja		
			1GD19AE032	Rashi Jain		
4	Design of Morphing wing and Analysis by fabrication and	Dr. Ramesh G	1GD19AE004	Deepak G	PO1, PO2, PO3, PO5	PSO1, PSO2
			1GD19AE017	Mahima		
			1GD19AE026	Pooja S		
			1GD19AE044	Yashika		
5	Design and Development of Novel Planform For MAV	Dr. Ramesh G	1GD19AE010	Gouthami N	PO1, PO2, PO3, PO9	PSO1, PSO2
			1GD19AE011	Hoysala S		
			1GD19AE018	Manoj M R		
			1GD20AE400	Aishwarya J		
6	Design and Development of VTOL Fixed Wing UAV	Dr. Manjunath S V	1GD19AE038	Soniya K	PO1, PO2, PO3, PO7	PSO1, PSO2
			1GD19AE040	Syed Ifthikar Ul Hassan		
7	Design and Developement of Variable Pitch Propeller for Agricultural Drones	Dr K. Sirikondamallik	1GD19AE029	Pruthvish R	PO1, PO2, PO5, PO6	PSO1, PSO2
			1GD19AE030	Rakshith R		
			1GD19AE041	Varun K		
			1GD19AE007	Deepu Darshan K		
8	Design and Analysis of Aircraft Winglet	Saviraj A S	1GD19AE004	Bhimashankar	PO1, PO2, PO3, PO5	PSO1, PSO2
			1GD19AE020	Naveen M		
			1GD19AE039	Sudeep K S		
			1GD19AE046	Yathish		
9	Study of Mechanical properties for Natural Composites	Dr. G Purushotham	1GD19AE009	Ganavi G	PO1, PO2, PO4, PO7	PSO1, PSO2
			1GD19AE031	Rangaswamy S R		
			1GD19AE027	Praveen R		
			1GD19AE014	M Tharun		
10	Study on Effect of Glass Fiber using CNT	Mr. Shakthi Prasad	1GD19AE033	Ruksar Khanum B J	PO1, PO2, PO4, PO5	PSO1, PSO2
			1GD19AE013	Kruthika K		
			1GD19AE025	Pooja A		
			1GD19AE023	Pavana C N		
11	Design and development of flight control system using ELSOM -5CG	Mr. Praveen N	1GD19AE021	Nisarga Mahesh M	PO1, PO2, PO5, PO9	PSO1, PSO2
			1GD19AE035	Sahana T		
			1GD19AE005	Channamma		
			1GD19AE043	Vivek Manohar M		
12	Experimental investigation of Mechanical properties and Corrosion behavior of Metallic and Composite panel for Aerospace application	Dr. G Purushotham	1GD19AE002	Anil kumar Nayaka M	PO1, PO2, PO4, PO5, PO7	PSO1, PSO2
			1GD19AE037	Sneha		
			1GD19AE001	Jerusha A P		

C. Process for monitoring and Evaluation of Project Work

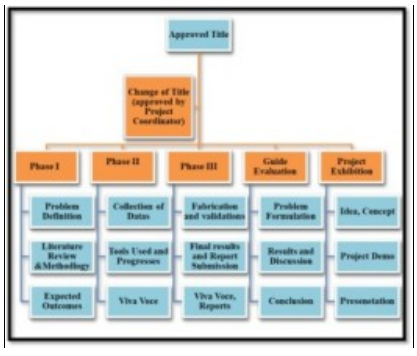


Fig.2.2.3.2 Project Evaluation Phases

Table.2.2.3.3 Project Evaluation

Evaluation	Marks Allotted as per VTU curriculum	Phases of evaluation

Internal	100	• Synopsis presentation • Review of the Progress • Final Review • Project Exhibition
External	100	Final Project Examination

Marks Allotment for Project Work

PHASE	***Evaluation Parameter***	***Evaluator***	***Maximum Marks(100)***
PHASE-I	Problem definition Literature study and objectives	Guide & Evaluation Panel	**10**
PHASE-II	Progress with respect to methodology Data collection and implementation	Guide & Evaluation Panel	**20**
PHASE-III	Data analysis Results and discussion	Guide & Evaluation Panel	**20**
EVALUATION BY GUIDE	Overall Execution of the project Project Documentation	Guide	**40**
TECHNICAL EXPO/PUBLICATION	Participate in technical Expo or Publication in standard conference	Guide	**10**

D. Quality of the completed projects and awards won

Table.2.2.3.4 Projects Completed and rewards received

Date	**Name of the Event**	**Type of the Event**	**Students Participated**	**Rewards**
25th May 2024	. IRoC-U 2024 ISRO Robotic Challenge	National Level	Mr. Skanda Navada Mr. Rishith K Mr. S. Karan Mr. Tharun Surya D. J. Mr. Gagan D. Mr. Neeraj	Selected for prelims out of 1500 participants.
9th Aug 2024	KSCST SPP 47TH Series	State Level	Mr. GAGAN D. Ms. HEMASHREE D. S. Mr. SYED SULTHAN K. Mr. VARUN REDDY	Best Aeronautical Engineering Project and cash prize of 1500 for each student.
31th Aug 2024	NACDeC-VII	National Level	Mr. Gowtham Y V Ms. Kirankumari Bhatt Mr. Pratish Gudalkar Mr. Shekar G C Mr. Shashank P	Top 5 out of 45 competitors
25th -27th October 2024	Fixed Wing UAV competition. Advances in UAV Technology, IIAEM, Jain University.	National Level	Mr. Abhishek S Mr. Dilip N Ms. Revathi M Ms. Karanam Vaishnavi Ms. Anushree	Best Innovation award.

Fig.2.2.3.3 Best Project of the year at KSCST SPP 47th series State level project exhibtion .

Fig.2.2.3.4 NACDeC-VII -Top 5 out of 45 competitors

Fig.2.2.3.5 Fixed Wing UAV competition. Advances in UAV Technology, IIAEM, Jain University.

KSCST SPONSORED PROJECTS:

- Karnataka State council for Science and Technology initiate, support and coordinate applied research programs in universities and other institutions in areas identified to be especially suitable for the application of Science and Technology.
- Department of aeronautical Engineering assists and guides the students to take up the projects which applies the Science and Technology to the development needs.
- KSCST Provides and Sponsors the projects based on its successful executions and meet of needs.

Table.2.2.3.5 List of KSCST sponsored projects

Academic year	Title of the project	Name of the guide	Team leader name	Sanctioned amount(in Rs.)
2023-24	Design, Develop, And Testing A Hybrid Quadcopter-Rover (Drover) For Rescue Operations, Disaster Management, And Industrial Surveillance	MR. SAVIRAJ A S	Mr. VADAKKERKARA RAMESH ROOPESH Ms. SHAESTHA TARANUM	8500
2023-24	Design And Fabrication Of Modular Electric Propulsion System For UAVs.	MR. SUPRITH M	Mr. SKANDA NAVADA Mr. RISHITH K Mr. S. KARAN Mr. THARUN SURYA D. J.	7000
2023-24	Design And Development Of 3dof Testing Mechanism For UAV	MR. SUPRITH M	Mr. GAGAN D. Ms. HEMASHREE D. S. Mr. SYED SULTHAN K. Mr. VARUN REDDY	7000
2023-24	Design And Development Of Robust Icosahedron Frame Capable Of Absorbing And Dissipating Collision Forces, Minimising The Risk of Critical Damage To Unmanned Aerial System	DR. MANJUNATH S V	Mr. M. P. THASHWAN SARATHI Ms. AMRUTHA M. Ms. SAHANA GHORPADE Ms. VARSHINI A. R.	9500
2022-23	Experimental Investigation Of Mechanical Properties And Corrosion Behavior Of Metallic And Composite Panel For Aerospace Application.	Dr. PURUSHOTHAM G	Ms. SNEHA Mr. ANIL KUMAR NAYAKA M	7000

GOPALAN SKILL ACADEMY REWARDS

From the year 2023-24 GOPALAN SKILL ACADEMY started rewarding the best two projects with Rs.2000 and Rs. 1500 of the department selected by the department based on the project exhibition results evaluated by the external faculty.

Table.2.2.3.6 Gopalan Skill Academy Rewarded projects.

Academic year	Tittle of the project	Name of the guide	Team leader name
2023-24	Design And Fabrication Of Modular Electric Propulsion System For UAVs.	MR. SUPRITH M	Mr. SKANDA NAVADA Mr. RISHITH K Mr. S. KARAN Mr. THARUN SURYA D. J.
2023-24	Design And Development Of 3dof Testing Mechanism For UAV	MR. SUPRITH M	Mr. GAGAN D. Ms. HEMASHREE D. S. Mr. SYED SULTHAN K. Mr. VARUN REDDY

2.2.4 Initiative related to industry interaction (15) Institute Marks : 15.00

A. **Industry supported laboratories**

Table.2.2.4.1 Industry supported Laboratories

S.N	Industry supported laboratories	Organization with MoU/MoA is signed	Functional from
1	Bosch Rexroth	SJCIT-Bosch Rexroth	2019

Table.2.2.4.2 Course content for Hydraulics and Pneumatics lab

Course Name: Industrial Automation Technology[Hydraulics and Pneumatics]		
Chapter	**Topics/Contents**	**No of Hrs**
1	FUNDAMENTALS AND BASIC PR1NCIPLES • Introduction, Fluid flow fundamentals, Pascal's Law, Advantages of using Fluid Power , Components of a Hydraulic System	3
2	• PUMPS, ACTUATORS AND VALVES Pumping Theory, Pump Classification, Gear Pump, Vane pumps, piston pumps, Pump Performance, Hydraulic Actuators and Motors, Motor Performance, Control Valves, Hydraulic Accumulator	3
3	PROJECTS • Hydraulic pump/characteristic curve of variable displacement pump Single-rod cylinder/pressure Intensification • Application of 4/3 directional valve Study of Hydraulic Motor with 4/3 DCV	9
4	Introduction to pneumatic controlCompressed air preparation Pneumatic cylindersDirectional control valve	*6*
5	• Controlling of pneumatic cylinders Speed control of cylinders Signal processing devices Co-ordinated motion control. • Hands on with pneumatics	*3*
6	PROJECT EXERCISES • Direct control of Double Acting Cylinder Indirect control of Double Acting CylinderSpeed Control of Single Acting Cylinder—Slow Speed Extension and Rapid Retraction	*6*
7	PROJECT EXERCISES • Position Dependent Control of a Double Acting Cylinder with Mechanical Limit Switches • Logical Controls with Shuttle, and Twin-Pressure Valves • Sequential Control of Two Double Acting Cylinders without overlapping signals	*6*

CERTIFICATE

5 Days Training program on Industrial Hydraulics & Pneumatics

This is to certify that Mr/Ms Shashi Kumar bearing USN 1GA21AE033 has completed his five days training program on "Automation Technology (Industrial Hydraulics & Pneumatics) " during the period of 18th to 22nd July 2023.

The training has been carried out at Regional Center of Competence for Automation Technologies, established at SJC Institute of Technology in collaboration with Bosch Rexroth (India)Limited. He/She has completed the training successfully.

We wish him/her all the best for his/her future Endeavours.

Coordinator SJCIT Centre of competence for Automation Technologies, Chickballapura

HOD MED,SJCIT Chickballapura

Principal SJCIT Chickballapura

Fig.2.2.4.1 Student certificate sample

2.2.5 Initiative related to industry internship/summer training (15) Institute Marks : 15.00

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

Procedure followed to conduct Industrial visits for students:

- Department conducts industrial visits for different industries every semester.
- Department industrial visit coordinator will write a request letter to the Personnel Officer/Public Relation Officer of the industry mentioning the objective of visit, the date of visit and number of students& staff attending that visit etc.
- Minimum of two faculties are assigned for every visit. The college will provide the transportation facility for the visit.
- The faculty selected for visits was chosen based on the type of industry and the relevance of the subject they handle so that they can get maximum industrial practical exposure on the subjects. The list of industries visited is listed in the table below:

Table.2.2.5.1 Industrial visits

Sl no	Type of Industries	Planned/Non-Planned activity	Objectives/ area of training	No. of students	Sem	Academic Year
1	NAL BENGALURU	Planned activity	Aeronautical Engineering	40	7	2021-22
2	LAMINA FOUNDRIES	Planned activity	Manufacturing /Casting	56	4	2021-22
3	GOPALAN AEROSPACE PVT. LTD., BENGALURU.	Planned activity	Aerospace Manufacturing	70	5&7	2022-23
4	CSIR NAL, BANGALORE	Planned activity	Aeronautical Engineering	35	3	2022-23
5	GOPALAN AEROSPACE PVT. LTD., BENGALURU	Planned activity	Aerospace Manufacturing	20	3	2023-24
6	U R RAO SATELLITE CENTRE, ISRO	Planned activity	Aerospace Manufacturing	59	4&6	2023-24
7	KPTCL, CHITRADURGA	Planned activity	Power transmission/ Electricity	18	4	2023-24
8	ACHARYA INSTITUTE OF TECHNOLOGY, BENGALURU.	Planned activity	Inter Institute visit	59	4 & 6	2023-24
9	8th BANGALORE SPACE EXPO	Non-Planned	Aerospace Technologies	30	3 & 7	2024-25
10	GOPALAN AEROSPACE PVT. LTD., BENGALURU	Planned activity	Aeronautical Engineering	59	3	2024-25

B. Industrial /Internship /Summer training of more than two weeks and post training assessment

- Students are encouraged to attend Internship/Training Programs during vacation Period to enhance their knowledge.
- Students are suggested to take up internship in the companies which are directly or indirectly involved with the civil engineering domain.
- HOD issues recommendation letters for students to take up internship after receiving the request letters from the students.
- Permission is given to take up to attend Internship/Training program for 2 to 3 weeks. Reports are to be prepared by students and are submitted to the department after successful completion of the Internship/ Training.

Table.2.2.5.2 Number of students undergone Internship /training in different Industries/Institutes

Academic Year	Name of Industries/ Institute	Total Number of Students
2022-23 CAYm2	1. HAL,Bangalore 2. GTTC Bangalore 3. Brahmastra Aerospace 4. Gopalan Aerospace 5. ARTPARK, IISc 6. Pegasus Aerospace	**46**
2023-24 CAYm1	1. Jakkur Aerodrome 2. HAL, Bangalore 3. CIM Tools Private Limited (A Subsidiary of Samvardhana Motherson International Limited) 4. Multiplex Drone Pravite Limited Company 5. Gopalan Aerospace India Pvt Ltd 6. Enmaz Engineering Solution 7. Kadet Defence Systems (P) Limited 8. IPCS Global Solutions Pvt Ltd 9. Centum Electronics 10. Bramastra Aerospace Systems	**37**
2024--25 CAY	VTU-NSDC	**37**

Table.2.2.5.3 Internship details for the academic year CAYm3 2022-23

ACADEMIC YEAR: ***2022-23***			**Total Number of students Undergone Internship*: 46***		
Sl. No	**Name of Student**	**USN**	**Institute/ Company**	**Duration From**	**To**
1.	A P Jerusha	1GD19AE001	Brahmastra Aerospace	10/09/2022	30/09/2022
2.	Anil Kumar Nayaka M	1GD19AE002	ARDC, HAL	09/09/2022	08/10/2022
3.	Anupama M Augustine	1GD19AE003	Aircraft Division, HAL	01/09/2022	30/09/2022

4.	Bhimashankar Halepurgi	1GD19AE004	Pegasus Aerospace	12/09/2022	27/10/2022
5.	Channamma	1GD19AE005	Gopalan Aerospace	12/09/2022	11/10/2022
6.	Deepak G	1GD19AE006	Foundry and Forge Division, HAL	06/09/2022	05/10/2022
7.	Deepudarshan K	1GD19AE007	Aerospace Division, HAL	22/08/2022	21/09/2022
8.	Fawad Siraj Shariff	1GD19AE008	-	-	-
9.	Ganavi G	1GD19AE009	GTTC – Government Tool Room and Training Centre	12/09/2022	11/10/2022
10.	Gouthami N	1GD19AE010	Aerospace Division, HAL	22/08/2022	21/09/2022
11.	Hoysala S	1GD19AE011	Aerospace Division, HAL	22/08/2022	21/09/2022
12.	Kishore K	1GD19AE012	Engine Division, HAL	24/09/2022	20/09/2022
13.	Kruthika K	1GD19AE013	ARDC, HAL	01/09/2022	30/09/2022
14.	M Tharun	1GD19AE014	Brahmastra Aerospace	10/09/2022	30/09/2022
15.	Madhava Naidu H A	1GD19AE015	Engine Division, HAL	24/09/2022	20/09/2022
16.	Mahima	1GD19AE017	Gopalan Aerospace	12/09/2022	11/10/2022
17.	Manoj M R	1GD19AE018	Aerospace Division, HAL	22/08/2022	21/09/2022
18.	Manoj N S	1GD19AE019	ARTPARK, IISc	23/08/2022	22/09/2022
19.	Naveen M	1GD19AE020	ARDC, HAL	09/09/2022	08/10/2022
20.	Nisarga Mahesh M	1GD19AE021	GTTC – Government Tool Room and Training Centre	12/09/2022	11/10/2022
21.	Omkaresh Ramesh	1GD19AE022	Gopalan Aerospace	12/09/2022	11/10/2022
22.	Pavana C N	1GD19AE023	Gopalan Aerospace	12/09/2022	11/10/2022
23.	Pooja S	1GD19AE024	Foundry and Forge Division, HAL	06/09/2022	05/10/2022
24.	Pooja A	1GD19AE025	ARDC, HAL	23/08/2022	22/09/2022
25.	Pooja S	1GD19AE026	Gopalan Aerospace	12/09/2022	11/10/2022
26.	Praveen R	1GD19AE027	GTTC – Government Tool Room and Training Centre	12/09/2022	11/10/2022
27.	Priyanka G	1GD19AE028	ARTPARK, IISc	23/08/2022	22/09/2022
28.	Pruthvish R	1GD19AE029	Foundry and Forge Division, HAL	06/09/2022	05/10/2022
29.	Rakshith P	1GD19AE030	Aerospace Division, HAL	22/08/2022	21/09/2022
30.	Rangaswamy S R	1GD19AE031	GTTC – Government Tool Room and Training Centre	12/09/2022	11/10/2022
31.	Rashi Jain	1GD19AE032	Aircraft Division, HAL	01/09/2022	30/09/2022
32.	Ruksar Khanum B J	1GD19AE033	ARDC, HAL	01/09/2022	30/09/2022
33.	Saba Afshaan A	1GD19AE034	ARTPARK, IISc	23/08/2022	22/09/2022
34.	Sahana T	1GD19AE035	Aerospace Division, HAL	08/09/2022	07/10/2022
35.	Shyamala C N	1GD19AE036	Aircraft Division, HAL	01/09/2022	30/09/2022
36.	Sneha	1GD19AE037	GTTC – Government Tool Room and Training Centre	12/09/2022	11/10/2022
37.	Soniya K	1GD19AE038	ARDC, HAL	23/08/2022	22/09/2022
38.	Sudeep K S	1GD19AE039	ARDC, HAL	09/09/2022	08/10/2022
39.	Syed Ifthikar Ul Hassan	1GD19AE040	General Aeronautics	05/09/2022	04/10/2022
40.	Varun K	1GD19AE041	Aerospace Division, HAL	22/08/2022	21/09/2022
41.	Venu N	1GD19AE042	ARTPARK, IISc	23/08/2022	22/09/2022
42.	Vivek Manohar M	1GD19AE043	Gopalan Aerospace	12/09/2022	11/10/2022
43.	Yashika Achari	1GD19AE044	Foundry and Forge Division, HAL	06/09/2022	05/10/2022
44.	Yashwanth Kumar K	1GD19AE045	Engine Division, HAL	24/09/2022	20/09/2022
45.	Yathish	1GD19AE046	ARDC, HAL	09/09/2022	08/10/2022
46.	Aishwarya J S	1GD20AE400	Aerospace Division, HAL	22/08/2022	21/09/2022

Table.2.2.5.4. Internship details for the academic year CAYm2 2023-24

ACADEMIC YEAR: 2023-24			**Total Number of students Undergone Internship:37**		
Sl. No	**Name of Student**	**USN**	**Institute/**	**Duration**	
			Company	**From**	**To**
1	A Pallavi	1GD20AE001	Hindustan Aeronautics Limited	30/08/2023	30/09/2023
2	Abdul Razak	1GD20AE002	IPCS Global Solutions Pvt Ltd	23/08/2023	24/09/2023
3	Abhishek S	1GD20AE003	AIX Connect Private Limited	28/09/2023	27/10/2023
4	Afreen S	1GD20AE004	Jakkur Aerodrome	28/08/2023	28/09/2023
5	Amrutha M	1GD20AE005	Hindustan Aeronautics Limited	25/8/2023	25/9/2023
6	B R Suraj	1GD20AE007	CIM Tools Private Limited (A Subsidiary of Samvardhana Motherson International Limited)	06-09-2023	30/09/2023

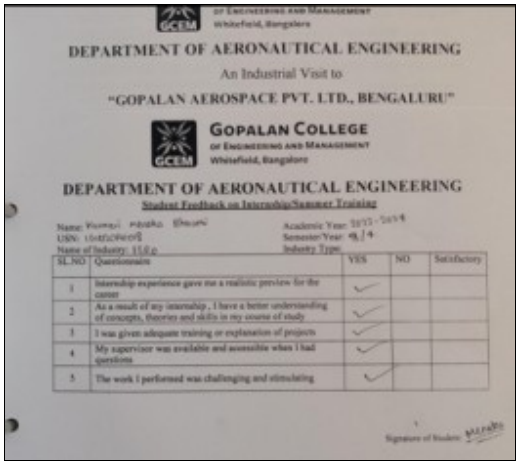
7	Bhuvan Kumar R	1GD20AE008	Multiplex Drone Pravite Limited Company	21/08/2023	20/09/2023
8	Dhamini S	1GD20AE009	Gopalan Aerospace India Pvt Ltd	21/08/2023	20/09/2023
9	Dhana Raj D R	1GD20AE010	Multiplex Drone Pravite Limited Company	21/08/2023	20/09/2023
10	Divyashree Harthi T	1GD20AE011	Hindustan Aeronautics Limited	30/08/2023	30/09/2023
11	Gagan D	1GD20AE012	Gopalan Aerospace India Pvt Ltd	21/08/2023	20/09/2023
12	Hemashree DS	1GD20AE013	Gopalan Aerospace India Pvt Ltd	21/08/2023	20/09/2023
13	K P Mohammed Nijal	1GD20AE014	Garuda Aerospace Pvt Ltd	04-09-2023	03-10-2023
14	Kavansagar	1GD20AE015	Gopalan Aerospace India Pvt Ltd	21/8/2023	20/9/2023
15	Keerthan K L	1GD20AE016	Gopalan Aerospace India Pvt Ltd	21/8/2023	20/9/2023
16	Kiran C S	1GD20AE017	Enmaz Engineering Solution	28/08/2023	20/9/2023
17	Kumari Menaka Bharathi	1GD20AE018	Hindustan Aeronautics Limited	30/08/2023	30/09/2023
18	M PThashwan Sarathi	1GD20AE019	Hindustan Aeronautics Limited	25/8/2023	25/9/2023
19	Neeraj P.S	1GD20AE020	Kadet Defence Systems (P) Limited	18/08/2023	16/09/2023
20	Puneeth M	1GD20AE021	IPCS Global Solutions Pvt Ltd	23/08/2023	24/09/2023
21	Rishith R Kumar	1GD20AE022	Centum Electronics	28/08/2023	28/09/2023
22	S Karan	1GD20AE023	Centum Electronics	28/08/2023	28/09/2023
23	Sahana Ghorpade	1GD20AE024	Hindustan Aeronautics Limited	25/8/2023	25/9/2023
24	Sandeep P Salimath	1GD20AE025	Jakkur Aerodrome	28/08/2023	28/09/2023
25	Sandhya	1GD20AE026	Jakkur Aerodrome	28/08/2023	28/09/2023
26	Shabaaz Khan N	1GD20AE027	Gopalan Aerospace India Pvt Ltd	21/08/2023	20/09/2023
27	Shaestha Taranum	1GD20AE028	IPCS Global Solutions Pvt Ltd	23/08/2023	24/09/2023
28	Shubham Sai Samal	1GD20AE029	Bramastra Aerospace Systems	04-09-23	24/09/23
29	Skanda Navada P	1GD20AE030	Centum Electronics	28/08/2023	28/09/2023
30	Syed Sulthan K	1GD20AE031	Gopalan Aerospace India Pvt Ltd	21/08/2023	20/09/2023
31	Tejaswini S	1GD20AE032	Gopalan Aerospace India Pvt Ltd	21/08/2024	20/09/2024
32	Tharun Surya D J	1GD20AE033	Multiplex Drone Pravite Limited Company	21/08/2023	20/09/2023
33	Vadakkerkara Ramesh Roopesh	1GD20AE034	Bramastra Aerospace Systems	21/08/2023	10-09-2023
34	Varshini A R	1GD20AE035	Hindustan Aeronautics Limited	25/8/2023	25/9/2023
35	Varun Reddy K	1GD20AE036	Gopalan Aerospace India Pvt Ltd	21/08/2023	20/9/2023
36	Anil Bhat	1GD21AE400	Enmaz Engineering Solution	28/08/2023	20/9/2023
37	Shankar	1GD21AE401	Cranes Varsity	29/08/2023	9-10-2023

Table.2.2.5.5 Internship details for the academic year CAYm1 2024-25

ACADEMIC YEAR: 2024-25			**Total Number of students Undergone Internship: 37**		
Sl. No	**Name of Student**	**USN**	**Institute/ Company**	**Duration**	**Division**
1	ADARSH H	1GD21AE001	VTU-NSDC	16 weeks	AI And ML
2	ANKITA NANDANWAD	1GD21AE002	VTU-NSDC	16 weeks	AI And ML
3	ANKITH KUMAR PADHY	1GD21AE003	VTU-NSDC	16 weeks	AI And ML
4	ARPIKA CHOUBEY	1GD21AE004	VTU-NSDC	16 weeks	AI And ML
5	BABAI NATH	1GD21AE006	VTU-NSDC	16 weeks	AI And ML
6	BHAVANA SHARMA	1GD21AE007	VTU-NSDC	16 weeks	AI And ML
7	DARSHAN K	1GD21AE009	VTU-NSDC	16 weeks	AI And ML
8	GOWTHAM Y V	1GD21AE011	VTU-NSDC	16 weeks	AI And ML
9	GUDALKAR PRATISH	1GD21AE012	VTU-NSDC	16 weeks	AI And ML
10	JENNIFER VASANTH	1GD21AE014	VTU-NSDC	16 weeks	AI And ML
11	KJ HARSHITHA	1GD21AE015	VTU-NSDC	16 weeks	AI And ML
12	K S HARISHA	1GD21AE016	VTU-NSDC	16 weeks	AI And ML
13	KARTIKKUMAR NAGAPPAMUNGALI	1GD21AE017	VTU-NSDC	16 weeks	AI And ML
14	KIRAN KUMARI BHATT	1GD21AE018	VTU-NSDC	16 weeks	AI And ML
15	MAHESHWARI M	1GD21AE019	VTU-NSDC	16 weeks	AI And ML
16	MANASA S	1GD21AE020	VTU-NSDC	16 weeks	AI And ML
17	MONESH KUMAR P	1GD21AE021	VTU-NSDC	16 weeks	AI And ML
18	P STEVEN JOEL	1GD21AE023	VTU-NSDC	16 weeks	AI And ML

19	PATIL PRANAV CHATUR	1GD21AE024	VTU-NSDC	16 weeks	AI And ML
20	PAVITHRA V	1GD21AE025	VTU-NSDC	16 weeks	AI And ML
21	PRITY SONAR	1GD21AE027	VTU-NSDC	16 weeks	AI And ML
22	RITHIK P	1GD21AE029	VTU-NSDC	16 weeks	AI And ML
23	S B NISHANTH	1GD21AE030	VTU-NSDC	16 weeks	AI And ML
24	SANDEEP KUMAR	1GD21AE031	VTU-NSDC	16 weeks	AI And ML
25	SHAMBHAVI	1GD21AE032	VTU-NSDC	16 weeks	AI And ML
26	SHASHI KUMAR	1GD21AE033	VTU-NSDC	16 weeks	AI And ML
27	SHEKAR G C	1GD21AE034	VTU-NSDC	16 weeks	AI And ML
28	SIMIYON RAJ	1GD21AE035	VTU-NSDC	16 weeks	AI And ML
29	SPOORTHI M R	1GD21AE036	VTU-NSDC	16 weeks	AI And ML
30	SURAJ DIYALI	1GD21AE037	VTU-NSDC	16 weeks	AI And ML
31	SWATHI O	1GD21AE038	VTU-NSDC	16 weeks	AI And ML
32	SYED SAHEEL	1GD21AE039	VTU-NSDC	16 weeks	AI And ML
33	TARUN V	1GD21AE040	VTU-NSDC	16 weeks	AI And ML
34	YOGESH M	1GD21AE042	VTU-NSDC	16 weeks	AI And ML
35	AKASH S GOVEKAR	1GD22AE400	VTU-NSDC	16 weeks	AI And ML
36	CHARAN R	1GD22AE401	VTU-NSDC	16 weeks	AI And ML
37	SHASHANK P	1GD22AE403	VTU-NSDC	16 weeks	AI And ML

After the completion of the internship, a report has to be prepared by student and submitted in the department. A feedback form is collected from students where they can express their views and ideas for the improvement in future internships.



DEPARTMENT OF AERONAUTICAL ENGINEERING

An Industrial Visit to

"GOPALAN AEROSPACE PVT. LTD., BENGALURU"

GOPALAN COLLEGE OF ENGINEERING AND MANAGEMENT, Whitefield, Bangalore

DEPARTMENT OF AERONAUTICAL ENGINEERING

Student Feedback on Internship/Summer Training

SL.NO	Questionnaire	YES	NO	Satisfactory
1	Internship experience gave me a realistic preview for the career	✓		
2	As a result of my internship, I have a better understanding of concepts, theories and skills in my course of study	✓		
3	I was given adequate training or explanation of projects	✓		
4	My supervisor was available and accessible when I had questions	✓		
5	The work I performed was challenging and stimulating	✓		

Fig.2.2.5.1 Student Feedback format on Internship/Summer Training

Impact analysis of industrial training/visit

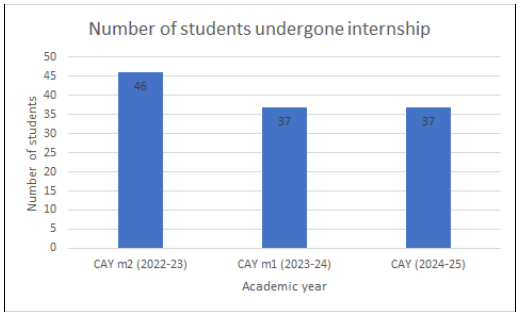


Fig.2.2.5.2 Impact analysis of industrial internship.

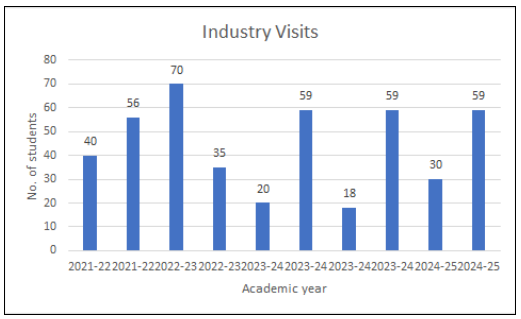


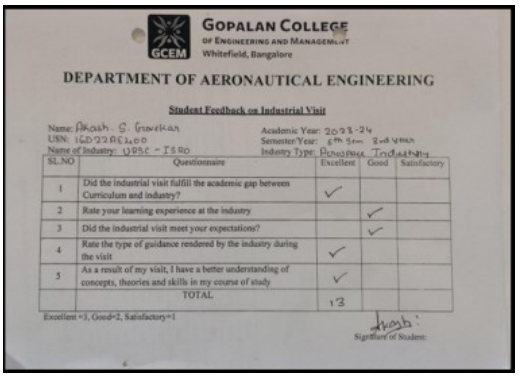
Fig.2.2.5.3 Impact analysis of industrial visit.

More number of students exposed to the industry work culture which enhances the confidence level and augments the learning process of the students. It bridges the gap between the academic curriculum and industrial expectations. It also improves the quality of leadership and team work in students which eventually resulted in better placements for students. Feedbacks on Industrial training/visit from the students are collected and impact analysis will be made.

The analysis is based on several questionnaires about how successful was the industrial training in attaining the Program outcomes and Program specific outcomes.

Student feedback on initiative

After the completion of industrial visit/training, a report has to be prepared by student and submit to the department. A feedback form is collected from students where they can express their views and ideas for the improvement of forthcoming industrial visits. More number of Industrial visits or internships is planned for subsequent years.



GOPALAN COLLEGE
OF ENGINEERING AND MANAGEMENT
Whitefield, Bangalore

DEPARTMENT OF AERONAUTICAL ENGINEERING

Student Feedback on Industrial Visit

Name: Akash. S. Gowdkar
USN: 1GD22AE400
Name of Industry: USIC - ISRO
Academic Year: 2023-24
Semester/Year: 6th Sem, 3rd Year
Industry Type: Research Institute

SL.NO	Questionnaire	Excellent	Good	Satisfactory
1	Did the industrial visit fulfill the academic gap between Curriculum and industry?	✓		
2	Rate your learning experience at the industry		✓	
3	Did the industrial visit meet your expectations?		✓	
4	Rate the type of guidance rendered by the industry during the visit	✓		
5	As a result of my visit, I have a better understanding of concepts, theories and skills in my course of study	✓		
	TOTAL	13		

Excellent =3, Good=2, Satisfactory=1

Signature of Student

Fig.2.2.5.4 Feedback form on Industrial visit

3 COURSE OUTCOMES AND PROGRAM OUTCOMES (120)

Total Marks 120.00

Define the Program specific outcomes

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

Total Marks 20.00

:

PSO1	Apply their knowledge in the domain areas of Aerodynamics, Aircraft Propulsion, Aircraft Structures and Flight mechanics by acquiring knowledge in basic engineering, mathematics, science and Aeronautical engineering
PSO2	Graduates will exhibit professionalism, team work in their chosen profession and adapt to current trends, technologies, research and industrial scenarios by pursuing lifelong learning.

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

Institute Marks : 5.00

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

Course Name :	C2 04	Course Year :	2023-2024

Course Name	Statements
C2 04.1	Analyze stress, strain, equilibrium and material behavior to select suitable materials for structural performance.
C2 04.2	Illustrate Euler-Bernoulli beam theory and Apply the concepts of Shear Force Diagram, Bending Moment Diagram, Bending stresses and shearing stresses in beams
C2 04.3	Apply Double integration and Macaulay's method to determine deflection of beams and Design of shafts subjected to torsion.
C2 04.4	Understand the principles of Virtual work and Energy Methods to solve structural problems.
C2 04.5	Understand fracture behavior, creep phenomena, fatigue properties and interpret S-N diagram for material selection and testing.

Course Name :	C2 10	Course Year :	2023-2024

Course Name	Statements
C2 10.1	Evaluate the significance of various types of elementary flows and to understand the incompressible flow over airfoils.
C2 10.2	To understand the complexity involved in incompressible flow over finite wings.
C2 10.3	To discuss the various applications of finite wing theory and high-lift systems.
C2 10.4	Understand the basics of compressible flows.
C2 10.5	To describe the effects of various types of shock waves.

Course Name :	C3 01	Course Year :	2023-2024

Course Name	Statements
C3 01.1	Identify various types of mechanisms
C3 01.2	Apply the theory of velocity, acceleration and static force analysis to design of mechanisms.
C3 01.3	Design the spur gears and gear trains
C3 01.4	Analyze the balancing of rotating and reciprocating masses
C3 01.5	Apply governors and gyroscope for force analysis

Course Name :	C3 09	Course Year :	2023-2024

Course Name	Statements
C3 09.1	Analyze and apply principles of airline and airport management for better decision-making.
C3 09.2	Understand HR management and organizational behavior to enhance customer relationships.
C3 09.3	Understand airline marketing and quality management for strategic planning.
C3 09.4	Utilize business software and communication skills for integrated aviation management.
C3 09.5	Acquire knowledge of aviation law, safety, and emerging trends for entrepreneurial initiatives.

Course Name :	C4 02	Course Year :	2023-2024

Course Name	Statements
C4 02.1	Outline basic governing equations of fluid dynamics, boundary layer and discretization.
C4 02.2	Classify partial differential equations on their mathematical behavior with case studies
C4 02.3	Outline the different method of grid generation and its features and need.
C4 02.4	Understand the essence of discretization and transformation of governing PDEs from physical domain to computational domain.
C4 02.5	Apply Finite Volume Method (FVM) to real engineering problems and will understand FVM discretization of differential equations.

Course Name :	C4 11	Course Year :	2023-2024

Course Name	Statements
C4 11.1	Understand the importance of conceptual design process and wing loading, thrust to weight ratio concepts for the design of flight vehicle.
C4 11.2	Interpret the concepts required for designing the Structural components like wing, fuselage and tail.
C4 11.3	Implement the concepts involved Engine selection and Performance of flight vehicle.
C4 11.4	Analyze the static stability & control concepts.
C4 11.5	Explain the design aspects of different subsystems.

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

1 . course name : C204

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C204.1	3	2	1	-	-	-	-	-	-	-	-	-
C204.2	3	2	1	-	-	-	-	-	-	-	-	-
C204.3	3	2	1	-	-	-	-	-	-	-	-	-
C204.4	3	2	1	-	-	-	-	-	-	-	-	-
C204.5	3	2	1	-	-	-	-	-	-	-	-	-
Average	**3.00**	**2.00**	**1.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2 . course name : C210

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C210.1	2	2	3	1	-	-	-	-	-	-	-	-
C210.2	2	1	2	1	-	-	-	-	-	-	-	-
C210.3	2	1	2	1	-	-	-	-	-	-	-	-
C210.4	2	1	2	1	-	-	-	-	-	-	-	-
C210.5	2	1	1	1	-	-	-	-	-	-	-	-
Average	**2.00**	**1.20**	**2.00**	**1.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3 . course name : C301

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C301.1	3	2	1	-	-	-	-	-	-	-	-	-
C301.2	3	2	1	-	-	-	-	-	-	-	-	-
C301.3	3	2	1	1	-	-	-	-	-	-	-	-
C301.4	3	2	1	1	-	-	-	-	-	-	-	-
C301.5	3	2	1	1	-	-	-	-	-	-	-	-
Average	**3.00**	**2.00**	**1.00**	**1.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

4 . course name : C309

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C309.1	1	-	-	-	-	-	-	2	2	1	1	-
C309.2	1	-	-	-	-	-	-	2	2	1	1	-
C309.3	1	-	-	-	-	-	-	2	2	1	1	-
C309.4	1	-	-	-	-	-	-	2	2	1	1	-
C309.5	1	-	-	-	-	-	-	2	2	1	1	-
Average	**1.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**2.00**	**2.00**	**1.00**	**1.00**	**0.00**

5 . course name : C402

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C402.1	3	2	2	-	-	-	-	-	-	-	-	1
C402.2	3	3	2	1	-	-	-	-	1	-	-	1
C402.3	3	2	2	1	1	-	-	-	-	-	-	1
C402.4	3	3	2	1	1	-	-	-	1	-	-	1
C402.5	3	3	2	1	1	-	-	-	1	-	-	1
Average	**3.00**	**2.60**	**2.00**	**1.00**	**1.00**	**0.00**	**0.00**	**0.00**	**1.00**	**0.00**	**0.00**	**1.00**

6 . course name : C411

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C411.1	2	2	1	-	-	-	-	-	-	-	-	-
C411.2	1	1	1	1	-	-	1	-	-	-	-	1
C411.3	1	1	1	1	-	-	1	-	-	-	-	1
C411.4	2	1	1	-	-	-	1	-	-	-	-	-
C411.5	3	1	1	-	-	-	-	-	-	-	-	1
Average	**1.80**	**1.20**	**1.00**	**1.00**	**0.00**	**0.00**	**1.00**	**0.00**	**0.00**	**0.00**	**0.00**	**1.00**

1 . Course Name : C204

Course	PSO1	PSO2
C204.1	2	1
C204.2	2	1
C204.3	2	1
C204.4	2	1
C204.5	2	1
Average	**2.00**	**1.00**

2 . Course Name : C210

Course	PSO1	PSO2
C210.1	3	1
C210.2	3	1
C210.3	3	1
C210.4	3	1
C210.5	3	1
Average	**3.00**	**1.00**

3 . Course Name : C301

Course	PSO1	PSO2
C301.1	2	1
C301.2	2	1
C301.3	2	1
C301.4	2	1
C301.5	2	1
Average	**2.00**	**1.00**

4 . Course Name : C309

Course	PSO1	PSO2
C309.1	1	2
C309.2	1	2
C309.3	1	2
C309.4	1	2
C309.5	1	2
Average	**1.00**	**2.00**

5 . Course Name : C402

Course	PSO1	PSO2
C402.1	2	1
C402.2	2	1
C402.3	2	1
C402.4	2	1
C402.5	2	1
Average	**2.00**	**1.00**

6 . Course Name : C411

Course	PSO1	PSO2
C411.1	3	2
C411.2	3	2
C411.3	3	2
C411.4	3	2
C411.5	2	2
Average	**2.80**	**2.00**

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

Institute Marks : 10.00

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C101	1.8	2.8	PO3	PO4	3.00	PO6	PO7	PO8	PO9	PO10	1.00	1.00
C102	3.00	1.00	1.00	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C103	3.00	2.50	2.67	PO4	2.67	2.00	PO7	PO8	2.00	3.00	PO11	2.00
C104	3.00	3.00	PO3	PO4	PO5	PO6	3.00	PO8	2.00	PO10	PO11	PO12

C105	3.00	2.20	2.40	PO4	PO5	PO6	PO7	3.00	3.00	2.80	2.00	PO12
C106	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	2.40	PO11	PO12
C107	PO1	PO2	PO3	PO4	PO5	1.00	PO7	1.00	PO9	2.00	PO11	1.00
C108	PO1	PO2	PO3	PO4	PO5	1.00	PO7	1.00	PO9	2.00	PO11	1.00
C109	PO1	PO2	PO3	PO4	PO5	2.00	PO7	PO8	PO9	PO10	PO11	PO12
C110	2.60	2.20	1.60	PO4	0.20	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C111	3.00	2.00	1.00	PO4	2.00	PO6	PO7	3.00	3.00	PO10	PO11	2.00
C112	3.00	2.00	PO3	PO4	PO5	1.00	1.00	PO8	PO9	1.00	PO11	1.00
C113	PO1	PO2	3.00	PO4	2.25	2.00	PO7	1.00	1.50	PO10	PO11	2.25
C114	3.00	2.80	3.00	PO4	2.60	PO6	3.00	PO8	PO9	PO10	PO11	PO12
C115	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	2.00	2.33	PO11	1.00
C116	PO1	PO2	PO3	PO4	PO5	PO6	PO7	3.00	1.00	PO10	PO11	PO12
C117	2.75	3.00	2.50	PO4	2.50	PO6	2.00	PO8	PO9	PO10	PO11	PO12
C201	2.20	1.40	1.00	PO4	PO5	1.00	1.00	1.00	PO9	PO10	PO11	PO12
C202	3.00	1.20	1.00	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C203	2.70	2.33	1.22	2.00	2.84	1.00	PO7	PO8	1.33	1.50	1.00	1.50
C204	3.00	2.00	1.00	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C205	2.67	2.33	1.67	PO4	2.67	PO6	PO7	PO8	PO9	PO10	PO11	1.67
C206	3.00	2.00	2.00	PO4	1.00	1.33	1.80	PO8	1.00	1.00	1.00	1.00
C207	1.00	2.00	2.00	PO4	PO5	2.00	1.60	PO8	PO9	PO10	PO11	1.00
C208	1.00	PO2	PO3	PO4	PO5	1.00	PO7	PO8	1.00	1.00	1.00	1.00
C209	2.80	2.00	2.60	2.00	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C210	2.00	1.20	2.00	1.00	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C211	2.60	2.20	1.80	2.00	1.00	1.00	PO7	PO8	1.00	PO10	PO11	2.00
C212	2.20	2.40	2.80	2.60	3.00	1.20	2.00	2.00	PO9	PO10	1.00	2.00
C213	2.80	1.80	2.20	PO4	2.60	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C214	1.00	2.00	1.80	PO4	2.00	PO6	PO7	PO8	PO9	PO10	PO11	2.00
C215	3.00	2.80	2.60	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C216	PO1	PO2	PO3	PO4	PO5	1.75	1.25	3.00	PO9	PO10	PO11	1.00
C301	3.00	2.00	1.00	1.00	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C302	2.60	2.20	1.80	2.00	1.00	1.00	PO7	PO8	1.00	PO10	PO11	2.00
C303	3.00	1.80	1.80	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C304	3.00	2.40	3.00	2.60	2.00	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C305	3.00	2.00	2.00	2.00	3.00	PO6	PO7	PO8	1.00	1.00	1.00	1.00
C306	3.00	3.00	2.20	PO4	1.00	1.00	PO7	2.00	PO9	PO10	PO11	2.00
C307	PO1	2.50	PO3	PO4	PO5	2.00	1.75	PO8	PO9	1.25	PO11	PO12
C308	1.00	PO2	PO3	PO4	PO5	PO6	PO7	PO8	1.00	PO10	1.00	1.00
C309	1.00	PO2	PO3	PO4	PO5	PO6	PO7	2.00	2.00	1.00	1.00	PO12
C310	1.80	1.60	1.80	PO4	2.00	PO6	PO7	PO8	2.00	2.00	PO11	1.00
C311	3.00	2.40	2.20	2.40	2.00	PO6	PO7	PO8	1.00	1.00	PO11	1.00
C312	2.80	2.00	1.00	PO4	PO5	PO6	2.00	PO8	PO9	PO10	PO11	1.00
C313	3.00	2.80	2.50	PO4	PO5	PO6	2.60	PO8	PO9	PO10	PO11	PO12
C314	3.00	2.40	2.67	PO4	2.75	PO6	PO7	PO8	2.00	PO10	PO11	2.20
C315	2.00	PO2	PO3	PO4	3.00	PO6	PO7	3.00	1.00	3.00	3.00	1.00
C316	0.60	1.20	1.20	2.00	0.60	0.60	1.20	0.60	0.60	0.60	0.60	0.60
C401	3.00	2.00	PO3	PO4	PO5	1.00	PO7	PO8	PO9	PO10	PO11	PO12
C402	3.00	2.60	2.00	1.00	1.00	PO6	PO7	PO8	1.00	PO10	PO11	1.00
C403	2.40	2.60	PO3	PO4	1.40	PO6	PO7	PO8	PO9	PO10	PO11	1.00
C404	1.80	1.60	1.80	PO4	2.00	PO6	PO7	PO8	2.00	1.00	PO11	1.00
C405	3.00	2.00	2.00	PO4	1.00	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C406	3.00	2.67	PO3	PO4	PO5	PO6	3.00	PO8	3.00	2.00	3.00	PO12
C407	PO1	PO2	PO3	PO4	PO5	1.75	1.80	3.00	PO9	PO10	PO11	1.00
C408	2.00	PO2	1.50	PO4	2.25	PO6	PO7	PO8	PO9	PO10	PO11	2.25
C409	2.00	PO2	1.50	PO4	2.25	PO6	PO7	PO8	PO9	PO10	PO11	2.25
C410	2.00	PO2	PO3	PO4	3.00	PO6	PO7	3.00	1.00	3.00	3.00	1.00
C411	1.80	1.20	1.00	1.00	PO5	PO6	1.00	PO8	PO9	PO10	PO11	1.00
C412	1.80	1.40	2.00	PO4	PO5	2.00	PO7	PO8	PO9	PO10	PO11	1.00
C413	2.00	PO2	PO3	PO4	3.00	PO6	PO7	3.00	1.00	3.00	3.00	1.00
C414	PO1	PO2	PO3	PO4	3.00	3.00	3.00	3.00	3.00	3.00	PO11	3.00
C415	2.33	2.67	2.00	PO4	PO5	PO6	PO7	2.00	1.00	1.00	1.00	PO12

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

Course	PSO1	PSO2
C101	PSO1	PSO2
C102	PSO1	PSO2
C103	2.75	3.00
C104	2.00	PSO2
C105	3.00	2.20
C106	PSO1	PSO2
C107	PSO1	PSO2
C108	PSO1	PSO2
C109	PSO1	PSO2
C110	PSO1	PSO2
C111	PSO1	PSO2
C112	PSO1	PSO2
C113	PSO1	2.15
C114	3.00	2.40
C115	PSO1	PSO2
C116	PSO1	PSO2
C117	2.75	2.25
C201	1.40	2.00
C202	3.00	2.00
C203	1.58	2.00
C204	2.00	1.00
C205	2.33	1.67
C206	3.00	1.40
C207	PSO1	PSO2
C208	1.00	PSO2
C209	1.00	PSO2
C210	3.00	1.00
C211	3.00	2.00
C212	2.60	2.00
C213	1.00	2.00
C214	3.00	2.00
C215	3.00	2.60
C216	1.00	PSO2
C301	2.00	1.00
C302	3.00	2.00
C303	1.00	1.00
C304	3.00	2.00
C305	2.00	1.00
C306	1.00	3.00
C307	PSO1	PSO2
C308	1.00	1.00
C309	1.00	2.00
C310	1.00	2.00
C311	1.00	PSO2
C312	2.00	1.00
C313	2.80	PSO2
C314	3.00	PSO2
C315	3.00	3.00
C316	1.40	0.40
C401	3.00	1.00
C402	2.00	1.00
C403	1.80	1.00
C404	1.00	1.00
C405	1.00	1.00
C406	PSO1	2.67
C407	1.00	1.00
C408	1.50	1.75
C409	1.50	1.75
C410	3.00	3.00
C411	2.80	2.00

C412	2.00	1.00
C413	3.00	3.00
C414	1.00	3.00
C415	2.33	2.67

3.2 Attainment of Course Outcomes (50) Total Marks 50.00

3.2.1 Describe the assessment processes used to gather the data upon which the evaluation of Course Outcome is based (10) Institute Marks : 10.00

The Course Outcomes (COs), Program Outcomes (POs) and Program Specific Outcomes (PSOs) are assessed through assessment tools formatted by the Department based on the Direct and Indirect methods of assessment. The Course Outcomes are listed for each of the courses at the beginning of the semester. Before starting any new course and a chapter, the related course outcomes are explained to the students. The mapping of Course outcomes and Program outcomes are done for each course and recorded. Similarly mapping of Course outcomes and Program Specific outcomes are done for each course and recorded.

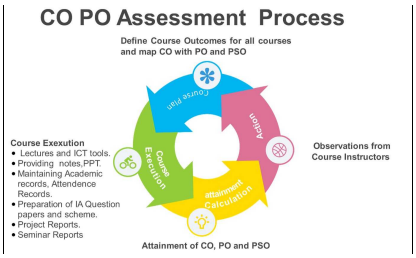


Figure 3.2.1.1 CO Assessment Process

The course outcome assessments are carried outby two methods.

1. Direct method

2. Indirect method

Direct method of Assessment: Direct method gives the course outcomes through Continuous Internal Assessments (CIA), seminars, assignments and University Semester End Examinations (SEE). The attainment of each COs in each internals are calculated systematically and recorded. A target is set to attain each COs, and the attainment percentage is compared at the end of the semester. If the set target is attained, a higher attainment level is set for the next academic year. On the other hand, if the target is not reached, then suitable actions are planned to attain the same in future.

The various tools for assessing the students

- Continuous Internal Assessments
- Assignment (Seminar/Quiz/unit test/Mini projects)
- Semester End Examinations

Internal Tests/Exams

After commencement of the course, the centralized college examination coordinator will conduct three internal assessment tests at the end of 6th, 10th and 14th weeks of the semester as per scheduled in accordance with college calendar of events.

The entire exam process will be monitored by the institution examination coordinator followed by the department examination coordinator. Three different Schemes were followed as per the revision of schemes by the Visvesvaraya Technological University.

- The Course Coordinator will prepare the Question papers for the respective course and will be submitted to Exam Coordinator well in advance.
- The course coordinator will follow scheme and solutions for each test and evaluate the performance of students as per the assessment rubrics.
- The Internal assessment marks are based on average of maximum score of two tests conducted (minimum of two tests are compulsory) in 2022 scheme, an average of three test while considering as IA marks in 2018 and 2021 scheme as per University Guidelines.

Internal Tests/Exams Assessment Procedure:

- It has been decided at the department level to set target level for all three IA as 60% for approved by Program Assessment Committee
- Target level for each question in all three IA will be calculated by the course Instructors.
- Marks scored is compared with the target marks for each question
  - If the attempted question reached the target level, then mark as "**3**".
  - If the attempted question does not reach the target level, then mark as "**2 or 1**".
  - If a student does not attend any question pertaining to particular CO or absent for the IA, then mark as "**0**".
- Count the number of "**3,"** for each course outcome.
- CO attainment of the respective question has been calculated as shown below,

IA Test Class Average = Number of '3's / (Total number of students attempting the particular CO)

- If percentage of students scored above
  - class Average in CIA≥60% Attainment level is 3
  - Else if <60% but ≥50% Attainment level is 2
  - Else if <50% but ≥40% Attainment level is 1
  - Else Attainment level is 0

Figure 3.2.1.2 IA Assessment for 2018 scheme

Figure 3.2.1.3 IA Assessment for 2021 scheme

Figure 3.2.1.4 IA Assessment for 2022 scheme

Laboratory Tests

Laboratory in-charge faculties will follow rubrics, which is set by the Department for evaluation of laboratory courses.

Lab Continuous Assessment Procedure:

- It has been decided at the department level to set target level for all lab Evaluation as 60%.
- Target level for each experiment will be calculated by the course Instructors.
- Marks scored is compared with the target marks for each Experiment
  - If the respective Experiment marks reached the target level, then mark as "**3**".
  - If the respective Experiment marks does not reach the target level, then mark as "**2 or 1**".
  - If a student is absent for the Experiment, then mark as "**0**".
- Count the number of "**3,"** for each course outcome.
- CO attainment of the experiment has been calculated as shown below,

Lab Continuous Assessment Attainment Average= Number of '3's / (Total number of students attempting the particular CO)

- If percentage of students scored above class Average in
  - **Lab Continuous Assessment Attainment Average** ≥60% Attainment level is 3
  - Else if <60% but ≥50% Attainment level is 2
  - Else if <50% but ≥40% Attainment level is 1
  - Else Attainment level is 0

Lab IA Test Procedure:

It has been decided at the department Level to set target level for Lab Test based on the class average of Lab Test obtained marks in the respective course

- If percentage of students scored above class Average in
  - **lab Test Attainment Average**≥60% Attainment level is 3
  - Else if <60% but ≥50% Attainment level is 2
  - Else if <50% but ≥40% Attainment level is 1
  - Else Attainment level is 0
- Continuous evaluation of marks for laboratory experiments is categorized based on the scheme released by the university as follows.

Scheme	Course	Conduction Marks	Record Marks	Viva Voce	Internal Assessment	Total
2018		10	10	4	16	40
2021	IPCC	5	5	5	5	20
	PCCL	10	10	10	20	50
2022	IPCC	5	5	5	10	25
	PCCL	10	10	10	20	50

Seminar Work Evaluation

- The Department selects a senior faculty member as Seminar coordinator who along with other faculty would assess the Technical Seminar presentations by students.
- He/ She would ensure that the students choose advanced concepts in Aeronautical Engineering and allied research areas with a lot of relevance and applicability.
- One seminar per student in the VIII semester would be conducted as per the schedule mentioned prior in Time Table and Department Calendar of events.
- It will be evaluated by the seminar coordinator and other faculties and final marks will be submitted to the Head of the Department.

2018 Scheme:

Marks Allotment for Technical Seminar Presentation (CIE 100 MARKS)	
Evaluation Parameter	*Maximum Marks*
Topic And Background Survey	20
Presentation Skills	20
Viva	20
Seminar Report	40
Marks Allotment for Internship (100 Marks: CIE 40 marks + SEE 60 Marks)	
Topic and relevance of the work done in internship	10
Presentation Skills	10
Viva	10
Internship Report	10
SEE	60

2021 Scheme:

Marks Allotment for Technical Seminar Presentation (CIE 100 MARKS)	
Seminar Report	50
Presentation Skills	25
Question & Answer Session	25
Marks Allotment for Internship (100 CIE Marks)	
Internship Report	50
Presentation Skills	25
Question & Answer Session	25

2022 Scheme:

Marks Allotment for Internship (200 Marks: 100 CIE Marks + 100 SEE Marks)	
Internship Report	50
Presentation Skills	25
Question & Answer Session	25

SEE	100

Final Year Project Evaluation:

Project batches are formed as per the instruction given by project coordinator and Head of the Department.

- According to the curriculum of the university, every student must submit their project work by the end of 8th semester of the program.
- The project work takes place for a span of two semesters, where the formation of batches takes place over the mid of 6th semester.
- Sixth semester students are informed about the project and batch formation during the first week of April.
- Students are given an option to form the batches of their choice, comprising of maximum of four members per group.
- Students are given a seminar by a senior faculty regarding the selection of project and the ideas it should be related to. (Ex: It can be of Societal/ Environmental issues or themes stated by the funding agencies or of current trends).
- All the project batches are instructed to submit their areas of interest, in which they intend to carry out the further work.
- The areas of interest or tentative title of the project will be finalized either by the students or after discussing with the faculty addressing the specific area.
- The tentative title is then submitted to the project coordinator.
- A department meeting will be scheduled by the end of 6thsemester to allocate the respective guides, with necessary specializations to match the areas of interest given by the students.
- If the titles or the topics doesn't meet the above aspects students are asked to re-submit their tentative titles within a span of a week.
- Students are then informed about the guides allocated to their respective groups by the project coordinator.
- Each internal guide will continuously monitor their students to observe the progress of the work.
- The project guide along with project coordinator conduct 3 project reviews during 7th and 8thsemester which is described in the table 3.23 and then submit the Internal Assessment marks to the Head of the Department.
- External Project Viva voce is conducted by the panel of examiners deputed by the university. Based on the project work and viva voce performance the marks are awarded to the students and submitted to the university.
- A Project exhibition "AVISHKAAR" is being organized by the institution in the month of May every year to encourage the students and the best projects are awarded to motivate the students to do innovative projects.
- The department will encourage students to participate in technical Expo and the project guides motivate and guide the students to publish in standard conference/journal forums.
- It has been decided by the Program Assessment Committee (PAC) that, a target of 80 marks is fixed to assess the CO attainment Level

Table 3.2.1.1 Marks Allotment for Project Work during CAYm1 (2023-24)

Mini Project Evaluation:

2018 Scheme:

Marks Allotment for Mini Project (100 Marks: CIE 40 Marks + SEE 60 Marks)	
Project Report	20
Presentation Skills	10
Question & Answer Session	10
SEE	60

2021 Scheme:

Marks Allotment for Mini Project (100 CIE Marks)	
Project Report	50
Presentation Skills	25
Question & Answer Session	25

2022 Scheme:

Marks Allotment for Mini Project (100 CIE Marks)	
Project Report	50
Presentation Skills	25
Question & Answer Session	25

Major Project Evaluation:

2018 Scheme:

Marks Allotment for Major Project Phase - I (100 CIE Marks)	
Project Work Phase - I Report	50
Presentation Skills	25
Question & Answer Session	25
Marks Allotment for Major Project Phase - II (100 Marks: CIE 40 Marks + SEE 60 Marks)	
Project Work Phase - II Report	20
Presentation Skills	10
Question & Answer Session	10
SEE	60

2021 Scheme:

Marks Allotment for Project Work (200 Marks: CIE 100 Marks + SEE 100 Marks)	
Project Work Report	50
Presentation Skills	25

Question & Answer Session	25
SEE	100

2022 Scheme:

Marks Allotment for Major Project Phase - I (100 CIE Marks)	
Project Work Phase - I Report	50
Presentation Skills	25
Question & Answer Session	25
Marks Allotment for Major Project Phase - II (200 Marks: CIE 100 Marks + SEE 100 Marks)	
Major Project Phase - II Report	50
Presentation Skills	25
Question & Answer Session	25
SEE	100

Semester End Examination (SEE) Attainment

- It has been decided to set target level for Semester End Examination (SEE) based on the class average of university SEE obtained marks in the respective course, approved by Program Assessment Committee (PAC).
- The department has to assess the marks obtained by each student in the course. The percentage of students scored above the class average mark in the SEE is considered for attainment calculation.
- If percentage of students scored above class Average in **Semester End Examination (SEE)** is
  - ≥60% Attainment level is 3
  - Else if <60% but ≥50% Attainment level is 2
  - Else if <50% but ≥40% Attainment level is 1
  - Else Attainment level is 0

In case of Choice Based Credit System (CBCS) scheme, the result on individual subject in SEE is available as grade letters such as S^+ for marks ≥90%, S for marks <90% and ≥80%, A for marks <80% and ≥70%, B for marks <70 and ≥60%, C for marks <60% and ≥50%, D for marks <50% and ≥45%, E for marks <45% and ≥40% and F for fail (<40%).

In this case the percentage of students scored above 60% the average grade values are extracted and subtracted with obtained CIA of the respective subjects.

- If percentage of students scored above class Average in **SEMESTER END EXAMINATIONS(SEE) CLASS AVERAGE**
  - ≥60% Attainment level is 3
  - Else if <60% but ≥50% Attainment level is 2
  - Else if <50% but ≥40% Attainment level is 1
  - Else Attainment level is 0

Indirect method of Assessment

Indirect attainment of COs is determined from Course Exit Surveys of the respective courses. This survey is to assess the effectiveness of our engineering program. The department is deeply committed to continuous quality improvement, and this survey is an integral part of our assessment process.

The course exit survey from more than 60% of students is taken for the individual COs at the end of the respective semester.

It has been decided at the Department level to set the target and approved by Program Assessment Committee (PAC).

Sample of Course Exit Survey (CES) Questionnaire

Sl No	**Question**	**Good**	**Fair**	**Average**	**Poor**
		3	**2**	**1**	**0**
1	How good are you with respect to fundamentals of Thermodynamics?				
2	Rate your ability in understanding the difference between Work and Heat.				
3	How effectively can you utilize the knowledge of 1st Law of Thermodynamics in understanding the process in a system?				
4	How confident are you on solving problems related to enthalpy of a system?				
5	What is your knowledge level in understanding the energy interaction in the Heat Engine?				
6	How confident are you on solving problems related to entropy of a system?				
7	How effectively can you utilize the knowledge of compressibility factor in analysing Ideal gases?				
8	Rate your ability in understanding the Thermodynamic relations.				
9	Rate your ability in understanding the Thermodynamic gas cycles.				
10	How confident are you on solving problems related to vapour power cycle?				

Overall CO attainment is calculated as shown below:

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

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

Institute Marks : 40.00

Attainment level is correlated to 3, 2 or 1 depending on the marks scored as given below.

Attainment level 3: The students scoring more than 60% of the marks out of the relevant maximum marks for that CO

Attainment level 2: The students scoring between 50% and 60% of the marks out of the relevant maximum marks for that CO

Attainment level 1: The students scoring between 40% and 50% of the marks out of the relevant maximum marks for that CO

Note:

If percentage of students scored above class Average in CIA≥60% Attainment level is 3

Else if <60% but ≥50% Attainment level is 2

Else if <50% but ≥40% Attainment level is 1

Else Attainment level is 0

From the individual students performance consolidated CO attainment calculation is made

Sample of CO attainment calculation for one course is shown below:

Table 3.2.2.1 CO Attainment- CAYm1-2023-24-C204- Mechanics of Materials (BAE304)

Course Name: Mechanics of Materials (BAE304) Year of Study: 2023-24 (CAYm1)						
COs	Percentage of students scored ≥60% in CIA	Attainment level through CIA	Percentage of students scored above target level marks in SEE	Attainment level through SEE	Direct CO attainment = 0.5*SEE +0.5*CIA	Direct CO Attainment level
C204.1	**70.00**	**3**	**45.00**	**2**	**57.50**	**2**
C204.2	**70.00**	**3**	**45.00**	**2**	**57.50**	**2**
C204.3	**80.00**	**3**	**45.00**	**2**	**62.50**	**3**
C204.4	**85.00**	**3**	**45.00**	**2**	**65.00**	**3**
C204.5	**65.00**	**3**	**45.00**	**2**	**55.00**	**2**

ar of Study: 2017-18 (CAY)

Course Name: Mechanics of Materials (BAE304) Year of Study: 2023-24 (CAYm1)			
CO	Overall CO attainment = 0.8*DA+0.2*IDA	**Target**	**Observation**
C204.1	**65.61**	**60**	**+ 5.61**
C204.2	**65.41**	**60**	**+ 5.41**
C204.3	**69.41**	**60**	**+ 9.41**
C204.4	**71.02**	**60**	**+ 11.02**
C204.5	**63.61**	**60**	**+ 3.61**

Course Name: Mechanics of Materials (BAE304) Year of Study: 2023-24 (CAYm1)		
Target Level	**CO Attainment Level**	**Observations**
3	3	100% Attained

Table 3.2.2.2 CO Attainment-CAYm1-2023-24-C210 Aerodynamics (BAE402)

Course Name: Aerodynamics (BAE402) Year of Study: 2023 -24 (CAYm1)						
COs	Percentage of students scored ≥60% in CIA	Attainment level through CIA	Percentage of students scored above target level marks in SEE	Attainment level through SEE	Direct CO attainment = 0.5*SEE +0.5*CIA	Direct CO Attainment level
C210.1	**90.00**	**3**	**40.00**	**1**	**65.00**	**3**
C210.2	**90.00**	**3**	**40.00**	**1**	**65.00**	**3**
C210.3	**90.00**	**3**	**40.00**	**1**	**65.00**	**3**
C210.4	**87.00**	**3**	**40.00**	**1**	**63.50**	**3**
C210.5	**93.00**	**3**	**40.00**	**1**	**66.50**	**3**

Course Name: Aerodynamics (BAE402) Year of Study: 2023 -24 (CAYm1)			
CO	Overall CO attainment = 0.8*DA+0.2*IDA	**Target**	**Observation**
C210.1	**70.33**	**60**	**+ 10.33**
C210.2	**70.17**	**60**	**+ 10.17**
C210.3	**70.33**	**60**	**+ 10.33**
C210.4	**68.97**	**60**	**+ 8.97**

C210.5	**71.37**	**60**	**+ 11.37**

Course Name: Aerodynamics (BAE402)		
Year of Study: 2023 -24 (CAYm1)		
Target Level	**CO Attainment Level**	**Observations**
3	**3**	**100% Attained**

Table 3.2.2.3 CO Attainment-CAYm1-2023-24-C301 Mechanism and Machine Theory (21AE51)

Course Name: Mechanism and Machine Theory (21AE51)						
Year of Study: 2023 -24 (CAYm1)						
COs	Percentage of students scored ≥60% in CIA	Attainment level through CIA	Percentage of students scored above target level marks in SEE	Attainment level through SEE	Direct CO attainment = 0.5*SEE +0.5*CIA	Direct CO Attainment level
C301.1	**52.63**	**2**	**48.57**	**1**	**55.66**	**2**
C301.2	**33.33**	**0**	**48.57**	**1**	**45.05**	**1**
C301.3	**41.67**	**1**	**48.57**	**1**	**49.63**	**1**
C301.4	**64.10**	**3**	**48.57**	**1**	**61.97**	**3**
C301.5	**79.49**	**3**	**48.57**	**1**	**70.43**	**3**

Course Name: Mechanism and Machine Theory (21AE51)			
Year of Study: 2023 -24 (CAYm1)			
CO	Overall CO attainment = 0.8*DA+0.2*IDA	**Target**	**Observation**
C301.1	**61.73**	**60**	**+ 1.73**
C301.2	**52.27**	**60**	**- 7.73**
C301.3	**56.48**	**60**	**- 3.52**
C301.4	**67.21**	**60**	**+ 7.21**
C301.5	**72.69**	**60**	**+ 12.69**

Course Name: Mechanism and Machine Theory (21AE51)		
Year of Study: 2023 -24 (CAYm1)		
Target Level	**CO Attainment Level**	**Observations**
3	**2**	**66.7% Attained**

Table 3.2.2.4 CO Attainment-CAYm1-2023-24-C309 Aviation Management (21AE61)

Course Name: Aviation Management (21AE61)						
Year of Study: CAYm1 2023 - 24						
COs	Percentage of students scored ≥60% in CIA	Attainment level through CIA	Percentage of students scored above target level marks in SEE	Attainment level through SEE	Direct CO attainment = 0.5*SEE +0.5*CIA	Direct CO Attainment level
C309.1	**71.34**	**3**	**53.85**	**2**	**62.59**	**3.00**
C309.2	**84.15**	**3**	**53.85**	**2**	**69.00**	**3.00**
C309.3	**73.17**	**3**	**53.85**	**2**	**63.51**	**3.00**
C309.4	**78.66**	**3**	**53.85**	**2**	**66.25**	**3.00**
C309.5	**69.51**	**3**	**53.85**	**2**	**61.68**	**3.00**

Course Name: Aviation Management (21AE61)			
Year of Study: CAYm1 2023 - 24			
CO	Overall CO attainment = 0.8*DA+0.2*IDA	**Target**	**Observation**
C309.1	**62.59**	**60**	**+ 2.59**
C309.2	**69.00**	**60**	**+ 9.00**
C309.3	**63.51**	**60**	**+ 3.51**
C309.4	**66.25**	**60**	**+ 6.25**
C309.5	**61.68**	**60**	**+ 1.68**

Course Name: Aviation Management (21AE61)		
Year of Study: CAYm1 2023 - 24		
Target Level	**CO Attainment Level**	**Observations**
3	**3**	**100% Attained**

Table 3.2.2.5 CO Attainment-CAYm1-2023-24-C402 Computational Fluid Dynamics (18AE72)

Course Name: Computational Fluid Dynamics (18AE72)						
Year of Study: 2023 - 24 (CAYm1)						
COs	Percentage of students scored ≥60% in CIA	Attainment level through CIA	Percentage of students scored above target level marks in SEE	Attainment level through SEE	Direct CO attainment = 0.6*SEE +0.4*CIA	Direct CO Attainment level
C402.1	**93.92**	**3**	**49.95**	**1**	**65.14**	**3.00**
C402.2	**76.32**	**3**	**49.95**	**1**	**58.09**	**2.00**
C402.3	**91.18**	**3**	**49.95**	**1**	**64.04**	**3.00**
C402.4	**77.70**	**3**	**49.95**	**1**	**58.65**	**2.00**
C402.5	**87.84**	**3**	**49.95**	**1**	**62.70**	**3.00**

Course Name: Computational Fluid Dynamics (18AE72)			
Year of Study: 2023 - 24 (CAYm1)			
CO	Overall CO attainment = 0.8*DA+0.2*IDA	**Target**	**Observation**
C402.1	**69.42**	**60**	**+ 9.42**
C402.2	**64.17**	**60**	**+ 4.17**
C402.3	**67.77**	**60**	**+ 7.77**
C402.4	**64.10**	**60**	**+ 4.10**
C402.5	**66.70**	**60**	**+ 6.70**

Course Name: Computational Fluid Dynamics (18AE72)		
Year of Study: 2023 - 24 (CAYm1)		
Target Level	**CO Attainment Level**	**Observations**
3	**2.6**	**86.7% Attained**

Table 3.2.2.6 CO Attainment-CAYm1-2023-24-C411 Flight Vehicle Design (18AE81)

Course Name: Flight Vehicle Design (18AE81)						
Year of Study: 2023 - 24 (CAYm1)						
COs	Percentage of students scored ≥60% in CIA	Attainment level through CIA	Percentage of students scored above target level marks in SEE	Attainment level through SEE	Direct CO attainment = 0.6*SEE +0.4*CIA	Direct CO Attainment level
C411.1	**93.07**	**3**	**47.22**	**2**	**65.56**	**3.00**
C411.2	**80.57**	**3**	**47.22**	**2**	**60.56**	**3.00**
C411.3	**88.91**	**3**	**47.22**	**2**	**63.90**	**3.00**
C411.4	**84.74**	**3**	**47.22**	**2**	**62.23**	**3.00**
C411.5	**84.74**	**3**	**47.22**	**2**	**62.23**	**3.00**

Course Name: Flight Vehicle Design (18AE81)			
Year of Study: 2023 - 24 (CAYm1)			
CO	Overall CO attainment = 0.8*DA+0.2*IDA	**Target**	**Observation**
C411.1	**65.56**	**60**	**+ 5.56**
C411.2	**60.56**	**60**	**+ 0.56**
C411.3	**63.90**	**60**	**+ 3.90**
C411.4	**62.23**	**60**	**+ 2.23**
C411.5	**62.23**	**60**	**+ 2.23**

Course Name: Flight Vehicle Design (18AE81)
Year of Study: 2023 - 24 (CAYm1)

Target Level	CO Attainment Level	Observations
3	3	100% Attained

Table 3.2.2.7 CO Attainment of Academic Year CAYm1 2023-24

Subject Code	COURSE NAME	Course	CO1	CO2	CO3	CO4	CO5
BMATM101	Mathematics-I for ME Streams	C101	2.00	2.00	2.00	2.00	3.00
BCHEM102	Applied Chemistry for ME Streams	C102	3.00	3.00	3.00	3.00	3.00
BCEDK103	Computer-Aided Engineering Drawing	C103	3.00	3.00	2.00	3.00	3.00
BESCK104E	Introduction to C Programming	C104	3.00	2.00	2.00	3.00	3.00
BETCK105E	Renewable Energy Sources	C105	2.00	3.00	3.00	3.00	3.00
BENGK106	Communicative English	C106	3.00	3.00	3.00	3.00	3.00
BKSK0107	Samskrutika Kannada	C107	3.00	3.00	3.00	3.00	3.00
BKBKK107	Balake Kannada	C108	3.00	3.00	3.00	3.00	3.00
BSFHK158	Scientific Foundations for Health	C109	3.00	3.00	3.00	3.00	3.00
BMATM201	Mathematics-II for ME Streams	C110	2.00	1.00	1.00	2.00	1.00
BPHYM202	Applied Physics for ME Streams	C111	3.00	3.00	2.00	1.00	2.00
BEME203	Elements of Mechanical Engineering	C112	2.00	2.00	3.00	2.00	3.00
BESCK204C	Introduction to Electronics Communication	C113	3.00	3.00	3.00	3.00	3.00
BPLCK205B	Introduction to Python Programming	C114	2.00	3.00	2.00	2.00	2.00
BPWSK206	Professional Writing Skills in English	C115	3.00	3.00	3.00	3.00	3.00
BICOK207	Indian Constitution	C116	3.00	3.00	3.00	3.00	3.00
BIDTK258	Innovation and Design Thinking	C117	3.00	3.00	3.00	3.00	3.00
BAE301	Aircraft Materials & Processes	C201	3.00	3.00	3.00	3.00	3.00
BAE302	Elements Of Aeronautics	C202	3.00	3.00	3.00	3.00	3.00
BAE303	Fluid Mechanics	C203	2.00	3.00	3.00	2.00	3.00
BAE304	Mechanics of Materials	C204	3.00	3.00	3.00	3.00	3.00
BAEL305	Computer Aided Aircraft Drawing	C205	2.00	2.00	2.00	-	-
BAE306A	Introduction to Drone Technology	C206	3.00	3.00	3.00	3.00	3.00
BSCK307	Social Connect and Responsibility	C207	3.00	3.00	3.00	3.00	3.00
BAE358A	Development of Soft Skills for Engineers	C208	3.00	3.00	3.00	3.00	3.00
BAE401	Aero Engineering Thermodynamics	C209	3.00	3.00	3.00	3.00	3.00
BAE402	Aerodynamics	C210	3.00	3.00	3.00	3.00	3.00
BAE403	Aircraft Propulsion	C211	3.00	3.00	3.00	3.00	3.00
BAEL404	Aircraft Material Testing & Processing Lab	C212	3.00	3.00	3.00	3.00	-
BAE405A	Additive Manufacturing (3D Printing)	C213	2.00	3.00	3.00	3.00	3.00
BAE456A	Fundamentals on Spreadsheet	C214	3.00	3.00	3.00	3.00	3.00
BBOK407	Biology For Engineers	C215	3.00	3.00	3.00	3.00	3.00
BUHK408	Universal human values course	C216	3.00	3.00	3.00	3.00	3.00
21AE51	Mechanism and Machine Theory	C301	3.00	2.00	2.00	3.00	3.00
21AE52	Aircraft Propulsion (+ Propulsion Lab)	C302	3.00	3.00	3.00	3.00	3.00
21AE53	Aero structures	C303	3.00	3.00	3.00	3.00	3.00
21AE54	Aircraft Performance and Stability	C304	2.00	3.00	2.00	2.00	2.00
21AEL55	Advanced Aircraft Structures Lab	C305	3.00	3.00	3.00	-	-
21AE56	Research Methodology & Intellectual Property Rights	C306	3.00	3.00	3.00	3.00	2.00
21CIV57	Environmental Studies	C307	3.00	3.00	3.00	3.00	3.00
21AE581	DRONE Pilot Training	C308	3.00	3.00	3.00	3.00	3.00
21AE61	Aviation Management	C309	3.00	3.00	3.00	3.00	3.00
21AE62	Aircraft Systems and Avionics (+ Avionics Lab)	C310	3.00	3.00	3.00	3.00	3.00
21AE63	Gas Turbine Technology	C311	3.00	3.00	3.00	3.00	3.00
21AE642	Composite Materials and Structures	C312	2.00	2.00	2.00	2.00	2.00
21XX65	Open Elective Course-I	C313	3.00	2.00	3.00	3.00	3.00
21AEL66	Flight Modelling, Analysis and Simulation Lab	C314	2.00	3.00	2.00	2.00	3.00
21AEMP67	Mini Project	C315	3.00	3.00	3.00	-	-
21INT68	Innovation/Entrepreneurship /Societal Internship	C316	3.00	3.00	3.00	-	-
18AE71	Aircraft Stability & Control	C401	3.00	3.00	2.00	3.00	2.00
18AE72	Computational Fluid Dynamics	C402	3.00	3.00	3.00	3.00	3.00
18AE732	Control Engineering	C403	2.00	2.00	3.00	3.00	3.00
18AE743	Guidance, Navigation & Control	C404	3.00	1.00	3.00	3.00	2.00
18CS752	Python Application Programming	C405	3.00	2.00	2.00	3.00	3.00
18CV753	Environmental Protection and Management	C406	3.00	3.00	3.00	3.00	3.00
18ME753	Industrial Safety	C407	3.00	2.00	3.00	3.00	3.00

18AEL76	Modelling & Analysis Lab	C408	3.00	3.00	3.00	-	-
18AEL77	Flight Simulation Lab	C409	3.00	3.00	3.00	-	-
18AEP78	Project Work Phase - 1	C410	3.00	3.00	3.00	-	-
18AE81	Flight Vehicle Design	C411	3.00	3.00	3.00	3.00	3.00
18AE821	Avionics	C412	3.00	3.00	3.00	3.00	3.00
18AEP83	Project Work Phase - 2	C413	3.00	3.00	3.00	-	-
18AES84	Technical Seminar	C414	3.00	3.00	3.00	-	-
18AEI85	Internship	C415	3.00	3.00	3.00	-	-

Table 3.2.2.8 CO Attainment with respect to set attainment for CAYm1 2023-24

Subject Code	COURSE NAME	Course	Target	Attainment
BMATM101	Mathematics-I for ME Streams	C101	60.00	55.24
BCHEM102	Applied Chemistry for ME Streams	C102	60.00	62.88
BCEDK103	Computer-Aided Engineering Drawing	C103	60.00	61.9
BESCK104E	Introduction to C Programming	C104	60.00	53.4
BETCK105E	Renewable Energy Sources	C105	60.00	61.9
BENGK106	Communicative English	C106	60.00	96.2
BKSK0107	Samskrutika Kannada	C107	60.00	98.3
BKBKK107	Balake Kannada	C108	60.00	98.5
BSFHK158	Scientific Foundations for Health	C109	60.00	81.92
BMATM201	Mathematics-II for ME Streams	C110	60.00	50.53
BPHYM202	Applied Physics for ME Streams	C111	60.00	57.68
BEME203	Elements of Mechanical Engineering	C112	60.00	58.63
BESCK204C	Introduction to Electronics Communication	C113	60.00	63.4
BPLCK205B	Introduction to Python Programming	C114	60.00	56.2
BPWSK206	Professional Writing Skills in English	C115	60.00	98.8
BICOK207	Indian Constitution	C116	60.00	98.3
BIDTK258	Innovation and Design Thinking	C117	60.00	85.6
BAE301	Aircraft Materials & Processes	C201	60.00	76.3
BAE302	Elements Of Aeronautics	C202	60.00	71.24
BAE303	Fluid Mechanics	C203	60.00	51.14
BAE304	Mechanics of Materials	C204	60.00	67.01
BAEL305	Computer Aided Aircraft Drawing	C205	60.00	67.52
BAE306A	Introduction to Drone Technology	C206	60.00	66.33
BSCK307	Social Connect and Responsibility	C207	60.00	97.58
BAE358A	Development of Soft Skills for Engineers	C208	60.00	98.12
BAE401	Aero Engineering Thermodynamics	C209	60.00	62.13
BAE402	Aerodynamics	C210	60.00	70.23
BAE403	Aircraft Propulsion	C211	60.00	60.12
BAEL404	Aircraft Material Testing & Processing Lab	C212	60.00	88.61
BAE405A	Additive Manufacturing (3D Printing)	C213	60.00	59.41
BAE456A	Fundamentals on Spreadsheet	C214	60.00	94.47
BBOK407	Biology For Engineers	C215	60.00	77.15
BUHK408	Universal human values course	C216	60.00	66.97
21AE51	Mechanism and Machine Theory	C301	60.00	62.08
21AE52	Aircraft Propulsion (+ Propulsion Lab)	C302	60.00	60.07
21AE53	Aero structures	C303	60.00	73.63
21AE54	Aircraft Performance and Stability	C304	60.00	54.65
21AEL55	Advanced Aircraft Structures Lab	C305	60.00	78.13
21AE56	Research Methodology & Intellectual Property Rights	C306	60.00	69.58
21CIV57	Environmental Studies	C307	60.00	98.87
21AE581	DRONE Pilot Training	C308	60.00	78.53
21AE61	Aviation Management	C309	60.00	64.61
21AE62	Aircraft Systems and Avionics (+ Avionics Lab)	C310	60.00	65.09
21AE63	Gas Turbine Technology	C311	60.00	57.23
21AE642	Composite Materials and Structures	C312	60.00	54.12
21XX65	Open Elective Course-I	C313	60.00	62.24
21AEL66	Flight Modelling, Analysis and Simulation Lab	C314	60.00	58.89
21AEMP67	Mini Project	C315	60.00	98.56
21INT68	Innovation/Entrepreneurship /Societal Internship	C316	60.00	98.14
18AE71	Aircraft Stability & Control	C401	60.00	61.15
18AE72	Computational Fluid Dynamics	C402	60.00	66.43
18AE732	Control Engineering	C403	60.00	69.68
18AE743	Guidance, Navigation & Control	C404	60.00	59.18

18CS752	Python Application Programming	C405	60.00	68.96
18CV753	Environmental Protection and Management	C406	60.00	98.56
18ME753	Industrial Safety	C407	60.00	65.48
18AEL76	Modelling & Analysis Lab	C408	60.00	88.25
18AEL77	Flight Simulation Lab	C409	60.00	89.65
18AEP78	Project Work Phase - 1	C410	60.00	97.58
18AE81	Flight Vehicle Design	C411	60.00	62.9
18AE821	Avionics	C412	60.00	66.37
18AEP83	Project Work Phase - 2	C413	60.00	98.62
18AES84	Technical Seminar	C414	60.00	98.79
18AEI85	Internship	C415	60.00	98.88

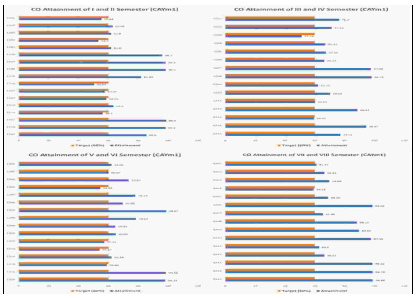


Figure 3.2.2.1 **CO Attainment (CAYm1)**

3.3 Attainment of Program Outcomes and Program Specific Outcomes (50) Total Marks 50.00

3.3.1 Describe the assessment tools and processes used for measuring the attainment of each of the Program Outcomes and Program Specific Outcomes (10) Institute Marks : 10.00

To evaluate the performance of Aeronautical Engineering Program, individual course of the program is mapped with the Program Outcome and Program Specific Outcomes. The attainment values for the POs and PSOs are calculated.

The program includes the courses required to conceptualise and understand the engineering systems. The courses from different streams of Aeronautical engineering are Aerodynamics, Propulsion, Aircraft Structures, Flight Mechanics concepts as per the discussion in the Program Assessment Committee (PAC).

The Program Outcome (PO) and Program Specific Outcomes (PSO) attainment in every course (both Direct and Indirect method) is entered in the PO attainment table and Overall attainment is made giving a weightage of 80% to direct attainment and 20% to indirect attainment are calculated.

Indirect CO and PO attainment Calculation: The component used here is the Course Exit Survey.

The responses are correlated as 3, 2, 1 and 0 for respectively for the responses Good, Fair, Average and Poor, date transferred to spread sheet and attainment calculation is made.

Overall PO attainment is calculated as follows:

Overall PO Attainment = (80% of Direct PO Attainment + 20% of Indirect PO Attainment)

The Methodology applied for assessment of POs and PSOs is depictedin figure 3.12. The components used for the direct assessment includes Internal tests, Assignments, Laboratory performance marks, Laboratory internal test, Semester End Examination, Laboratory semester end examination, Seminar marks and Project work, which are detailed in the table3.32.

Table 3.3.1.2 Direct Assessment Components

Direct assessment components		
Sl No	***Component***	***Description***
1	**Internal tests**	Two internal tests are conducted for • 25 Marks for 2022 scheme Three internal tests are conducted for • 30 marks for 2021 scheme • 30 Marks for 2018 scheme
2	**Assignments/ Activities/ Quiz/ GD/ Seminar**	Assignments/ Activities/ Quiz/ GD/ Seminar are given for checking the practical knowledge acquired by the students in the topic studied for • 25 marks for 2022 scheme • 20 marks for 2021 scheme • 10 Marks for 2018 scheme
3	**Laboratory Continuous Evaluation**	The laboratory experiments are conducted once in a week during the semester and the students' performance is evaluated based on the conduction of experiments for a maximum of • 30 Marks for 2022 scheme • 30 marks for 2021 scheme • 24 Marks for 2018 scheme
4	**Laboratory internal test**	The laboratory tests are conducted after the conduction of all prescribed experiments once in a semester similar to laboratory semester examination. • 20 Marks for 2022 scheme • 20 marks for 2021 scheme • 16 Marks for 2018 scheme
5	**Laboratory Semester End Examination (SEE)**	Laboratory SEE is conducted with two examiners one external and one internal. This is added with laboratory internal marks to declare the results for the Lab course The student performance in the examination is evaluated for • 50 Marks for 2022 scheme • 50 Marks for 2021 scheme • 60 Marks for 2018 scheme
6	**Semester End Examination (SEE)**	SEE is conducted as per the norms of the university covering the all the units/ modules which evaluates for the attainment of CO for • 50 Marks for 2022 scheme • 50 Marks for 2021 scheme • 60 Marks for 2018 scheme
7	**General Seminar**	The marks for the seminars in the final year shall be based on the evaluation by a committee constituted by the Head of the Department and a faculty member of the Department.
8	**Project work Evaluation (Internal)**	The marks for the Project in the final year shall be based on the evaluation by a committee constituted by the Head of the Department and a faculty member of the Department. This is added with Project work external marks to declare the results for the project work.
9	**Project work Evaluation (External)**	Project work viva voce is conducted with two examiners one external and one internal assigned by the university. The student performance in the examination is evaluated for 100 marks.

PROCEDURE FOR PO/PSO Mapping

- The course outcomes are mapped with POs and PSOs to bring the correlation between CO-PO-PSO.
- Mapping is done based on the hours allocated to cover a PO coming under a particular CO.
- Correlation is graded as HIGH (Weightage = 3), MODERATE (Weightage = 2) and LOW (Weightage = 1) based on the ratio of allocated hour to cover a particular PO/PSO to total number of hours allocated to cover a particular CO.
  - Time allocated to cover a PO/PSO≥30% of the Total time allocated to cover a CO, is graded as HIGH
  - Time allocated to cover a PO/PSO<30% and ≥15% of the Total time allocated to cover a CO, is graded as MODERATE
  - Time allocates to cover a PO/PSO< 15%, of the Total time allocated to cover a CO is graded as LOW
- The CO-PO-PSOs for all the courses are formed and consolidated.
- The curriculum followed is significant enough to correlate the entire COs with POs and PSOs.
- It has been decided by the PAC, if the curriculum fails to address any PO or PSO to reach 60% of the target given to HIGH level of mapping is identified as a gap.

- **PO/PSO attainment = Respective PO weightage * CO Attainment**

3.3.2 Provide results of evaluation of PO&PSO (40) Institute Marks : 40.00

PO Attainment

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C101	0.83	1.26	PO3	PO4	0.56	PO6	PO7	PO8	PO9	PO10	0.45	0.45
C102	1.8	0.6	0.6	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C103	1.8	1.8	1.8	PO4	1.8	1.67	PO7	PO8	1.67	1.8	PO11	1.67
C104	1.87	1.25	PO3	PO4	PO5	PO6	1.42	PO8	1.32	PO10	PO11	PO12
C105	1.87	1.67	1.67	PO4	PO5	PO6	PO7	1.8	1.87	1.67	1.67	PO12
C106	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	2.2	PO11	PO12
C107	PO1	PO2	PO3	PO4	PO5	0.9	PO7	0.85	PO9	1.67	PO11	0.85
C108	PO1	PO2	PO3	PO4	PO5	0.9	PO7	0.85	PO9	1.67	PO11	0.85
C109	PO1	PO2	PO3	PO4	PO5	0.78	PO7	PO8	PO9	PO10	PO11	PO12
C110	0.16	0.11	0.11	PO4	0.05	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C111	1.87	1.35	0.54	PO4	1.35	PO6	PO7	1.91	1.91	PO10	PO11	1.35
C112	1.78	1.19	PO3	PO4	PO5	0.59	0.59	PO8	PO9	0.59	PO11	0.59
C113	PO1	PO2	1.92	PO4	2.5	1.67	PO7	1.42	1.32	PO10	PO11	1.57
C114	1.87	1.67	1.85	PO4	1.67	PO6	1.87	PO8	PO9	PO10	PO11	PO12
C115	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	1.85	2.01	PO11	0.89
C116	PO1	PO2	PO3	PO4	PO5	PO6	PO7	2.78	0.88	PO10	PO11	PO12
C117	2.01	2.58	1.98	PO4	1.98	PO6	1.78	PO8	PO9	PO10	PO11	PO12
C201	1.61	1.02	0.73	PO4	PO5	0.45	0.16	0.12	PO9	PO10	PO11	PO12
C202	2	0.8	0.11	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C203	0.9	0.9	0.66	1.42	0.12	0.12	PO7	PO8	0.36	0.36	0.36	0.6
C204	1.79	1.19	0.6	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C205	1.66	1.45	1.04	PO4	1.66	PO6	PO7	PO8	PO9	PO10	PO11	1.04
C206	2.06	1.39	0.29	PO4	0.14	0.56	0.14	PO8	0.14	0.14	0.14	0.14
C207	0.4	0.8	0.8	PO4	PO5	0.8	1.6	PO8	PO9	PO10	PO11	0.8
C208	0.32	PO2	PO3	PO4	PO5	0.48	PO7	PO8	0.79	0.31	0.79	0.63
C209	1.67	1.35	1.67	1.25	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C210	1.3	0.78	1.3	0.65	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C211	1.8	1.35	0.97	1.15	0.54	0.45	PO7	PO8	0.54	PO10	PO11	0.78
C212	1.35	1.35	1.35	1.35	2.08	0.54	1.15	1.15	PO9	PO10	0.54	1.05
C213	2.72	1.75	2.14	PO4	2.53	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C214	0.95	1.9	1.71	PO4	1.9	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C215	2.08	1.85	1.45	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C216	PO1	PO2	PO3	PO4	PO5	1.45	1.1	2.65	PO9	PO10	PO11	0.87
C301	1.56	1.04	0.52	0.56	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C302	1.35	1.15	0.85	1.22	0.54	0.54	PO7	PO8	0.55	PO10	PO11	1.05
C303	2.05	1.22	1.22	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C304	2.15	1.85	2.15	1.35	1.1	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C305	2.05	1.37	1.37	1.37	2.05	PO6	PO7	PO8	0.68	0.68	0.68	0.68
C306	0.9	0.9	0.66	PO4	0.12	0.12	PO7	0.36	PO9	PO10	PO11	0.6
C307	PO1	1.35	PO3	PO4	PO5	1.05	0.97	PO8	PO9	0.78	PO11	PO12
C308	0.69	PO2	PO3	PO4	PO5	PO6	PO7	PO8	0.69	PO10	0.69	0.69
C309	0.65	PO2	PO3	PO4	PO5	PO6	PO7	1.29	1.29	0.65	0.65	PO12
C310	1.1	0.97	1.1	PO4	1.22	PO6	PO7	PO8	1.22	1.22	PO11	0.61
C311	1.79	1.43	1.31	1.43	1.2	PO6	PO7	PO8	0.6	0.6	PO11	0.6
C312	1.32	0.94	0.47	PO4	PO5	PO6	0.47	PO8	PO9	PO10	PO11	0.47
C313	2.67	1.54	1.30	PO4	PO5	PO6	1.38	PO8	PO9	PO10	PO11	PO12
C314	1.56	1.22	1.38	PO4	1.88	PO6	PO7	PO8	0.97	PO10	PO11	1.15
C315	1.02	PO2	PO3	PO4	1.56	PO6	PO7	1.58	0.54	1.56	1.54	0.54
C316	0.5	1	1	0.33	0.5	0.5	1	0.5	0.5	0.5	0.5	0.5
C401	2.06	1.37	PO3	PO4	PO5	0.69	PO7	PO8	PO9	PO10	PO11	PO12
C402	1.85	1.59	1.23	0.49	0.37	PO6	PO7	PO8	0.36	PO10	PO11	0.62
C403	1.31	1.44	PO3	PO4	0.81	PO6	PO7	PO8	PO9	PO10	PO11	0.53
C404	1.31	1.16	1.31	PO4	1.45	PO6	PO7	PO8	1.45	0.73	PO11	0.73
C405	1.87	1.25	1.25	PO4	0.62	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C406	2.8	2.33	PO3	PO4	PO5	PO6	2.74	PO8	2.75	1.02	1.67	PO12
C407	PO1	PO2	PO3	PO4	PO5	0.97	0.95	1.54	PO9	PO10	PO11	0.54
C408	1.23	PO2	0.92	PO4	1.39	PO6	PO7	PO8	PO9	PO10	PO11	1.39
C409	1.05	PO2	0.88	PO4	1.21	PO6	PO7	PO8	PO9	PO10	PO11	1.15

C410	1.85	PO2	PO3	PO4	2.75	PO6	PO7	2.78	0.88	2.78	2.78	0.88
C411	1.13	0.76	0.63	0.25	PO5	PO6	0.37	PO8	PO9	PO10	PO11	0.37
C412	1.18	0.92	1.31	PO4	PO5	1.31	PO7	PO8	PO9	PO10	PO11	0.66
C413	1.87	PO2	PO3	PO4	2.88	PO6	PO7	2.76	0.85	2.84	2.84	0.85
C414	PO1	PO2	PO3	PO4	2.88	2.88	2.88	2.88	2.88	2.88	PO11	2.84
C415	0.24	0.71	0.47	PO4	PO5	PO6	PO7	0.71	0.71	0.71	0.71	PO12
PO Attainment	1.63	1.40	1.22	1.09	1.45	0.93	1.27	1.59	1.15	1.33	1.13	0.92

PO Attainment Level

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
Direct Attainment	1.50	1.28	1.11	0.99	1.36	0.88	1.21	1.55	1.10	1.28	1.07	0.85
InDirect Attainment	2.17	1.88	1.66	1.51	1.79	1.11	1.5	1.76	1.33	1.53	1.36	1.19

PSO Attainment

Course	PSO1	PSO2
C101	PSO1	PSO2
C102	PSO1	PSO2
C103	1.67	1.8
C104	0.62	PSO2
C105	1.8	1.67
C106	PSO1	PSO2
C107	PSO1	PSO2
C108	PSO1	PSO2
C109	PSO1	PSO2
C110	PSO1	PSO2
C111	PSO1	PSO2
C112	PSO1	PSO2
C113	PSO1	1.87
C114	1.87	1.67
C115	PSO1	PSO2
C116	PSO1	PSO2
C117	1.98	1.84
C201	1	0.43
C202	2	0.67
C203	0.3	0.9
C204	1.19	0.6
C205	1.45	1.04
C206	2.06	0.97
C207	PSO1	PSO2
C208	0.47	PSO2
C209	0.45	PSO2
C210	1.95	0.65
C211	2.04	1.28
C212	1.35	0.98
C213	0.97	0.97
C214	2.85	1.90
C215	1.79	1.45
C216	0.87	PSO2
C301	1.04	0.52
C302	2.15	1.05
C303	0.68	0.68
C304	1.67	1.1
C305	1.37	0.68
C306	0.3	0.9
C307	PSO1	PSO2
C308	0.69	0.69
C309	0.65	1.29
C310	0.61	0.61
C311	0.6	PSO2
C312	0.94	0.47
C313	1.55	PSO2
C314	1.56	PSO2
C315	1.58	1.58
C316	1.17	0.33
C401	2.06	0.69

C402	1.23	0.62
C403	1	0.56
C404	0.73	0.73
C405	0.62	0.62
C406	PSO1	1.54
C407	0.54	0.54
C408	0.92	1.08
C409	0.78	0.89
C410	2.78	2.78
C411	1.76	1.26
C412	1.31	0.66
C413	2.84	2.84
C414	0.87	2.85
C415	0.95	0.47
PSO Attainment	1.41	1.20

PSO Attainment Level

Course	PSO1	PSO2
Direct Attainment	1.30	1.11
InDirect Attainment	1.85	1.58

4 STUDENTS' PERFORMANCE (150) Total Marks 113.85

:

Table 4.1

Item (Information to be provided cumulatively for all the shifts with explicit headings, wherever applicable)	2024-25 (CAY)	2023-24 (CAYm1)	2022-23(CAYm2)	2021-22(CAYm3)	2020-21(CAYm4)	2019-20 (CAYm5)	2018-19 (CAYm6)
Sanctioned intake of the program(N)	60	60	60	60	60	60	0
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)	47	60	21	42	36	45	0
Number of students admitted in 2nd year in the same batch via lateral entry (N2)	0	1	2	4	2	1	0
Separate division students, If applicable (N3)	0	0	0	0	0	0	0
Total number of students admitted in the programme(N1 + N2 + N3)	47	61	23	46	38	46	0

Table 4.2

Year of entry	Total No of students admitted in the program (N1 + N2 + N3)	Number of students who have successfully graduated without backlogs in any semester/ year of study (Without Backlog means no compartment or failures in any semester/ year of study)			
		I year	II year	III year	IV year
2024-25 (CAY)	47	0	0	0	0
2023-24 (CAYm1)	61	27	0	0	0
2022-23 (CAYm2)	23	10	10	0	0
2021-22 (CAYm3)	46	21	13	12	0
2020-21 (LYG)	38	17	12	11	10
2019-20 (LYGm1)	46	30	25	24	24
2018-19 (LYGm2)	0	0	0	0	0

Table 4.3

Year of entry	Total No of students admitted in the program (N1 + N2 + N3)	Number of students who have successfully graduated in stipulated period of study) [Total of with Backlog + without Backlog]			
		I year	II year	III year	IV year
2024-25 (CAY)	47	0	0	0	0
2023-24 (CAYm1)	61	54	0	0	0
2022-23 (CAYm2)	23	18	20	0	0
2021-22 (CAYm3)	46	41	41	41	0
2020-21 (LYG)	38	36	38	37	37
2019-20 (LYGm1)	46	45	46	45	44
2018-19 (LYGm2)	0	0	0	0	0

4.1 Enrolment Ratio (20) Total Marks 16.00

Institute Marks : 16.00

	N (From Table 4.1)	N1 (From Table 4.1)	Enrollment Ratio [(N1/N)*100]
2024-25 (CAY)	60	47	78.33
2023-24 (CAYm1)	60	60	100.00
2022-23 (CAYm2)	60	21	35.00

Average [(ER1 + ER2 + ER3) / 3] : 71.11

Assessment : 16.00

4.2 Success Rate in the stipulated period of the program (40) Total Marks 24.23

4.2.1 Success rate without backlogs in any semester / year of study (25) Institute Marks : 9.75

Item	Latest Year of Graduation, LYG (2020-21)	Latest Year of Graduation minus 1, LYGm1 (2019-20)	Latest Year of Graduation minus 2 LYGm2 (2018-19)
X Number of students admitted in the corresponding First year + admitted in 2nd year via lateral entry and seperated division, if applicable	38.00	46.00	0.00
Y Number of students who have graduated without backlogs in the stipulated period	10.00	24.00	0.00
Success Index [SI = Y / X]	0.26	0.52	0.00

Average SI [(SI1 + SI2 + SI3) / 3] : 0.39

Assessment [25 * Average SI] : 9.75

4.2.2 Sucess rate in stipulated period (15) Institute Marks : 14.48

Item	Latest Year of Graduation, LYG (2020-21)	Latest Year of Graduation minus 1, LYGm1 (2019-20)	Latest Year of Graduation minus 2 LYGm2 (2018-19)
X Number of students admitted in the corresponding First year + admitted in 2nd year via lateral entry and seperated division, if applicable	38.00	46.00	0.00
Y Number of students who have graduated in the stipulated period	37.00	44.00	0.00
Success Index [SI = Y / X]	0.97	0.96	0.00

Average SI[(SI1 + SI2 + SI3) / 3]: 0.96

Assessment [15 * Average SI] : 14.48

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

4.3 Academic Performance in Third Year (15) Total Marks 10.73

Institute Marks : 10.73

Academic Performance	CAYm3 (2021-22)	LYG (2020-21)	LYGm1 (2019-20)
Mean of CGPA or mean percentage of all successful students(X)	7.15	7.11	7.55
Total number of successful students(Y)	41.00	37.00	45.00
Totalnumber of students appeared in the examination(Z)	41.00	38.00	46.00
API [X*(Y/Z)]:	7.15	6.92	7.39

Average API [(AP1 + AP2 + AP3)/3] : 7.15

Assessment [1.5 * AverageAPI] : 10.73

4.4 Academic Performance in Second Year (15) Total Marks 10.49

Institute Marks : 10.49

Academic Performance	CAYm2 (2022-23)	CAYm3 (2021-22)	LYG (2020-21)
Mean of CGPA or mean percentage of all successful students(X)	7.19	7.01	7.40
Total number of successful students (Y)	20.00	41.00	38.00
Total number of students appeared in the examination (Z)	20.00	45.00	38.00
API [X * (Y/Z)]	7.19	6.39	7.40

Average API [(AP1 + AP2 + AP3)/3] : 6.99

Assessment [1.5 * AverageAPI] : 10.49

4.5 Placement, Higher Studies and Entrepreneurship (40) Total Marks 32.40

Institute Marks : 32.40

Item	LYG (2020-21)	LYGm1 (2019-20)	LYGm2 (2018-19)
Total No of Final Year Students(N)	37.00	45.00	0.00
No of students placed in the companies or government sector(X)	23.00	35.00	0.00
No of students admitted to higher studies with valid qualifying scores(GATE or equivalent State or National Level tests, GRE, GMAT etc.) (Y)	5.00	0.00	0.00
No of students turned entrepreneur in engineering/technology (Z)	3.00	0.00	0.00
x + y + z =	31.00	35.00	0.00
Placement Index [(X+Y+Z)/N] :	0.84	0.78	0.00

Average Placement [(P1 + P2 + P3)/3] : 0.81

Assessment [40 * Average Placement] : 32.40

Program Name : Aeronautical Engg.

Assessment Year Name : CAYm1

S.No	Student Name	Enrollment No	Employee Name	Appointment No
1	Puneeth M	1GD20AE021	Aviotron Aerospace Pvt Ltd	24-01
2	Dhana Raj D R	1GD20AE010	Aviotron Aerospace Pvt Ltd	24-02
3	Kumari Menaka Bharathi	1GD20AE018	Aviotron Aerospace pvt ltd	24-03
4	S Karan	1GD20AE023	Aviotron Aerospace pvt ltd	24-04
5	Shaestha Taranam	1GD20AE028	Aviotron Aerospace pvt ltd	24-05
6	Skanda Navada P	1GD20AE030	Aviotron Aerospace pvt ltd	24-06
7	Vadakkekara Ramesh Roopesh	1GD20AE034	Aviotron Aerospace pvt ltd	24-07
8	Kavan Sagar	1GD20AE015	Aviotron Aerospace pvt ltd	24-08
9	Mohammad Nizal	1GD20AE014	SSD Pte Ltd	24-09
10	Gagan D	1GD20AE012	Academor	24-10
11	Abhishek S	1GD20AE003	Niveshartha	24-11
12	Varun Reddy	1GD20AE036	Tsalla Aerospace	24-12
13	Abdul Razak	1GD20AE002	Tek Works	24-13
14	Dhamini S	1GD20AE009	Tekworks	24-14
15	Divyashree Harthi T	1GD20AE011	Academor	24-15
16	Keerthan K L	1GD20AE016	Tekworks	24-16
17	Kiran C S	1GD20AE017	Tekworks	24-17
18	M P Tashwan Sarathi	1GD20AE019	Academor	24-18
19	Sahana Ghorpade	1GD20AE024	Academor	24-19
20	Sandhya	1GD20AE026	Academor	24-20
21	Shabaaz Khan	1GD20AE027	Tekworks	24-21
22	Syed Sulthan K	1GD20AE031	Tekworks	24-22
23	Tejaswini S	1GD20AE032	Academor	24-23

Assessment Year Name : CAYm2

S.No	Student Name	Enrollment No	Employee Name	Appointment No
1	Gouthami N	1GD19AE010	Q spiders and J Spiders	23-01
2	Manoj N S	1GD19AE019	Cognizant	23-02
3	Anil Kumar Nayaka	1GD19AE002	Lufthansa Technik Services India	23-03
4	Anupama M Augustine	1GD19AE003	Umlaut Pvt Ltd	23-04
5	Hoysala S	1GD19AE011	Global Unique Engineering	23-05
6	Kruthika K	1GD19AE013	Lufthansa Technik Services India	23-06
7	Manoj M R	1GD19AE018	Gopalan Aerospace India Pvt Ltd	23-07
8	Naveen M	1GD19AE020	Kadet defense Systems Pvt Ltd	23-08
9	Nisarga Mahesh	1GD19AE021	Rangsons Aerospace Pvt Ltd	23-09
10	Pavana C N	1GD19AE023	Global Unique Engineering	23-10
11	Priyanka G	1GD19AE028	Lufthansa Technik Service India	23-11
12	Pooja S	1GD19AE024	Gopalan Aerospace India Pvt Ltd	23-12
13	Praveen R	1GD19AE027	Byju's	23-13
14	Rangaswamy S R	1GD19AE031	Star Airlines	23-14
15	Saba Afshaan A	1GD19AE034	Turing minds.AI	23-15
16	Shyamala C N	1GD19AE036	Gopalan Aerospace India Pvt Ltd	23-16
17	Sneha	1GD19AE037	Roboclick Infotech Pvt Ltd	23-17
18	Soniya K	1GD19AE038	Umlaut Pvt Ltd	23-18
19	Sudeep K S	1GD19AE039	Kadet defense Systems Pvt Ltd	23-19
20	Syed Ifthikar Ul Hassan	1GD19AE040	General Aeronautics Pvt Ltd	23-20
21	Venu N	1GD19AE042	Art park	23-21
22	Yashika Achari	1GD19AE044	Scandron Pvt Ltd	23-22
23	Aishwarya J Saravana	1GD20AE400	Q spiders and J Spiders	23-23
24	Channamma	1GD19AE005	Eleation	23-24
25	Deepak G	1GD19AE006	Gopalan Aerospace India Pvt Ltd	23-25
26	Ganavi G	1GD19AE009	Eleation	23-26
27	Ruksar Khanum B J	1GD19AE033	Gopalan Aerospace India Pvt Ltd	23-27
28	Pooja S	1GD20AE026	Gopalan Aerospace India Pvt Ltd	23-28
29	Pruthvish R	1GD20AE029	Gopalan Aerospace India Pvt Ltd	23-29
30	Pooja A	1GD20AE025	Cognizant	23-30
31	Rakshith P	1GD19AE030	Gopalan Aerospace India Pvt Ltd	23-31
32	Madhava Naidu	1GD19AE015	Gopalan Aerospace India Pvt Ltd	23-32
33	Sahana T	1GD19AE035	Gopalan Aerospace India Pvt Ltd	23-33
34	Mahima	1GD19AE017	Dronix Technologies Pvt Ltd	23-34
35	Rashi Jain	1GD19AE032	FlyB Technologies	23-35

Assessment Year Name : CAYm3

No record exist(s)

4.6 Professional Activities (20) Total Marks 20.00

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

Institute Marks : 5.00

The Department of Aeronautical Engineering has an MOU with Aeronautical Society of India (AeSI) and department established Gopalan Research Innovation and Training Centre (GRIT)

Student Association [Eagle] is a professional student body actively working in the department for overall development of student skills by organizing the following workshops, industrial visits, guest lectures, technical quiz, student project exhibition and seminars.

Under the guidance of AeSI, the Student Association and Club organize a variety of events to provide students with a platform for exchanging ideas and information. These activities cover a wide range of interests, including curriculum-related discussions, insights into the job market, guidance on higher studies, exploration of emerging technologies in Aeronautical Engineering

These events Encourage team work and self-reliance among students.

At the National level Fixed Wing RC Aircraft Competition held on October 25th and 26th at Jain University , our talented team consisting of Karanam Vaishnavi, Revathin N Marihal, Abhishek S, Dilip N, ANushree N soared above the rest, winning the Best Innovation and Design Award.

Fig. 4.6.1.1 Students recieving best innovation award for their RC Plane at Jain University.

Team G371 ((https://www.linkedin.com/company/department-of-aeronautical-engineering-gopalan-college-of-engineering-and-management-bangalore/)Gowtham Y V (https://www.linkedin.com/in/gowtham-y-v-411619319/), Kirankumari Bhatt (https://www.linkedin.com/in/kirankumari-bhatt-87893528b/), Pratish Gudalkar (https://www.linkedin.com/in/pratish-gudalkar-b82a0b231/), Shekar G C (https://www.linkedin.com/in/shekar-g-c-0972722a3/), Shashank P) represewnting Department of Aeronautical Engineering, Gopalan College of Engineering and Management, Bangalore (https://www.linkedin.com/company/department-of-aeronautical-engineering-gopalan-college-of-engineering-and-management-bangalore/), have made it to the Top 5 at the prestigious VII National Aerospace Conceptual Design Competition (NACDeC-VII), organized by The The Aeronautical Society of India (https://www.linkedin.com/company/aerosociety/)! Our team tackled a challenging problem statement provided by ISRO - Indian Space Research Organization (https://www.linkedin.com/company/officialisro/) , designing an innovative Martian UAV for atmospheric exploration on Mars.

Fig.4.6.1.2 Students recieving award in NACDeC VII

The GRIT Centre hosted a weekly workshop on "CATIA: Sketching, Part Design, and Assembly," conducted by Prof. Rajashekharreddy H G, Assistant Professor at GCEM. Aimed at providing hands-on experience with CATIA, a pivotal computer-aided design software in engineering, the workshop covered sketching, part design, and assembly techniques. A total of 78 enthusiastic students participated, eager to explore CATIAs features.

Fig.4.6.1.3 Workshop Flyer

"Workshop on MATLAB for Aeronautical/Aerospace Applications" was held at GCEM every Friday and was conducted by Prof. Praveen N, Assistant Professor, Dept. of Aernoautical Engineering. The purpose of the workshop was to familiarize students and professionals with the use of MATLAB in the field of aeronautical and aerospace engineering. Prof. Praveen then went on to cover the basics of MATLAB programming, including variables, arrays, functions, and scripts. He also discussed advanced topics such as plotting, image processing, and optimization techniques. The Workshop on "MATLAB for Aeronautical/ Aerospace Applications" was a successful event that provided valuable insights into the use of MATLAB in the field of aeronautical and aerospace engineering. The participants appreciated the opportunity to learn about the various tools and techniques available in MATLAB and how they can be applied in their work.

Fig.4.6.1.4 Workshop Flyer

A workshop on “Indigenous Development of Unmanned Aerial Vehicle (UAV)” was organized by the department on 15th of October, 2022. The primary purpose of the workshop was to consider and discuss the potential of indigenous development of UAVs to meet requirements such as transportation systems, autonomous vehicles (automatic driving), Intelligent traffic control, and collaborative environmental perception, which require extensive data transmission and information exchange that are beyond the capability of conventional connected vehicles. The workshop was inaugurated by Dr. R Karuna Murthy, Academic Administrator, GCEM. Mr. Prashanth Radhakrishnan, CEO & Founder, Dautya Aerospace Pvt. Ltd. Goa & Bengaluru participated as resource person and threw light on flexibility and high maneuverability of UAVs that can quickly provide wireless connection to ground vehicles in the mobile environment. Post – presentation, hands on training was conducted

for students on assembling and flying of agricultural drones. Prof. Rajshekharreddy and Dr. Shravan Koundinya Vutukuru coordinated the workshop in which 159 students took active participation.

Fig.4.6.1.5 Workshop Flyer

GCEM hosted a "Technical Talk on GATE: Preparation and Future Prospects" on December 14, 2022, conducted by Prof. Saviraj A S, Assistant Professor at the institute. Aimed at guiding students on Graduate Aptitude Test in Engineering (GATE) preparation and its future prospects, the talk provided comprehensive insights. Prof. Saviraj commenced with an overview of GATE, elucidating eligibility criteria and the diverse streams it covers. Key topics for effective preparation were discussed, emphasizing a fundamental understanding and recommending study materials like textbooks, practice questions, and mock tests. The speaker delved into the future prospects of GATE, elucidating opportunities for higher studies and career benefits.

Fig.4.6.1.6 Technical Talk Flyer

The Department of Aeronautical Engineering at Gopalan College of Engineering and Management (GCEM) collaborated with Aero Innovation & Skill Centre of the Aeronautical Society of India – Bangalore Branch to organize GOAERO 2K23, a National Level Intercollegiate Aero Techno-Cultural Fest on 10th and 11th April, 2023. The event was supported by Gopalan Aerospace, Bumblebee, Spranktronics, Vinayaka Energy Tek, Edall Systems, INDLAB Equipment's, New Tech Engineers, Captronic Systems, and Aeolus Aerotech. The event witnessed the participation of over 300 students from 36 Engineering colleges hailing from 10 states of the country. Eminent personalities, including researchers, academicians, and technocrats in the Aerospace domain, graced the occasion with their presence and delivered technical talks.

Fig.4.6.1.7 GoAero Event picture.

The Skill Enhancement Program, held from May 17 to June 2, 2023, by the Skill Lab of the Aeronautical Engineering Department, proved to be an enriching experience for students seeking practical proficiency in various engineering and design software tools. The program focused on familiarizing students with CATIA, SOLIDWORKS, XFLR5, JAVA FOIL, QBLADE, ANSYS FLUENT, and MATLAB, with specific objectives guiding the learning process.

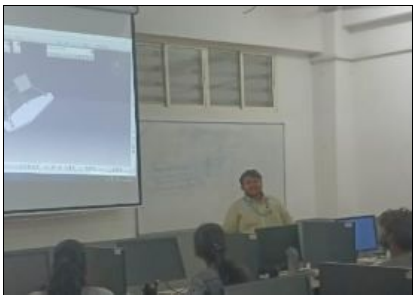


Fig.4.6.1.8 Skill Enhancement program.

The Skill Lab in the Department of Aeronautical Engineering at Gopalan College of Engineering and Management, in collaboration with Enmaz Engineering Services Pvt. Ltd., organized a one-day workshop on Advanced Vibration Analysis on June 16, 2023. This collaborative effort brought together esteemed experts in the field to deliver informative technical talks and hands-on sessions. Dr. V Shankar, Ex-scientist from NAL, set the tone as the keynote speaker, addressed the audience on "Introduction to Vibration Testing" during the morning session. The workshop seamlessly transitioned into hands-on sessions, with Mr. D.S. Ramakrishna, Chief Technology Officer at Enmaz Engineering Services Pvt. Ltd., Participants engaged in a guided hands-on session where they conducted vibration testing, gaining practical insights under Mr. Ramakrishnas expert guidance.

Fig.4.6.1.9 Workshop on Advanced Vibration Analysis

The Department of Aeronautical Engineering is organizing a month long national Level Hackathon "Smart Aero Hackathon 2023" for the engineering students across the country from 15-11-2023 to 15-12-2023.

The primary objective of the Smart Aero Hackathon 2023 is to provide a platform for GCEM students:
To apply their knowledge of MATLAB, Python, CATIA, and ANSYS in real-world aeronautical/aerospace engineering challenges.
To promote teamwork, problem-solving, and communication skills by working in multidisciplinary teams of five members, including a designated team leader.
To think creatively and develop cutting-edge solutions to complex aeronautical/aerospace problems.

Fig.4.6.1.10 Smart Aero Hackathon 2023 flyer.

The department of Aeronautical Engineering is organized "Mold & Build - A Hands On Session for Composite Fabrication" a two day hands on session for the students of GCEM and other enginerering colleges on composites fabrication on 1st and 2nd DEcember, 2024.. Composite materials are synthetically crafted substances produced by combining two or more constituent materials that exhibit notably distinct physical or chemical properties. The amalgamation of these materials results in a final product endowed with improved characteristics not inherent in the individual components alone. Based on the matrix material used, reinforced composite materials are categorized into Polymer Matrix Composites (PMC), Metal Matrix Composites (MMC), and Ceramic Matrix Composites (CMC).

Fig.4.6.1.11 Mold & Build - A Hands On Session for Composite Fabrication

GCEM Aeronauticals 3rd-semester cohort recently engaged in an exhilarating RC Modeling Workshop. Guiding the hands-on session were Mr. Tharun Surya DJ, President of ENVICTUS, along with Mr. Varun Reddy and Mr. Gagan Devaraj, both Members of ENVICTUS. Enthusiasts delved into the intricacies of Remote Control aircraft design, mastering the art of aeronautical modeling. The event wasnt just about flights; it was a journey into hands-on engineering. GCEM continues to shape future aviators, fostering skills essential for the aerospace industry. The skies are no longer the limit; they are a canvas for the creative minds at GCEM Aeronautical!

Fig.4.6.1.12 RC Modeling Workshop

Department of Aeronautical Engineering in association with Gopalan Research Innovation and Training Centre (GRIT) has organized a workshop on "OPEN VSP" on 27th of January, 2024 for Aeronautical Engineering students. The workshop on Open VSP, also known as Open Vehicle Sketch Pad, is an open-source parametric aircraft geometry tool originally developed by NASA was aimed to provide the knowledge on geometry tools for designing aircraft.

Fig.4.6.1.13 Open VSP workshop.

RADIANCE, a celebration in honor of National Science Day, took place on 28th February 2024 at the Seminar Hall of Gopalan College of Engineering and Management. The event aimed to inspire scientific temperament, foster innovation, and commemorate the remarkable achievements of Indian science. Dr. P V Venkitakrishnan, a distinguished scientist with a profound contribution to the field, graced the occasion as the Chief Guest.

Fig.4.6.1.14 Techtalk on national space day

4.6.2 Publication of technical magazines, newsletters, etc. (5) Institute Marks : 5.00

The Department of Aeronautical Engineering has published two News Letters EMPYREAN - I & II in the academic years 2022-23 and 2023-24 respectively

The Department of Aeronautical Engineering has made significant progress in knowledge sharing and engagement by publishing two newsletters, **EMPYREAN - I** and **EMPYREAN - II**, during the academic years 2022-23 and 2023-24, respectively. These publications serve as a comprehensive record of departmental activities, achievements, and insights into aeronautical advancements. Each issue highlights contributions from students, faculty, and collaborators, offering a platform for disseminating innovative ideas and celebrating milestones. The newsletters are a testament to the departments commitment to fostering an informed and dynamic academic community.

Fig 4.6.2.1 Department News Letter

Final Year students has published a journal paper corresponding to their project work in an International Journal in the year 2023

Table 4.6.2.1 Students publication

S.No	Name of the Student	USN	Name of the Journal	Name of the Guide	Title of the Paper	DOI
1	Praveen N	---	Journal of Polymer and Composites	Dr. G. Purushotham	Effect of Carbon Fibre on Mechanical Porperties and Corrosion behaviour of Aluminium-6061 for Aerospace Applications	10.37591/JoPC
	Anil Kumar Nayaka M	1GD19AE002				
	Sneha	1GD19AE037				

4.6.3 Participationininter-institute events by students of the program of study (10) Institute Marks : 10.00

Fundings Received for Student Projects

Academic year	Title of the project	Name of the guide	Team leader name	Sanctioned amount(in Rs.)
2023-24	Design, Develop, And Testing A Hybrid Quadcopter-Rover (Drover) For Rescue Operations, Disaster Management, And Industrial Surveillance	Mr. Saviraj A S	Mr. Vadakkerkara Ramesh Roopesh Ms. Shaestha Taranum	8500
2023-24	Design And Fabrication Of Modular Electric Propulsion System For UAVs.	Mr. Suprith M	Mr. Skanda Navada Mr. Rishith K Mr. S. Karan Mr. Tharun Surya D. J.	7000
2023-24	Design And Development Of 3dof Testing Mechanism For UAV	Mr. Suprith M	Mr. Gagan D. Ms. Hemashree D. S. Mr. Syed Sulthan K. Mr. Varun Reddy	7000
2023-24	Design And Development Of Robust Icosahedron Frame Capable Of Absorbing And Dissipating Collision Forces, Minimising The Risk of Critical Damage To Unmanned Aerial System	Dr. Manjunath S V	Mr. M. P. Thashwan Sarathi Ms. Amrutha M. Ms. Sahana Ghorpade Ms. Varshini A. R.	9500
2022-23	Experimental Investigation Of Mechanical Properties And Corrosion Behavior Of Metallic And Composite Panel For Aerospace Application.	Dr. Purushotham G	Ms. Sneha Mr. Anil Kumar Nayaka M	7000

STUDENT PUBLICATIONS

Sl. No.	Date	Event	Organizing Institute	Students' Name	USN
1	27th & 28th of April, 2023	International Conference on ***Recent Trends in Science, Engineering and Management (ICRTSEM 2023)***	Er. Perumal Manimekalai College of Engineering, Hosur, TN	Ms. Gouthami N	1GD19AE010
				Mr. Manoj M R	1GD19AE018
				Ms. Aishwarya J S	1GD20AE400
2	23rd & 24th of May, 2023	National Virtual Conference on ***"Advances in Materials, Manufacturing and Simulation (AMMS 3.0)"***	Department of Aeronautical Engineering, Bannari Amman Institute of Technology, Sathyamangalam, TN	Mr. Anil Kumar Nayaka M	1GD19AE002
				Ms. Ganavi G	1GD19AE009
				Ms. Sneha	1GD19AE037
				Mr. Tharun M	1GD19AE014
				Mr. Praveen R	1GD19AE027
				Mr. Rangaswamy S R	1GD19AE031
3	16th & 17th of June, 2022	***GETOCS V2.0***, the Intercollegiate Technical Fest	Department of Electronics and Communication Engineering, GCEM, Bangalore	Mr. Rishith R Kumar	1GD20AE022
				Mr. S Karan	1GD20AE023

STUDENT ACHIEVEMENTS IN VARIOUS INSTITUTES INSIDE AND OUT SIDE THE STATE

Sl. No.	Date	Event	Organizing Institute	Students' Name	USN	Achievement/ Role/ Position
1	08th of January, 2021	Webinar on ***"Your Eyes During Covid 19 and Beyond"***	Dept. of Basic Science, Gopalan College of Engineering and Management & Narayana Nethralaya, Bangalore	Mr. Neeraj P S	1GD20AE020	**Participation**
				Mr. Rishith R Kumar	1GD20AE022	
				Mr. S Karan	1GD20AE023	
2	19th of January, 2021	Webinar on ***"Mathematics Education in National Education Policy – 2020"***	Coimbatore Institute of Technology, Coimbatore	Ms. Shaestha Taranum	1GD20AE028	**Participation**
3	26th of March, 2021	Career Talk on ***"How to Ace your Summer Internship"***	INTERNSHALA	Mr. Abdul Razak	1GD20AE002	**Participation**
				Ms. Divyashree Harthi T	1GD20AE011	
				Mr. Keerthan K L	1GD20AE016	
				Mr. Neeraj P S	1GD20AE020	
				Mr. Rishith R Kumar	1GD20AE022	
				Mr. Shabaaz Khan	1GD20AE027	
4	3rd of June, 2021	Webinar on ***"Product Life Cycle of An Aircraft"***	Department of Aeronautical Engineering, Gopalan College of Engineering and Management,	Ms. A Pallavi	1GD20AE001	**Participation**
				Ms. Divyashree Harthi T	1GD20AE011	

			Bangalore	Mr. Keerthan K L	1GD20AE016	
				Ms. Kumari Menaka B	1GD20AE018	
				Mr. Neeraj P S	1GD20AE020	
				Mr. Shabaaz Khan N	1GD20AE027	
5	10th of June, 2021	Webinar on ***"A 360^{0} View on Emerging Technologies and its' Applications"***	Department of Aeronautical Engineering, Gopalan College of Engineering and Management, Bangalore	Mr. Abdul Razak	1GD20AE002	**Participation**
				Ms. Divyashree Harthi T	1GD20AE011	
				Mr. Keerthan K L	1GD20AE016	
				Ms. Kumari Menaka B	1GD20AE018	
				Mr. Neeraj P S	1GD20AE020	
				Mr. Rishith R Kumar	1GD20AE022	
				Mr. Shabaaz Khan N	1GD20AE027	
				Ms. Shaestha Taranum	1GD20AE028	
6	15th of June, 2021	Virtual Webinar on ***"Composite Materials – Fabrication and Testing"***	Department of Aeronautical Engineering, Gopalan College of Engineering and Management, Bangalore	Mr. Abdul Razak	1GD20AE002	**Participation**
				Mr. Keerthan K L	1GD20AE016	
				Mr. Neeraj P S	1GD20AE020	
				Mr. Rishith R Kumar	1GD20AE022	
				Mr. S Karan	1GD20AE023	
				Mr. Shabaaz Khan N	1GD20AE027	
7	18th of June, 2021	Webinar on ***"Complexity and Excitement of Aerospace Control"***	Department of Electronics and Communication Engineering, Dr. Ambedkar Institute of Technology, Bengaluru	Mr. Neeraj P S	1GD20AE020	**Participation**
				Mr. Rishith R Kumar	1GD20AE022	
8	25th & 26th of June, 2021	**GOAERO** – A Two Days National Level Webinar on ***"Enabling Technologies & Opportunities in Aerospace Engineering"***	Department of Aeronautical Engineering, Gopalan College of Engineering and Management, Bangalore	Mr. Neeraj P S	1GD20AE020	**Participation**
				Mr. Rishith R Kumar	1GD20AE022	
				Mr. Tharun Surya D J	1GD20AE033	
9	11th & 12th of August, 2021	Two days National Level Webinar on ***"Advances in Mathematical Sciences and its Applications in Engineering and Research (AMSAER) – 2021"***	Department of Mathematics, Bapuji Institute of Engineering & Technology, Davanagere	Mr. Abdul Razak	1GD20AE002	**Participation**
10	8th of September, 2021	National Level Project Competition ***"INNOVATIONS – 2021"***	CMR Institute of Technology, Bangalore	Mr. Gagan D	1GD20AE012	**SECOND PLACE**
				Mr. Rishith R Kumar	1GD20AE022	
				Mr. S Karan	1GD20AE023	
				Mr. Tharun Surya D J	1GD20AE033	
11	15th of September, 2021	***Engineers' Day*** Celebrations	Rajalaxmi Engineering College, Chennai	Mr. Gagan D	1GD20AE012	**First Prize in Idea Presentation for paper titled "Hybrid Power Connate"**
				Mr. Tharun Surya D J	1GD20AE033	
12	11th of October, 2021	***Glider*** Workshop	Rachisi Solutions Pvt. Ltd.	Ms. A Pallavi	1GD20AE001	**Participation**
				Ms. Divyashree Harthi T	1GD20AE011	
				Mr. Keerthan K L	1GD20AE016	
				Ms. Kumari Menaka B	1GD20AE018	
				Mr. Neeraj P S	1GD20AE020	
				Mr. S Karan	1GD20AE023	
				Mr. Shabaaz Khan N	1GD20AE027	
				Ms. Shaestha Taranum	1GD20AE028	
				Mr. Tharun Surya D J	1GD20AE033	
13	15th of October, 2021	***KALAM 2021***	Aeronautical Engineering Association, Kumaraguru College of Technology	Mr. Tharun Surya D J	1GD20AE033	**Participation**
14	15th of December, 2021	***Cardiopulmonary Resuscitation (CPR)*** Training	Manipal Hospital, Whitefield	Mr. Abdul Razak	1GD20AE002	**Training**
				Mr. Gagan D	1GD20AE012	
				Ms. Kumari Menaka B	1GD20AE018	
				Mr. Shabaaz Khan N	1GD20AE027	
15	10th of February, 2022	Webinar on ***"Aerospace Industry – An Overview"***	Department of Aeronautical Engineering, Gopalan College of Engineering and Management, Bangalore	Ms. A Pallavi	1GD20AE001	**Participation**
				Ms. Divyashree Harthi T	1GD20AE011	
				Mr. Keerthan K L	1GD20AE016	
				Ms. Kumari Menaka B	1GD20AE018	
				Mr. S Karan	1GD20AE023	
				Mr. Shabaaz Khan N	1GD20AE027	
				Mr. Tharun Surya D J	1GD20AE033	
				Mr. Anil Umesh Bhat	1GD21AE400	
16	21st of February, 2022		The Institution of Green Engineers (IGEN)	Mr. Tharun Surya D J	1GD20AE033	**Commendation Certificate for Specia Contribution**

17	28th of February, 2022	***National Science Day*** Event	Department of Aerospace Engineering, Agni College of Technology	Ms. Hemashree D S	1GD20AE013	**Third Place in Quiz**
				Mr. Rishith R Kumar	1GD20AE022	
				Mr. Tharun Surya D J	1GD20AE033	
				Mr. Rishith R Kumar	1GD20AE022	**Third Place in Poster Presentation**
18	7th of April, 2022	Webinar on ***"Career Guidance Program for Engineering Graduates"***	Eazy BTech	Ms. Manasa S	1GD21AE020	**Participation**
19	June, 2022	***"Manthan 2022"*** – Business Plan Competition	Federation of Karnataka Chambers of Commerce & Industry, Bangalore	Mr. Gagan D	1GD20AE012	**Participation**
				Mr. Tharun Surya D J	1GD20AE033	
20	11th of June, 2022	Inter-Collegiate Cultural Fest ***"REVELATIONS' 22"***	Alumni Association and NHCE Extra-Curricular Clubs, New Horizon College of Engineering, Bangalore	Mr. S Karan	1GD20AE023	**Second Place in Dumb Charades**
				Mr. Tharun Surya D J	1GD20AE033	
21	14th of June, 2022	Blood Donation Camp	Rashtrotthana Blood Centre, Bangalore	Mr. Tharun Surya D J	1GD20AE033	**Certificate of Appreciation**
22	16th & 17th of June, 2022	***GETOCS V2.0***, the Intercollegiate Technical Fest	Department of Electronics and Communication Engineering, Gopalan College of Engineering and Management, Bangalore	Mr. Gagan D	1GD20AE012	**First Place in Technical Paper Presentation**
				Mr. Rishith R Kumar	1GD20AE022	
				Mr. S Karan	1GD20AE023	
				Mr. Tharun Surya D J	1GD20AE033	
				Mr. Gagan D	1GD20AE012	**Participation in Technical Paper Presentation**
				Mr. Rishith R Kumar	1GD20AE022	
				Mr. S Karan	1GD20AE023	
23	1st of July, 2022	***Annual Sports Meet***	Gopalan College of Engineering and Management & Gopalan School of Architecture & Planning, Bangalore	Ms. K J Harshitha	1GD21AE015	**First Place in Throw Ball**
				Ms. Pavithra V	1GD21AE025	
				Mr. Shabaaz Khan N	1GD20AE027	**First Place in Volley Ball**
				Mr. Dhana Raj D R	1GD20AE010	**Second Place in Volley Ball**
				Mr. Tharun Surya D J	1GD20AE033	
				Mr. Anil Umesh Bhat	1GD21AE400	
				Mr. Tharun Surya D J	1GD20AE033	**Second Place in Shotput**
24	11th to 15th of July, 2022	5 Days Live Training on ***Advanced Excel***	iTech Analytic Solutions, Bengaluru	Ms. Bhavana Sharma	1GD21AE007	**Participation**
				Ms. K J Harshitha	1GD21AE015	
				Ms. K S Harisha	1GD21AE016	
				Ms. Manasa S	1GD21AE020	
				Ms. Prity Sonar	1GD21AE027	
				Ms. Shambhavi	1GD21AE032	
25	23rd July to 10th Sept. 2022	***Python*** Programming Workshop	Rachisi Solutions Pvt. Ltd.	Ms. A Pallavi	1GD20AE001	**Participation**
				Mr. Dhana Raj D R	1GD20AE010	
				Ms. Divyashree Harthi T	1GD20AE011	
				Mr. Gagan D	1GD20AE012	
				Ms. Shaestha Taranum	1GD20AE028	
				Mr. Anil Umesh Bhat	1GD21AE400	
26	6th & 7th of August, 2022	Two Days Workshop on ***"Aeromodelling & Rocket Propulsion"***	HYPSTUMA & Dream Aerospace	Ms. A Pallavi	1GD20AE001	**Participation**
				Mr. Abdul Razak	1GD20AE002	
				Mr. Dhana Raj D R	1GD20AE010	
				Ms. Divyashree Harthi T	1GD20AE011	
				Mr. Keerthan K L	1GD20AE016	
				Mr. Rishith R Kumar	1GD20AE022	
				Mr. Shabaaz Khan N	1GD20AE027	
27	18th to 20th of August, 2022	Hands-On Workshop on ***"Design & Analysis of Aircraft Using Open VSP"***	Ozhil Academy & GRIT, Gopalan College of Engineering and Management, Bangalore	Mr. Rishith R Kumar	1GD20AE022	**Participation**
				Mr. Tharun Surya D J	1GD20AE033	
28	23rd of July to 10th of September, 2022	Training on ***Python Programming***	Rachisi Solutions Pvt. Ltd.	Mr. Abdul Razak	1GD20AE002	**Participation**
				Ms. Kumari Menaka B	1GD20AE018	
				Mr. Neeraj P S	1GD20AE020	
				Mr. S Karan	1GD20AE023	
				Mr. Shabaaz Khan N	1GD20AE027	
29	15th of October, 2022	Workshop on ***Indigenous Development of UAV***	Dautya Aerospace Pvt. Ltd., Bangalore	Ms. Bhavana Sharma	1GD21AE007	**Participation**
				Ms. K J Harshitha	1GD21AE015	
				Ms. K S Harisha	1GD21AE016	
				Ms. Maheshwari M	1GD21AE019	

				Ms. Manasa S	1GD21AE020	
				Ms. Pavithra V	1GD21AE025	
				Ms. Shambhavi	1GD21AE032	
				Mr. Shashikumar	1GD21AE033	
				Mr. Shekar G C	1GD21AE034	
				Ms. Swathi O	1GD21AE038	
				Ms. A Pallavi	1GD20AE001	
				Ms. Divyashree Harthi T	1GD20AE011	
				Ms. Kumari Menaka B	1GD20AE018	
				Mr. Rishith R Kumar	1GD20AE022	
				Mr. Tharun Surya D J	1GD20AE033	
30	31st of October, 2022	Three Weeks Intra-Institute Internship on ***Soft Skills, Invited Talks by Industry Experts and Skill Labs***	Training and Placement Department, Gopalan College of Engineering and Management, Bangalore	Mr. Ankith Kumar Padhy	1GD21AE002	**Successful Completion**
				Ms. Bhavana Sharma	1GD21AE007	
				Ms. Jennifer Vasanth	1GD21AE014	
				Ms. K J Harshitha	1GD21AE015	
				Ms. K S Harisha	1GD21AE016	
				Ms. Maheshwari M	1GD21AE019	
				Ms. Manasa S	1GD21AE020	
				Ms. Pavithra V	1GD21AE025	
				Ms. Prity Sonar	1GD21AE027	
				Ms. Shambavi	1GD21AE032	
				Mr. Shashi Kumar H S	1GD21AE033	
				Mr. Shekar G C	1GD21AE034	
				Mr. Simiyon Raj	1GD21AE035	
				Ms. Swathi O	1GD21AE038	
31	28th of November, 2022	***National Science Day Event – 2K22***	Agni College of Technology, Chennai	Mr. Gagan D	1GD20AE012	**Third Place in Poster Presentation**
				Mr. Rishith R Kumar	1GD20AE022	
				Ms. Hemashree D S	1GD20AE013	
				Mr. Rishith R Kumar	1GD20AE022	**Third Place in Quiz**
				Mr. Tharun Surya D J	1GD20AE033	
32	30th of November, 2022	***67th Kannada Rajyotsava***	Gopalan College of Engineering and Management, Bangalore	Mr. Gowtham Y V	1GD21AE011	**First Place in Dance**
				Ms. Prity Sonar	1GD21AE027	
				Ms. Shambhavi	1GD21AE032	
				Mr. Gagan D	1GD20AE012	**First Place in Quiz**
				Mr. Gagan D	1GD20AE012	**Third Place in Solo Singing**
				Mr. Neeraj P S	1GD20AE020	**Participation**
33	20th of December, 2022	***International Civil Aviation Day***	HAL Management Academy	Mr. S Karan	1GD20AE023	**First Prize in Pick & Speak Competition**
				Mr. Rishith R Kumar	1GD20AE022	**Second Prize in Crossword Puzzle Competition**
				Ms. A Pallavi	1GD20AE001	**Participation in Paper Plane Competition**
				Ms. Divyashree Harthi T	1GD20AE011	
				Ms. Kumari Menaka B	1GD20AE018	**Participation in Crossword Puzzle Competition**
34	4th to 6th of January, 2023	***AERO MANIA 2023***, Techfest Event	Department of Aerospace Engineering, RV College of Engineering, Bangalore	Mr. Rishith R Kumar	1GD20AE022	**First Prize in Scratch Squash**
				Mr. Tharun Surya D J	1GD20AE033	
35	27th & 28th of January, 2023	***Boeing IIT National Aeromodelling Competition***	Boeing and IIT Madras at IITDM Kancheepuram	Mr. Dhana Raj D R	1GD20AE010	**Participation**
36	15th of February, 2023	***Garuda's 1st National Drone Quiz Contest 2023***	Garuda Aerospace Pvt. Ltd., Chennai, Indian Drone Association and Aerospace and Aviation Sector Skill Council	Mr. Abdul Razak	1GD20AE002	**Participation**
				Mr. Neeraj P S	1GD20AE020	
				Mr. Rishith R Kumar	1GD20AE022	
				Mr. Shabaaz Khan N	1GD20AE027	
37	4th of March, 2023	***Digital 101 Journey***	IT – IteS SSC NASSCOM	Ms. K J Harshitha	1GD21AE015	**Successful Completion**
				Ms. Manasa S	1GD21AE020	
				Ms. Prity Sonar	1GD21AE027	
38	16th of March, 2023	***Sentia 2023*** – A State Level Intercollegiate Cultural, Technical and Management Fest	Mangalore Institute of Technology & Engineering, Moodbidri	Mr. S Karan	1GD20AE023	**First Place in Tech Debate**
				Mr. Gagan D	1GD20AE012	**First Place in Technical Paper Presentation**
				Mr. Tharun Surya D J	1GD20AE033	
39	25th of March, 2023	***Annual Sports Meet***	Gopalan College of Engineering and Management, Bangalore	Mr. Tharun Surya D J	1GD20AE033	**Second Place in Shotput**
				Ms. K J Harshitha	1GD21AE015	**Third Place in 4x100 Meter Relay**
				Ms. Prity Sonar	1GD21AE027	

				Mr. Shekar G C	1GD21AE034	**Second Prize in Aircraftistry – 3D Modeling**
				Mr. S Karan	1GD20AE023	**Second Prize in Group Dance**
				Mr. Neeraj P S	1GD20AE020	**Organizer**
				Ms. A Pallavi	1GD20AE001	**Event Coordinator**
				Mr. Abdul Razak	1GD20AE002	
				Mr. Dhana Raj D R	1GD20AE010	
				Ms. Divyashree Harthi T	1GD20AE011	
				Mr. Keerthan K L	1GD20AE016	
				Ms. Kumari Menaka B	1GD20AE018	
				Mr. Rishith R Kumar	1GD20AE022	
				Mr. S Karan	1GD20AE023	
				Mr. Shabaaz Khan N	1GD20AE027	
				Ms. Shaestha Taranum	1GD20AE028	
				Mr. Tharun Surya D J	1GD20AE033	
				Mr. Anil Umesh Bhat	1GD21AE400	
40	10th & 11th of April, 2023	***"GOAERO 2K23"*** – A National Level Intercollegiate Aero Techno-Cultural Fest	Department of Aeronautical Engineering, Gopalan College of Engineering and Management, Bangalore	Ms. K J Harshitha	1GD21AE015	**Participation**
				Ms. K S Harisha	1GD21AE016	
				Ms. Maheshwari	1GD21AE019	
				Ms. Manasa S	1GD21AE020	
				Ms. Prity Sonar	1GD21AE027	
				Ms. Shambhavi	1GD21AE032	
				Mr. Shashikumar H S	1GD21AE033	
				Mr. Shekar G C	1GD21AE034	
				Mr. Simiyon Raj	1GD21AE035	
				Ms. A Pallavi	1GD20AE001	
				Ms. Divyashree Harthi T	1GD20AE011	
				Mr. Gagan D	1GD20AE012	
				Ms. Kumari Menaka B	1GD20AE018	
				Mr. Neeraj P S	1GD20AE020	
				Mr. Rishith R Kumar	1GD20AE022	
				Mr. S Karan	1GD20AE023	
				Mr. Syed Sulthan K	1GD20AE031	
				Mr. Anil Umesh Bhat	1GD21AE400	
41	24th of April, 2023	***Sanction of Rs. 7,000/- funds for Students' Project***	Karnataka State Council for Science and Technology, Government of Karnataka, Bengaluru	Mr. Anil Kumar Nayaka M	1GD19AE002	**KSCST Funded Project**
				Ms. Sneha	1GD19AE037	
42	27th & 28th of April, 2023	International Conference on ***Recent Trends in Science, Engineering and Management (ICRTSEM 2023)***	Er. Perumal Manimekalai College of Engineering, Hosur, TN	Ms. Gouthami N	1GD19AE010	**Presentation of Paper entitled "Design and Structural Analysis of Hexacopter Frame"**
				Mr. Manoj M R	1GD19AE018	
				Ms. Aishwarya J S	1GD20AE400	
43	27th & 28th of April, 2023	Regional Consultative Workshop for ***Technology Vision 2047***	Department of Science & Technology, GoI at IISc, Bangalore	Mr. Gagan D	1GD20AE012	**Participation**
				Mr. Neeraj P S	1GD20AE020	
				Mr. Rishith R Kumar	1GD20AE022	
				Mr. S Karan	1GD20AE023	
				Mr. Tharun Surya D J	1GD20AE033	
44	18th & 19th of May, 2023	***Vertechx 11.0*** – An Intercollegiate National Level Technical Fest	MVJ College of Engineering, Bangalore	Mr. Gowtham Y V	1GD21AE011	**Participation**
				Mr. Shashi Kumar H S	1GD21AE033	
				Mr. Shekar G C	1GD21AE034	
45	23rd & 24th of May, 2023	National Virtual Conference on ***"Advances in Materials, Manufacturing and Simulation (AMMS 3.0)"***	Department of Aeronautical Engineering, Bannari Amman Institute of Technology, Sathyamangalam, TN	Mr. Anil Kumar Nayaka M	1GD19AE002	**Presentation of Paper entitled "Experimental Investigation of Mechanical Properties and Corrosion Behavior of Metallic and Composite Panel for Aerospace Applications"**
				Ms. Ganavi G	1GD19AE009	
				Ms. Sneha	1GD19AE037	
				Mr. Tharun M	1GD19AE014	**Presentation of Paper entitled "Study of Mechanical Properties and Characterization of Natural Fiber Composites Hybridized with Carbon Fiber"**
				Mr. Praveen R	1GD19AE027	
				Mr. Rangaswamy S R	1GD19AE031	

5 FACULTY INFORMATION AND CONTRIBUTIONS (200) Total Marks 171.59

Institute Marks :

Name	PAN No.	University Degree	Date of Receiving Degree	Area of Specialization	Research Paper Publications	Ph.D Guidance	Faculty receiving Ph.D during the assessment year	Current Designation	Date (Designated as Prof/ Assoc. Prof.).	Initial Date of Joining	Association Type	At present working with the Institution(Yes/ No)	In case of NO, Date of Leaving	IS HOD?
Dr. G.Purushotham	AUAPP2540E	ME/M. Tech and PhD	21/01/2017	Mechanical Engineering Sciences	6	2	1	Professor	10/08/2022	10/08/2022	Regular	Yes		Yes
Dr. Manjunath S V	CYJPS4592Q	ME/M. Tech and PhD	24/02/2023	Aerospace Propulsion Technology	4	0	1	Associate Professor	02/05/2023	01/10/2021	Regular	Yes		No
Dr. Velmurugan P	AEYPV5267J	ME/M. Tech and PhD	05/05/2017	Mechanical Engineering Sciences	3	0	0	Associate Professor	23/06/2022	23/06/2022	Regular	Yes		No
Saviraj A S	FTEPS9746B	M.E/M.Tech	09/05/2015	Machine Design	3	0	0	Assistant Professor		06/06/2022	Regular	Yes		No
Dr. Konada Sirikonda Mallik	DNPPK7624K	ME/M. Tech and PhD	13/07/2020	Machine Design	2	0	0	Assistant Professor		04/07/2022	Regular	Yes		No
Suprith M	FMPPS0946M	M.E/M.Tech	24/03/2022	Aerospace Structure and Design	2	0	0	Assistant Professor		07/07/2023	Regular	Yes		No
Likhith Raj R	EURPR7645H	M.E/M.Tech	28/07/2023	Aerospace Propulsion Technology	0	0	0	Assistant Professor		11/07/2023	Regular	Yes		No
Sivaramraj M	GCLPS0238H	M.E/M.Tech	01/07/2022	Aeronautical Engineering	2	0	0	Assistant Professor		13/05/2023	Regular	Yes		No
Thean Mani Rajan Kanagaraj	AZIPK3223A	M.E/M.Tech	09/08/2003	Aerospace Engineering	2	0	0	Assistant Professor		12/09/2024	Regular	Yes		No
Dr. Ramesh G	ABBPR6099N	M.Sc. (Engineering) and PhD	18/09/2004	Aeronautical Engineering	0	0	0	Professor	01/04/2019	01/04/2019	Regular	No	20/06/2024	No
Rajashekhara reddy H G	AJZPH6755K	M.E/M.Tech	09/01/2018	Aerospace Propulsion Technology	2	0	0	Assistant Professor		08/02/2021	Regular	No	15/05/2024	No
Adarsh K	BARPA2590R	M.E/M.Tech	17/05/2017	Thermal Sciences and Energy Systems	1	0	0	Assistant Professor		04/07/2023	Regular	No	15/05/2024	No
Praveen N	BCNPP9699G	M.E/M.Tech	19/11/2021	Astronomy & Space Engineering	1	0	0	Assistant Professor		04/08/2021	Regular	No	18/08/2023	No
Jini Raj R	AZVPJ8576C	M.E/M.Tech	01/04/2014	Aeronautical Engineering	1	0	1	Assistant Professor		06/03/2023	Regular	No	30/09/2023	No
Shakthi Prasad M	CZSPS7206P	M.E/M.Tech	01/06/2012	Aeronautical Engineering	0	0	0	Assistant Professor		21/04/2022	Regular	No	31/05/2023	No

5.1 Student-Faculty Ratio (20)

Total Marks 14.00

Institute Marks : 14.00

UG

No. of UG Programs in the Department 1

Aeronautical Engineering						
Year of Study	CAY (2024-25)		CAYm1 (2023-24)		CAYm2 (2022-23)	
	Sanction Intake	Actual admitted through lateral entry students	Sanction Intake	Actual admitted through lateral entry students	Sanction Intake	Actual admitted through lateral entry students
2nd Year	60	1	60	2	60	4
3rd Year	60	2	60	4	60	2
4th Year	60	4	60	2	60	1
Sub-Total	**180**	**7**	**180**	**8**	**180**	**7**
Total	**187**		**188**		**187**	
Grand Total	187		188		187	

PG

No. of PG Programs in the Department 0

Grand Total			

SFR

No. of UG Programs in the Department 1

No. of PG Programs in the Department 0

Description	CAY(2024-25)	CAYm1 (2023-24)	CAYm2 (2022-23)
Total No. of Students in the Department(S)	187 **Sum total of all (UG+PG) students**	188 **Sum total of all (UG+PG) students**	187 **Sum total of all (UG+PG) students**
No. of Faculty in the Department(F)	8 **F1**	11 **F2**	9 **F3**
Student Faculty Ratio(SFR)	23.38 **SFR1=S1/F1**	17.09 **SFR2=S2/F2**	20.78 **SFR3=S3/F3**
Average SFR	20.42 **SFR=(SFR1+SFR2+SFR3)/3**		
F=Total Number of Faculty Members in the Department (excluding first year faculty)			

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

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

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

	Total number of regular faculty in the department	Total number of contractual faculty in the department
CAY(2024-25)	8	0
CAYm1(2023-24)	11	0
CAYm2(2022-23)	9	0

Average SFR for three assessment years : 20.42

Assessment SFR : 14

5.2 Faculty Cadre Proportion (25) Total Marks 25.00

Institute Marks : 25.00

Year	Professors		Associate Professors		Assistant Professors	
	Required F1	Available	Required F2	Available	Required F3	Available
CAY(2024-25)	1.00	1.00	2.00	2.00	6.00	5.00
CAYm1(2023-24)	1.00	2.00	2.00	2.00	6.00	7.00
CAYm2(2022-23)	1.00	2.00	2.00	1.00	6.00	6.00
Average Numbers	1.00	1.67	2.00	1.67	6.00	6.00

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

5.3 Faculty Qualification (25) Total Marks 17.59

Institute Marks : 17.59

	X	Y	F	FQ = 2.5 x [(10X + 4Y) / F)]
2024-25(CAY)	4	4	9.00	15.56
2023-24(CAYm1)	5	6	9.00	20.56
2022-23(CAYm2)	4	5	9.00	16.67

Average Assessment : 17.59

5.4 Faculty Retention (25)

Total Marks 15.00

Institute Marks : 15.00

Description	2023-24	2024-25
No of Faculty Retained	7	5
Total No of Faculty	9	9
% of Faculty Retained	78	56

Average : 67.00

Assessment Marks : 15.00

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

Total Marks 20.00

Institute Marks : 20.00

Innovations by the Faculty in Teaching and Learning

Department of Aeronautical Engineering Faculty members follow innovative teaching and learning methodologies in the classroom in addition to the conventional teaching methods to encourage the students to acquire knowledge and enhance their analyzing and thinking skills for active involvement in their learning process.

The teaching-learning process is designed to be student-centric and caters to the diverse students of the Institution. The process is defined to identify slow learners, fast-learners and aid both. Competent faculties not only restrict themselves to curriculum delivery but also do counseling and extend support in extended activities. Remedial Classes are conducted for slow learners. The Internal Assessment is diversified with due weight-age for assignments.

The program outcomes and the program specific outcomes are defined by the Department Academic Board in line with the NBA guidelines. The COs stipulated by the university is refined by the faculty whenever required. The PSOs, POs and COs are circulated through the Website, in the classrooms and laboratories, through the display boards.

The Faculties are utilizing multimedia components for better teaching learning process, such as Laptops, LCD projectors, LAN network, demonstrative models, Videos for demonstration practical application of concepts etc. in the classroom. This will help the faculties to improve the effectiveness in conducting the lecture and to create interest in students to learn the lesson topic.

Table.5.5.1 Various Multimedia Tools used for teaching learning

Tools	Methods	Representation
Flipped Class room	Flipped class room is an instructional strategy and type of blended learning that reverses the traditional learning environment by delivering instructional content often online, outside of class room.	Slides & Video
Solid Edge	The utilization of models or strong demonstrating systems for better comprehension of ideas.	Solid Models (3D and 2D)
Animations and video	The utilization of models or strong demonstrating systems for better comprehension and analysis of ideas.	Visualization (Reports)
Physical Models	The models made of wood and rubber to demonstrate the concepts, ideas or working principle of a process.	Prototypes

In addition to the Multimedia tools, the faculty member adopts various methods for improving the teaching learning process, such as:

Brainstorming

The objective of brain storming sessions is to encourage the students to involve in brainstorming sessions to develop novel methods to solve the problem pertaining to the lesson topic. A meeting to generate new ideas is a valuable instrument to create thoughts or discover answers for a problem. These sessions investigate and grow an understudys capacity to think fundamentally and along the side. As students get effectively included, the sessions help the way toward learning and enhance scholarly execution. Conceptualizing in the classroom propel students to unreservedly express their thoughts and concepts on a subject.

Group Discussion

In Group Discussion, the students formally or informally discuss about an academic topic within certain fields. This implementation could be seen as an activity to make a student bring out his or her own ideas without any obligation. In the Laboratories, a group of students are given a topic or allowed to choose the topic of their choice to generate ideas on it for a better understanding of concepts apart from the curriculum.

To list a few, following tools are used.
1. PPT Presentations

2.Using Smart Board for presentation of topics

3. Encourage to take-up NPTEL /MOOC /Coursera/Add-on courses.

4. Giving Assignments /quizzes to enhance the reading capability of the subject materials.

5. Sharing e-Books and Videos links .

6. In-house Internships for skill development and technical proficiency.

7. The department organizes webinars for enhancing the technical knowledge of the students in area of VLSI, Machine Learning, IOT in collaboration with Industries.

A. Work Available on the institute Website

1. PPTs and Notes
2. Question banks
3. Previous years Question papers
4. Model Question papers
5. Assignments
6. Flipped Class Rooms
7. Videos by Faculty Members
8. Google class or Online Classes

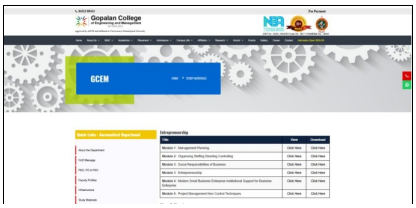


Fig.5.5.1 Department website

https://www.gopalancolleges.com/gcem/Aeronautical-engineering-study-material.html

B. Work Available for Peer Review and Critique

1. Subject Notes and PPTs
2. Lab Manuals
3. Internal Assessment Papers and Scheme and Solution
4. Content Beyond Syllabus

C. The work reproducible and developed further by other Scholars

All the documents such as subject notes, lab manuals, internal assessment papers, scheme and solution are made available in the department, which can be referred by department faculty members and they are allowed to review content and can suggest for modification if required. They are also allowed to add additional materials and contents as required in notes and lab manual.

D. Statement of clear goals, use of appropriate methods, significance of results, effective presentation and reflective critique

Following methods will be used to support the students to achieve their goals:

1. Use of ICT tools - Smart Board for teaching

2. Lecture delivered by expert resource persons

3. e-Tutorials of NPTEL and Video links

4. The students PPT presentation on the subject topics and group discussion in the classroom

5. Mentorship process to identify slow learners, fast learners and attend Remedial Classes to improve their learning ability.

6. Encouraging students to present technical papers in International and national Conferences

7. Conducting Workshops on latest developments in technical area, ability enhancement, personality development , behavioral changes and communication for overall nurturing of students making them industry ready students.

8. Conducting value added courses by both Skill academy and the Department to bridge the gap between industry and academia.

9. Industry – Institute Interaction, Invited expert Talk, Seminars and webinar

10. Encouraging and supporting students to caary out projects on their innovative ideas.

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

Total Marks 15.00

Institute Marks : 15.00

Name of the faculty	Max 5 Per Faculty		
	2023-24 (CAYm1)	2022-23 (CAYm2)	2021-22 (CAYm3)
Dr. G.Purushotham	2.00	2.00	2.00
Dr. Manjunath S V	3.00	3.00	5.00
Dr. Velmurugan P	3.00	2.00	2.00
Saviraj A S	2.00	3.00	2.00
Dr. Konada Sirikonda Mallik	2.00	2.00	2.00
Suprith M	2.00	3.00	0.00
Likhith Raj R	2.00	2.00	0.00
Sivaramraj M	2.00	2.00	0.00
Dr. Ramesh G	0.00	2.00	0.00
Rajashekhara reddy H G	0.00	2.00	3.00
Praveen N	0.00	3.00	3.00
Jini Raj R	2.00	2.00	0.00
Shakthi Prasad M	0.00	2.00	2.00
Sum	20.00	30.00	21.00
RF = Number of Faculty required to comply with 20:1 Student Faculty Ratioas per 5.1	9.35	9.40	9.35
Assessment [3*(Sum / 0.5RF)]	12.83	19.15	13.48

Average assessment over 3 years: 15.15

5.7 Research and Development (30)

Total Marks 25.00

5.7.1 Academic Research (10)

Institute Marks : 10.00

Scholastic research incorporates inquire about publications, Ph.D. direction, and personnel accepting Ph.D. amid the evaluation time frame.

Table 5.7.1.1: Faculty received PhD during Assessment Period

Sl.No	Name of the Faculty	University/ Research Centre	Year	Guide
1	Manjunath S V	Visvesvaraya Technological University	2022	Dr. Abdul Sharief
2	JiniRaj R	Anna University	2023	Dr. J Bruce Ralphin Rose

Table 5.7.1.2: Faculty pursuing PhD

Sl.No	Name of the Faculty	University/ Research Centre	Year of registration	Guide
1	Thean Mani Rajan Kanagaraj	Anna University	2024	Dr. Suresh V
2	Praveen N	VTU / NMIT	2023	Dr. Vinayak N
3	Mr. Rajashekhara Reddy H G	Dayanand Sagar University	2022	Dr. Ramkumar

Table 5.7.1.3: Faculty guiding the research scholars.

Sl.No	Name of the Guide	Name of Research Scholar	Research Center/ University	Year of Registration
1	Dr. G.Purushotham	Vishwas	VTU/MITE	2018

Table 5.7.1.4: Faculty Guided the research scholars and Awarded PhD.

Sl.No	Name of the Guide	Name of Research Scholar	Research Center/ University	Year of PhD Awarded
1	Dr. G.Purushotham	Kumaraswamy J	VTU	2022

Table 5.7.1.5: Patents Published/Filled

S.No	Title	Inventors	Assignee	Application or Publication or Patent Number/ Granting Organization	Status / Date
1	Large diesel engineer aftertreatment system	Thean Mani Rajan Kanagaraj, Ajay Patel, Deep Bandyopadhyay, Raghavendra Tantry	Progress Rail Locomotive Inc, IL (USA)	US 10648392 B2 / USPTO	Granted- May, 2020
2	Engine system having mixing mechanism for exhaust and injected fluid and engine exhaust treatment strategy	Thean Mani Rajan Kanagaraj, Xiao Fu, Mahesh Munirajappa, Deep Bandyopadhyay, Haridasa Raghavendra Tantry	Progress Rail Locomotive Inc, IL (USA)	US 2017/0362987 A1 / USPTO	Allowed- Oct-2019
3	Cognitive Unmanned Track Examiner (C.U.T.E)	Dr. Manjunath S V, et al	Gopalan College of Engineering and Management	-	Applied
4	Treadmill based Gait training device	Dr. D S Mohan Varma, Dr. Mohankumar K. V., Suprith M, Clinton Wilson B V	Vellore Institute of Technology	202341088409/ India Patent Office	Published - 03/2024
5	A Gimbal Inspection assembly with a vibration mitigation module	Dr. Ramesh G Dr. Purushotham G, Mr. Suprith M, Mr. Saviraj A S	Gopalan College of Engineering and Management	202441033781/ India Patent Office	Applied
6	Design And Fabrication Of Modular Electric Propulsion System For UAV's	Dr. Purushotham G, Mr. Suprith M, Mr. Tharun Surya D.J, Mr. Rishith R Kumar, Mr. Skanda Navada P, Mr. S Karan	Gopalan College of Engineering and Management	India Patent Office	Registered

Research Publications:

1. Dr. G.PURUSHOTHAM

International Journals:

1. Kumaraswamy, Vijay Kumar & Dr. G.Purushotham, "Evaluation of the microstructure and thermal properties of (ASTM A 494 M grade) nickel alloy hybrid metal matrix composites processed by sand mold casting", International Journal of Ambient Energy:Taylor & Francis, https://doi.org/10.1080/01430750.2021.1927836 2021.
2. Kumaraswamy, Vijay Kumar & Dr. G.Purushotham, "A review on mechanical and wear properties of ASTM A 494 M grade nickel-based alloy metal matrix composites", in ELSEVIER Materials Today: Proceedings, https://doi.org/10.1016/j.matpr.2020.07.499, Pg. 2027-2032, 2021.
3. Kumaraswamy, Dr. Vijay Kumar & Dr. G. Purushotham, "Thermal analysis of Nickel alloy/Al 2 O 3 /TiO 2 hybrid metal matrix composite in Automotive engine exhaust valve using FEA method", in Journal of Thermal Engineering: Vol. 7, No. 3, pp. 415- 428, Feb. 2021.
4. Manoj Kumar, Arpitha Holla & Dr. G.Purushotham, "Environmental Pollution Control Using Artificial Intelligence Drone", in AIP Conference Proceedings 2311, 030031 (2020); https://doi.org/10.1063/5.0034004 Published Online: 7 th December 2020.
5. Kumaraswamy, Vijay Kumar & Dr. G.Purushotham, "Effect of reinforcement on mechanical properties of Nickel alloy hybrid metal matrix composites processed by sand mould technique", in Applied Science & Engineering Progress DOI: 10.14416/j.asep.2020.11.001.
2020.
6. Sujesh Kumar, Dr. Lokesha M & Dr. G.Purushotham, "Comparative study of signal processing techniques for the diagnosis of fault in belt drives", in International Journal of Mechanical and Production Engineering Research & Developments (IJMPERD), Vol. 10, Special Issue, Pg 424-433, 2020.

7. Vidyasagar Shetty, Vijay Kumar & Dr. G.Purushotham, "Micro-Structural evolution analysis and assessment of Tribological behavior of Nickel alloy reinforced with SiO 2 and Al 2 O 3 hybrid metal matrix composites",

International Journal of Mechanical and Production Engineering Research & Developments (IJMPERD), Vol. 10, Issue 2, Pg 421-430, 2020.
8. Vidyasagar Shetty, Vijay Kumar & Dr. G.Purushotham, “Effect of SiO 2 and Al 2 O 3 on mechanical properties of ASTM A 494 M Grade Nickel alloy hybrid metal matrix composites”, Journal of Mechanical Engineering Research & Developments (JMERD), Pg 231-233, 2019.
9. Dr. G.Purushotham, Yathin K.L “Study of Mechanical Behavior for Tamarind Shell Powder and Coconut Coir Fiber Epoxy Composite for Aerospace Application”, International Journal of Trend in Scientific Research and Development (IJTSRD), International Open Access Journal, Volume 3, Pg 941-949, Nov-Dec 2018.
10. Manas Jain, Dr. G.Purushotham, “Effect of Almandine on Microstructure and Corrosion properties of Nickel super alloy (K500) composite for Aerospace Gas Turbine Application”, IOP Conference series: Material Science and Engineering 376 (2018).
11. Dr. Joel Hemanth, Dr. G.Purushotham, “Corrosion behavior of Nickel alloy (ASTM A 494 M) reinforced with Fused SiO 2 Chilled Metal Matrix Composites (MMCs) for Marine Applications”, IOP Conference series: Material Science and Engineering 225 (2017).
12. Dr. G.Purushotham, “Experimental investigation of thermal and mechanical properties on thermal barrier coatings for efficient gas turbine for automotive applications”, Indian Journal of Advances in chemical science (IJACS) 5(4), pp 216-219 (2017)
13. Dr. Joel Hemanth, G.Purushotham, “Development of Nickel alloy reinforced with fused SiO2 chilled composites and evaluation of thermal properties (Thermal conductivity & Coefficient of thermal expansion) and temperature distribution by finite element analysis (FEA)”, Open journal of composite materials, (Scientific Research Publishing) 7, pp 251- 264 (2017).
14. Dr. G.Purushotham, “Performance study of Yattria Stabilized Zirconia and Gadolinium Zirconate coating for Nickel base alloy for turbine application”, International Journal for Science and Advance Research in Technology (IJSART) Volume 3, Issue 9-Sept. (2017).
15. G.Purushotham, Dr. Joel Hemanth “Influence of fused silica and chills incorporation on corrosion, thermal and chemical composition of ASTM A 494 M grade nickel alloy”, IOP Publishing, Material Science and Engineering 149 (2016) 012042 doi:10.1088/1757.
16. G.Purushotham, Dr. Joel Hemanth “Study of physico-chemical properties of Monel M-35-1 Nickel Alloy-Fused Silica MMC for Marine application”, Indian Journal of Advances in Chemical Science (IJACS) Vol 4, Issue III, pp 235-240 (2016).
17. G.Purushotham, “Experimental investigation of Buckling strength comparison between metallic and CFRP sandwiched composite panel”, International Journal of Civil, Mechanical and Energy Science (IJCMES) Infogain Publication, Vol. 2, Issue-2, pp 21-26, Mar-Apr, (2016).
18. G.Purushotham, Dr. Joel Hemanth “Effect of chilling on soundness, micro hardness and ultimate tensile strength of Nickel Alloy-Fused silica metal matrix composite”, International Journal of Civil, Mechanical and Energy Science (IJCMES), Vol. 2, pp 29-35, (2016).
19. G.Purushotham, Dr. Joel Hemanth “Fabrication and Evaluation of Corrosion Behavior of Nickel Alloy Metal Matrix Composite with influence of chills”, TRANS TECH Publication Switzerland, Advanced Materials Research, Vol. 1119, pp 365-369 (2015).
20. Amaresh S.K, G.Purushotham “Direct and indirect vector control of induction motors using hybrid PID plus Fuzzy controller”, International Journal of Advances in Electronics and Computer Science, ISSN: 2393-2835, Volume-2, Issue-4, pp 78-82, April-2015.
21. G.Purushotham, Dr. Joel Hemanth “Action of chills on microstructure, mechanical properties of chilled ASTM A 494 M grade Nickel alloy reinforced with fused SiO 2 metal matrix composite”, ELSEVIER, Procedia Materials Science, Vol. 5C, pp 426-433 (2014).
22. G.Purushotham, Dr. Joel Hemanth “Effect of weight percentage on Mechanical properties of fused Silica particulate reinforced Nickel alloy (M 35-1) composite, with influence of chills”, TRANS TECH Publication Switzerland, Applied Mechanics & Materials, Vol. 592-594, pp
245-249 (2014).

International Conferences:

1. Manoj Kumar, Dr. G.Purushotham, “Environmental Pollution Control using Artificial Intelligent Drone”, in Frontiers in Automobile & Mechanical Engineering (FAME 2020), Sathyabama Institute of Science & Technology, Chennai, on 7 th to 9 th Aug. 2020.
2. Dr. G.Purushotham, Ajith Kumar and Sujesh Kumar “Experimental investigation of Mechanical Properties for Natural fiber hybrid Composites for Automotive/Aerospace applications”, in Global Conference on Advanced Smart and Sustainable Technologies in Engineering (GCASSTE-2020), Mangalore Institute of Technology & Engineering Moodbidri, on 30 th & 31 st Jan. 2020.
3. Sujesh Kumar, Dr. G.Purushotham “Comparative Study of Signal Processing Techniques for the Diagnosis of Fault in Belt Drives”, in Global Conference on Advanced Smart and Sustainable Technologies in Engineering (GCASSTE-2020), Mangalore Institute of Technology & Engineering Moodbidri, on 30 th & 31 st Jan. 2020.
4. Ajith Kumar Kumar, Dr. G.Purushotham “Study of Free Vibration Characteristics of Hybrid Polymer Composites”, in Global Conference on Advanced Smart and Sustainable Technologies in Engineering (GCASSTE-2020), Mangalore Institute of Technology & Engineering Moodbidri, on 30 th & 31 st Jan. 2020.
5. Manas Jain, Dr. G.Purushotham, “Effect of Almandine on Microstructure and Corrosion properties of Nickel super alloy (K500) composite for Aerospace Gas Turbine Application”, in International conference on advances in Manufacturing, Materials and Energy Engineering- (ICon MMEE 2018), Mangalore Institute of Technology & Engineering Moodbidri, on 2nd & 3rd March 2018 .
6. G.Purushotham, “Influence of fused silica and chills incorporation on corrosion, thermal and chemical composition of ASTM A 494 M Grade Nickel alloy”, in International conference on Advances in Materials & Manufacturing Applications (IconAMMA-2016), Amrita Vishwa Vidyapeetham, Bangalore, on July 14-16, 2016.
7. G.Purushotham, “Comparison of buckling strength between metallic and composite panels”, in International conference on Advanced Materials & Applications (ICAMA-2016), BMS College of Engineering, Bangalore, on June 15-17, 2016.
8. G.Purushotham, Dr. Joel Hemanth “Fabrication and Evaluation of Corrosion behavior of Nickel alloy Metal Matrix Composite with influence of Chills”, in International conference on Mechanical, Industrial and Manufacturing Technologies, MIMT-2015, MELAKA MALAYSIA, on March 6-7, 2015.
9. Amaresh S.K, G.Purushotham “Direct and indirect vector control of induction motors using hybrid PID plus Fuzzy controller”, in International Conference on Electrical, Electronics and Computer Engineering(ICEECE-2015), Institute of Research & Journals at Pune on 22 nd Feb.2015.
10. G.Purushotham, Dr. Joel Hemanth “Effect of weight percentage on Mechanical properties of fused Silica particulate reinforced Nickel alloy (M 35-1) composite, with influence of chills”, in International Mechanical Engineering Congress, 2014 (IMEC 2014), National Institute of Technology, Tiruchirappalli, on 13 th to 15 th June 2014.
11. G.Purushotham, Dr. Joel Hemanth “Action of chills on microstructure, mechanical properties of chilled ASTM A 494 M grade Nickel alloy reinforced with fused SiO 2 metal matrix composite”, in International Conference on Advances in Manufacturing and Materials Engineering, AMME 2014, NITK Surathkal on 27 th to 29 th March 2014.
12. G.Purushotham, “Effect of lead on mechanical properties and tribological characteristics of Al-Si alloy”, in International Conference on Emerging trends in Engineering ICETE 2013, NMAM Institute of Technology, Nitte on 15 th and 16 th May 2013.
13. G.Purushotham, “Effect of reinforcing lead on mechanical properties and tribological characteristics of heat treated Aluminium Silicon alloy for Automotive application.” in International Conference on Advanced materials, manufacturing, Management and Thermal Sciences AMMMT 2013 at Siddaganga Institute of Technology, Tumkur on 03 rd and 04 th May 2013.
14. G.Purushotham, “Experimental investigation of mechanical properties and tribological characteristics of Aluminium Silicon Lead alloys before and after heat treatment” in International Conference on Advanced materials and Manufacturing ICAMM 2013 at Cape Institute of Technology, Kanyakumari, on 11 th and 12 th April 2013.

National Conferences:
1. Deepika.V, G.Purushotham, “Design, Implementation & Comparative study of midnight sun concept using automatically tracking solar reflectors interfaced through PLC” in National conference on Advances in Mechanical Engineering (AME), at AMC Engineering college, Bangalore on 16 th May 2014.
2. G.Purushotham, “Experimental Characterization of Mechanical and Tribological properties of Al-Si-Pb metal matrix composites for Automotive applications.” in National Conference on Challenges in Research and Technology in coming Decades(CRT-2013), at SDMIT, Ujire on
27 th and 28 th Sep, 2013.
3. G.Purushotham, “Effect of Lead on Microstructure and Wear characteristics (Abrasive wear and Adhesive wear) of Aluminium Silicon Lead Metal Matrix Composites.” in National Conference on Smart Materials and Technologies for Emerging Electronics, NC-SMTEE-2013 at Mangalore Institute of Technology and Engineering, Moodbidre, on 8 th and 9 th March 2013.
4. G.Purushotham, Dr.T.B.Prasad, Dr.N.Lakshna Swamy, “Experimental investigation of Mechanical properties of Al-Si-Pb alloys” in National Conference on Recent Trends in Mechanical Engineering Sciences (R-TIMES-2008) at SSIT Tumkur on 21 st and 22 nd Feb 2008.

2. Dr. Manjunath S V

International Journals:
1. Manjunath S.V, Abdul Sharief, S.K. Maharana, “A Study of Nucleate Boiling Phenomenon of Water Undergoing Phase Change over Two Rotating Heated Cylinders in Tandem Arrangement at Different Spacing and Surface Roughness”, published in, International Journal for Research in Engineering Application & Management (IJREAM), Vol-08, Issue 02, pp. 21-27, May 2022.
2. Manjunath S.V, S.K. Maharana, Abdul Sharief, “Bayesian Inference of Volume Fraction of Vapor Formed During Nucleate Boiling Phenomenon of Water Undergoing Phase Change over Two Heated Cylinders in Tandem Arrangement”, published in, International Journal of Innovative Research in Technology (IJIRT), Vol. 8, Issue 12, pp. 411-418, May 2022.
3. Shabresh A, Keerthana N, Manjunath.S.V, „Numerical Analysis of Heat Transfer over Horizontal Rotating Cylinder in Presence of Axial Flow”, published in International Journal of Engineering Applied Sciences and Technology, Vol. 4, Issue 12, pp. 301-304, 2020.
4. Manjunath.S.V, S.K. Maharana , Abdul Sharief, „Study of Effects of Rotational Rate of a cylinder on the Film Boiling Phenomenon of Water Undergoing Phase Change Over Two Heated Cylinders in Tandem Arrangement”, published in, International Journal of Modern Engineering Research (IJMER), Volume.8, Issue 12, December -2018.
5. Manjunath.S.V, Monisha M, Pooja S, „Design and Structural Analysis of Main Landing Gear for Lockheed T-33 Jet Trainer Aircraft” published in, International Journal of Engineering Research and Advanced Technology (IJERAT), Volume.4, Issue 8, August -2018.
6. SK.MD.Azharuddin, Sabin Adhikari, Syed Imtiaz, Manjunath S.V, „Numerical Investigation Of Flow And Temperature Characteristics Enhancement In Tube annular Combustor’, published in International Journal of Engineering Sciences & Research Technology, Vol. 5, No. 3, pp. 151-156, 2016.
7. SK.MD.Azharuddin, Sabin Adhikari, Syed Imtiaz, Manjunath S.V, „Numerical Analysis of Combustor Flame Tube cooling”, published in International Journal of Science, Engineering and Technology Research, Volume 5, Issue 7, pp. 2366-2370, 2016.

Conferences:
1. Presented “Aerodynamic Design, Analysis and Optimization of Transonic Axial Compressor Blade with the Combination of NACA 65, Double Circular Arc (DCA) and Multi Circular Arc (MCA) Airfoil ”, 6th International Conference on Sustainable Materials and Recent Trends in Mechanical Engineering (SMARTME-2022), REVA University, Bengaluru, 8-9 July 2022.
2. Presented “Study of Effect of Rotational Rate of a Cylinder on the Volume Fraction of Vapor Formed during Nucleate Boiling Phenomenon of Water”, (Paper ID is 73), “ISBN- 978-93- 92403-23-1”, Joint Conference of ICTACEM 2021, APCATS 2021, AJSAE 2021 and AeSI 2021,
IIT-KGP, 20-22 Dec 2021.
3. Presented in 8th NCWE on “Numerical Simulation of Flow around Two Heated Circular Cylinders in Tandem Arrangement”, ISBN-978-93-5268-181-5, organized by IIT, BHU, 16-17 Dec 2016.

4. Presented in Engineering Insight into Design and Testing of Aircraft Engine Components, on “Effect of Freely Rotating Cylinder Mounted near the Trailing Edge of the Wing for Boundary Layer Separation Delay”, sponsored and organized by Institution of Engineers (India), on 19th Sept 2018.
5. Presented in National conference on “Role of Process Modelling in production of Quality Castings” in Advanced Forming Technologies, AFT-10 organized by R.V. College of Engineering, Bangalore, in 2010.
6. Presented in National level student symposium on “Tribological Characteristics of Aluminum Matrix Composites with Solid Lubricant Particulate Reinforcement” in MECHFUSION-10 organized by Don Bosco Institute of Technology, Bangalore, in 2010.

3. Dr. Velmurugan P

International Journals:

1. Karthikeyan P, Velmurugan P, George, AJ, Ram Kumar, R & Vasanth, RJ, „Experimental investigation on scaling and stacking up of proton exchange membrane fuel cells”, International Journal of Hydrogen Energy, (ELSEVIER) vol. 39, pp.11186- 11195. ISSN: 0360-3199. 2014 - Impact Factor - 3.313. https://doi.org/10.1016/j.ijhydene.2014.05.086

2. Velmurugan P, Laxshmi Narayanan, „Optimization of Design And Operating Parameters For Enhancing The Performances Of Pemfc With Serpentine FlowFields” - International Journal of Mechanical and Production Engineering Research and Development (IJMPERD) ISSN (P): 2249-6890; ISSN (E): 2249-8001 Vol. 7, Issue 4, Aug2017,447-456. https://scholar.google.com/citations?view_op=view_citation&hl=en&user=18xR3yEAAA AJ& citation_for_view=18xR3yEAAAAJ:u-x6o8ySG0sC

3. Velmurugan P, Laxshmi Narayanan, „Optimization of various Parameters for the Performance Enhancement of PEM Fuel Cell” - International Journal of Science and Technology,Vol11(1),January2018. https://pdfs.semanticscholar.org/f1d7/fbe0c333b555cfd53870b094b6b66cb60da0.pdf

4. Velmurugan P, K G. Thirugnanasambantham , Ramesh Raju , T. Sankaramoorthy , A. Kannagi , M. Chaitanya Kishore Reddy , V. Sai Koushik Chary , M.A. Mustafa and V. Ramesh Chandra “Degradation mechanism for high-temperature sliding wear in surface-modified In718 superalloy” -Cogent Engineering, TAYLOR & FRANCIS (2018), 5: 1501864 https://doi.org/10.1080/23311916.2018.1501864.

5. Laxshmi Narayanan, Velmurugan P, Karthikeyan Palaniswamy “Interdigitated Flow Channel on a Proton Exchange Membrane Fuel Cell Investigated Using the Response Surface Methodology” Transactions of FAMENA, Vol. 43 No. 2, 2019. https://doi.org/10.21278/TOF.43205.

6. P.Velmurugan, Dr.A.Kannagi, Dr.P.John Paul “Multi Slot TMI Measure Based Machine Scheduling for CNC Applications with Improved Data Security” - Journal of Advanced Research in Dynamical and Control Systems - Vol.11, Issue 12, 2019.

7. Dr.P.Velmurugan et.al “Thermal performance and analysis of a solar water heating system with heat pipe evacuated tube collector”” - International Journal of Research and Analytical Reviews e ISSN 2348 -1269, Print ISSN 2349-5138 - Pg - 228 - 231, 2019.

8. Dr.P.Velmurugan et.al “Design And Cfd Analysis Of Hair Pin Heat Exchanger at Different NaNo Fluids””- International Journal of Research and Analytical Reviews e ISSN 2348 -1269, Print ISSN 2349-5138 - Pg - 244 - 249, 2019.

9. Dr.P.Velmurugan, Dr.V.Lakshminarayanan, Jobin.C.Varghese, “Performance Study For 49 cm2 Multi Pass Flow Channel Of PEMFC” - International Journal Of Advance Engineering And Research Development, E-ISSN (O): 2348-4470 P-ISSN (P): 2348- 6406 Scientific Journal Of Impact Factor (SJIF): 5.71.

10. P. Velmurugan, P. Rathnakumar, J.Ramesh, “Design of I.C. Engine Air Cooling Fins Using FEA Analysis” - International Journal of Innovative Research Explorer, ISSN NO: 2347-6060, Volume 4, Issue 6, Nov/2017.

11. P.Velmurugan, C. Mageswaran, A. Lakshmijyothi, S. Sashikumar, “ Heat transfer Enhancement in Vertical Narrow Plates by Natural convection” - International Journal Of Current Engineering And Scientific Research (Ijcesr)Issn (Print): 2393-8374, (Online): 2394-0697, Volume-5, Issue-1, 2018 Doi: 10.21276/Ijcesr.2018.5.1.5

12. P. Velmurugan, A. Karthikeyan, R. P. Kumar, I. Prasanna , “Superior Equipment And Varnish Outlook For Gas Turbine Applications” - International Journal Of Current Engineering And Scientific Research ISSN (PRINT): 2393-8374, (ONLINE):2394- 0697,VOLUME-5, ISSUE-1, 2018 DOI: 10.21276/ijcesr.2018.5.1.1

13. Md Nizam Raza , Dr. Velmurugan P. , Mr. Vikash Kumar , “Thermal performance and analysis of a solar water heating system with heat pipe evacuated tube collector” - International Journal Of Research and Analytical Reviews e ISSN 2348 - 1269, Print ISSN 2349-5138 , 2018.

14. P.Velmurugan, Kannagi, Varsha, “Superior Fuzzy Enumeration Crop Prediction Algorithm For Big Data Agriculture Applications” - Materials Today: Proceedings - (Elsevier) Published on 13 March - 2021. https://doi.org/10.1016/j.matpr.2021.02.578.

15. T. Arunkumar, Velmurugan Pavanan , Vijay Anand Murugesan, “Infuence of Nanoparticles Reinforcements on Aluminium 6061 Alloys Fabricated via Novel Ultrasonic Aided Rheo-Squeeze Casting Method” - Metals and Materials International (SPRINGER) Published on 29 May 2021. https://link.springer.com/article/10.1007/s12540-021-01036-0

Conferences:

1. Velmurugan P et al “Macro mechanical and Water Absorption Properties of Composite Laminates with Novolac Resin and E-Glass/Sisal Fibers” International Conference on Materials Research in Science and Engineering 2021 presented at Kumaraguru college of Technology, Coimbatore on 23rd to 25th July 2021.

2. Velmurugan P et al “Interpretive Structural Modelling Approach: Implementation of Sustainability Concept and Lean in Aerospace Sectors” International Conference on Materials Research in Science and Engineering 2021 presented at Kumaraguru college of Technology, Coimbatore on 23rd to 25th July 2021.

3. Velmurugan P, “Study on Life Cycle of Solar Photovoltaic Power Systems” International conference on ICFTME 2017 Presented at Malla Reddy College of Engineering, Hyderabad on 29th and 30th November 2017.

4. Velmurugan P, “Design and Analysis of Steam Boiler used in Thermal PowerPlants” International conference on ICFTME 2017 Presented at Malla Reddy College of Engineering, Hyderabad on 29th and 30th November 2017.

5. Velmurugan P and Arjunan T, “Performance Analysis of Conventional Solar Still”, National Conference on ETIMES 2007 Presented at Bannari Amman Institute of Technology, Sathyamangalam on 19th December 2007.

4. Dr. Konada Sirikonda Mallik

Journal Publications

1. K.S.K. Mallik. et al., "An Experimental Investigation on Nano coat as bearing liner," International Journal of Engineering and Technology, 7(7), 303-305, 2018.

2. K.S.K. Mallik. et al., "An Innovative approach of Nano coat as bearing liner – An Experimental Study," International Journal of Production Engineering Research and Development, 1093-1098, 8(6), 2018.

3.K.S.K. Mallik. et al., "Nano coatings as a bearing liner – An Experimental Investigation," Journal of Computational and Theoretical Nanoscience, 16, 2148-2152, 2019.

4. K.S.K. Mallik. et al., "Nano Coat as an effective replacement for bearing liner," International Journal of Recent Technology and Engineering, 8(2), 2280-2282, 2019.

5. KSK Mallik, et al., "Nano coatings as a bearing liner – An experimental investigation," International Journal of Mechanical Engineering and Technology, 5(9), 58-63, 2018.

6. K.S.K. Mallik. et al., "A review on preparation and structural characterization studies of graphitic carbon nitride," Journal of Advanced Research in Dynamical and Control systems, 9(14), 1869-1880, 2017.

7. KSK Mallik. et al., "Modelling and Analysis of Kaplan Turbine Blade using CFD," International Journal of Engineering and Technology, 7(4), 1086-1089, 2018.

8. KSK Mallik. et al., "Design and Analysis of a Heavy Vehicle Chassis by using E-Glass Epoxy and S-2 Glass Materials," International Journal of Recent Engineering and Technology, 7,6, 903-905, 2019.

5. Dr. JiniRaj R

Journal Publications:

1. Jini Raj R, Srikanth H V (2024) “Aerodynamic Analysis of Bio-inspired Wing with Adaptive Aspect Ratio”, Journal of Polymer and Composites, Volume :11, Issue : 13, Page : 143-153.

2. Abhishek T.K, Ram Vishal, Jini Raj R**,** (2024) A New Design and CFD Analysis of UAV for Military and Other Applications, Journal of Polymer and Composites, Volume: 11, Issue: 13, Pages:181 – 187.

3. Jini Raj R**,** (2024)” Smart Materials and Structures: Adaptive Technologies for Modern Engineering” Book chapter in Book “Exploring Advanced Materials for Engineering Applications”, August 2024, ISBN : 978-81-974501-8-1. Publisher: SCIENTIFIC RESEARCH REPORTS (Book Publisher, approved by Govt. of India).

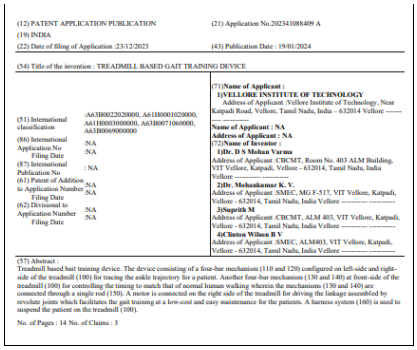
Patent:
1. Design Patent “WIRELESS CHARGING PAD” Cbr No: 205536, Journal No: 22/2024 Journal Date: 31/05/2024 (Accepted).
2. Design Patent, 2024“Morphing Wing for Aircraft” (Under Review)
3. Design Patent, 2024“Multi-Sectional Corrugated Airfoil Wing for Aircraft” (UnderReview)

6. Mr. Suprith M

Patent Details:

1. Suprith M, Treadmill based Gait training device National 2023, Application ID 202341088409, Vellore Institute of Technology, VIT

2. Suprith M, A Gimbal Inspection assembly with a vibration mitigation module National Application ID 202441033781, Gopalan College of Engineering and Managements, GCEM



(12) PATENT APPLICATION PUBLICATION (21) Application No.202341088409 A
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(22) Date of filing of Application :23/12/2023 (43) Publication Date : 19/01/2024

(54) Title of the invention : TREADMILL BASED GAIT TRAINING DEVICE

(51) International classification :A63B0022020000, A61H0001020000, A61H0003000000, A63B0071060000, A63B0069000000
(86) International Application No :NA Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA Filing Date :NA
(62) Divisional to Application Number :NA Filing Date :NA

(71)**Name of Applicant :**
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Name of Applicant : NA
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4)Clinton Wilson B V
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(57) Abstract :
Treadmill based bait training device. The device consisting of a four-bar mechanism (110 and 120) configured on left-side and right-side of the treadmill (100) for tracing the ankle trajectory for a patient. Another four-bar mechanism (130 and 140) at front-side of the treadmill (100) for controlling the timing to match that of normal human walking wherein the mechanisms (130 and 140) are connected through a single rod (150). A motor is connected on the right side of the treadmill for driving the linkage assembled by revolute joints which facilitates the gait training at a low-cost and easy maintenance for the patients. A harness system (160) is used to suspend the patient on the treadmill (100).
No. of Pages : 14 No. of Claims : 3

Fig.5.7.1.1 Patent Publication details.

7. Mr. Likhith Raj R

Conference Publication:

1. Likhith Raj R, Dr. G Muthuselvan, Dr. Basawaraj, "Experimental and Computational Analysis on Effect of Primary Airflow on Combustion Performance of Can-Combustor," 14th Asian Computational Fluid Dynamics Conference (ACFD 2023), 30th Oct - 2nd Nov. 2023, Bengaluru, India.

8. Mr. SIVARAMRAJ M

Conference Publication:

1. M Sivaramraj Conference Topology optimization of Tail boom of Helicopters International 2024 978-3-031-76937-5 Gopalan College of Engineering and Managements Springer Cham

2. M Sivaramraj Conference Fabrication and material characterization of samanae saman fruit Composites International 2024 978-3-031-76937-5 Gopalan College of Engineering and Managements Springer Cham

9. Mr. Thean Mani Rajan Kanagaraj

Journal Publications

1. Mr. Thean Mani Rajan Kanagaraj, "Large diesel engine aftertreatment system; " International 2020 "Patent number: US 10648392 B2" "TATA Consultancy Services, at the time of filing, 2016

3. Mr. Thean Mani Rajan Kanagaraj, "High fidelity systems modeling of thermo-fluid cold plate and electro-thermal battery pack", National 2023 "eBook ISBN: 978-981-96-1158-4Softcover ISBN: 978-981-96-1157-7" Modelon Engineering Private Limited, Thiruchirappalli, Tamilnadu Springer

4. Mr. Thean Mani Rajan Kanagaraj, "Thermal analysis of battery pack for varying configurational choices in hybrid powertrain system", National 2022 Online Presentation Only Modelon Engineering Private Limited, Thiruchirappalli, Tamilnadu Presentation at IIT Bombay,

5. Mr. Thean Mani Rajan Kanagaraj, "PBS Professional Job Scheduler at TCS: Six Sigma - Level Delivery Process and Its Features", National 2012 Presentation at conference TATA Consultancy Services Presentation at Conference and second prize

6. Mr. Thean Mani Rajan Kanagaraj, "Convective Heat Transfer Characteristics in an Annulus Wrapped with a Helical Wire", International 2008 "Poster at Conference, proceeding at https://ishmt.iitm.ac.in/login?f=c" Indian Institute of Technology, Madras Begell House Publishers, Inc

7. Mr. Thean Mani Rajan Kanagaraj, "CFD modeling of Fluid flow in an annulus wrapped with a helical wire", International 2006 "Presentation at conference ;Proc.

5.7.2 Sponsored Research (5) Institute Marks : 0.00

2023-24 (CAYm1)

Project Title	Duration	Funding Agency	Amount
DESIGN AND DEVELOPMENT OF ROBUST ICOSAHEDRON FRAME CAPABLE OF ABSORBING AND DISSIPATING COLLISION FORCES, MINIMISING THE RISK OF CRITICAL DAMAGE TO UNMANNED AERIAL SYSTEM	6 months	KSCST	9500.00
DESIGN, DEVELOP, AND TESTING A HYBRID QUADCOPTER- ROVER (DROVER) FOR RESCUE OPERATIONS, DISASTER MANAGEMENT, AND INDUSTRIAL SURVEILLANCE	6 months	KSCST	8500.00
DESIGN AND FABRICATION OF MODULAR ELECTRIC PROPULSION SYSTEM FOR UAV'S.	6 months	KSCST	7000.00
DESIGN AND DEVELOPMENT OF 3DOF TESTING MECHANISM FOR UAV	6 months	KSCST	7000.00
			Total Amount(X): 32000.00

2022-23 (CAYm2)

Project Title	Duration	Funding Agency	Amount
EXPERIMENTAL INVESTIGATION OF MECHANICAL PROPERTIES AND CORROSION BEHAVIOUR OF METALLIC AND COMPOSITE PANEL FOR AEROSPACE APPLICATION.	6 months	KSCST	7000.00
			Total Amount(Y): 7000.00

2021-22 (CAYm3)

Project Title	Duration	Funding Agency	Amount

Cumulative Amount(X + Y + Z) =
5.7.3 Development Activities (10) Institute Marks : 10.00

Product Development:

1. Fire Fighting Drone

This innovation is designed to tackle fire emergencies more effectively, showcasing how cutting-edge technology can be applied to critical real-world problems. The drones standout features include precision in targeting fire hotspots and a robust design that enhances its performance during rescue missions.

For more details on the invention and its potential impact on firefighting operations, you can read the full article on TV9 Kannada (https://tv9kannada.com/karnataka/bengaluru/gopalan-college-of-engineering-and-management-college-students-have-invented-a-unique-fire-fighting-drone-kannada-news-krn-850742.html). https://tv9kannada.com/karnataka/bengaluru/gopalan-college-of-engineering-and-management-college-students-have-invented-a-unique-fire-fighting-drone-kannada-news-krn-850742.html

2. Subsonic Windtunnel

The subsonic wind tunnel at Gopalan College of Engineering and Management was designed and developed by students, showcasing their practical skills in aerodynamics and engineering. This hands-on project enables precise airflow testing around various models, enhancing students understanding of aerodynamic performance. It supports the colleges commitment to fostering innovation and research in aerospace engineering.

3. Low Speed Vertical Axis Wind Turbine

The Low-Speed Vertical Axis Wind Turbine at Gopalan College of Engineering and Management was designed and developed by students and faculty as part of their commitment to renewable energy innovation. This project focuses on efficient energy generation in low-wind environments, showcasing their dedication to sustainable energy solutions and hands-on engineering education.

4. MODULAR ELECTRIC PROPULSION SYSTEM FOR UAVS.

5. 3DOF TESTING MECHANISM FOR UAV

Fig. 5.7.3.1 Products developed in department.

Research Laboratories:

1. Gopalan Research Innovation and Training Centre (GRIT) is established to promote innovation and research activities on the campus. It promotes undergraduate research, and innovation as well as provides training on the recent advancements in the different disciplines of engineering to aspiring young college students. G R I T closely works with industries under MOU to address R&D projects of mutual interest. Some of the key experimental facilities in GRIT include special-purpose Energy and Environment lab, Experimental Aero Lab, Design and Computation Lab, Fabrication and Testing, Sensors Lab, Virtual Instrumentation Lab.

Fig. 5.7.3.2 GRIT LAB.

2. Skill Laboratory

The Skill Laboratory is equipped with advanced tools, including a 3D printer, providing students and faculty with hands-on experience in prototyping, aerodynamics testing, and vibration analysis. This facility is designed to foster innovation and enhance practical engineering and design skills. Open throughout the semester, the lab supports academic, research, and project-based learning, empowering users to turn their

creative ideas into tangible solutions.

Fig. 5.7.3.3 Aeromodelling skill development workshop.

3. Innovation Lab

The Innovation Lab serves as a dedicated Project/Product Development Center, offering ample space and resources for students to engage in hands-on project work and research. It is designed to foster creativity, collaboration, and the practical application of knowledge, providing a conducive environment for transformative learning experiences. Open throughout the semester, it encourages students to explore, innovate, and develop real-world engineering solutions.

Table: Utilization/Developments of Research Lab Facilities by Students

Sl. No.	Title of Project / Competition	Facilities Available	Utilization
1	**Boeing IIT National Aero Modeling Competition**	Skill Lab - Foam Cutter, Innovation Lab	Design and fabrication of wing and fuselage
2	**Experimental and Computational Analysis of Sandwich Beams for Aircraft Structures**	ANSYS Software	Sandwich beam analysis in GRIT Lab
3	**Design and Development of Drover**	SolidWorks	Used for Drover design
4	**Design and Structural Analysis of Fixed Wing Micro Aerial Vehicle (MAV)**	3D Printer	Fabrication of rudder
5	**Modular Electric Propulsion System for Aircraft: An Adaptive and Interchangeable Power Plant**	Innovation Lab	Complete design and development of modular propulsion system
6	**Design and Development of a Six Degrees of Freedom Testing Mechanism for RC Planes and Drones**	Skill Lab - 3D Printer, Innovation Lab	3D-printed design for degrees of freedom testing mechanism
7	**Biometric Design of a Flapping Wing Micro Air Vehicle for Enhanced Maneuverability**	3D Printer	3D-printed flapping mechanism for ornithopter
8	**Workshop on "RC Aeromodeling"**	Foam Cutter – Skill Lab, Innovation Lab	Development of wing and fuselage
9	**EAGLE (AE Students Association) and ENVICTUS (AE Students Club)**	Innovation Lab Space	Allocated space for student clubs and associations

Instructional Materials:

1. Manuals for laboratories.

2. Use of digital library and virtual labs.

3. Well Developed library

4. Scholarly Journals- Through VTU Consortium, AICTE INDEST Publisher and NDL.

Worksing Models/Charts/Monogramsetc.

Working models:

1. Miniature models of various Mechanisms.

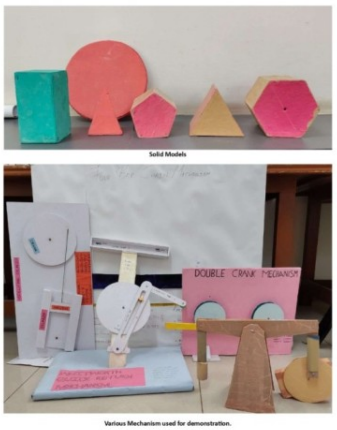


Fig. 5.7.3.4 Solid and Miniature models of various Mechanisms used for demonstration.

2. Various Charts available for display in labs

Fig. 5.7.3.5 Sample charts displayed in a lab.

5.7.4 Consultancy(from Industry) (5) Institute Marks : 5.00

2023-24 (CAYm1)

Project Title	Duration	Funding Agency	Amount
Cognitive Unmanned Track Examiner (C.U.T.E)	1 year	Gopalan Aerospace	365000.00
			Total Amount(X): 365000.00

2022-23 (CAYm2)

Project Title	Duration	Funding Agency	Amount
Fire Fighting Drone	6 Months	Gopalan Aerospace Pvt. Ltd.	350000.00
			Total Amount(Y): 350000.00

2021-22 (CAYm3)

Project Title	Duration	Funding Agency	Amount
Design and Development of Subsonic Windtunnel	6 months	Gopalan Aerospace Pvt. Ltd.	350000.00
			Total Amount(Z): 350000.00

Cumulative Amount(X + Y + Z) = 1065000.00

5.8 Faculty Performance Appraisal and Development System (FPADS) (30) Total Marks 30.00

Institute Marks : 30.00

Faculty Performance Appraisal and Development System (FPADS)

A. Well defined Performace appraisal and Development system:

A well defined Performace appraisal and Development system is formalized and consists of the following process:

1. Self Appraisal by Faculty
2. Appraisal by Students
3. Appraisal by the Head of the department.
4. Appraisal by the Principal

System for Faculty Self Appraisal and Appraisal by Students :

The procedure for Faculty Performance Appraisal is as follows:

1. All Faculty will be given Self appraisal form by the department Head
2. Faculty shall fill required data in the Self appraisal form and submits to the HoD
3. Students' feedback form will be given online to all the students for the faculty appraisal
4. Coordinator allotted will collect the feedback forms from the students through online mode and submits them to the HoD
5. The HoD shall discuss personally with the faculty about self appraisal of Faculty and approves the relevant columns in presence of Faculty
6. The HoD shall also fill the section titled "Appraisal by Head of the Department" based on his own assessment of the faculty
7. The Principal shall fill the section titled "Appraisal by the Principal of the College"
8. Principal's office shall prepare the "Summary of Scores" part of the appraisal.
9. Faculty getting the overall appraisal of 80% and above is acknowledged and appreciated for the good performance.
10. HOD is asked to keep track of improvement or the non-compliance by a faculty.

B. Implementation and effectiveness

1. Faculty shall be encouraged to attend seminars, trainings, conferences and FDPs, and also encouraged to take MOOC or NPTEL courses for knowledge enhancement.
2. Faculty shall be encouraged for Research proposal and project work coordination
3. Faculty shall be encouraged to interact with senior faculty members in the department and asked to take their suggestions
4. Feedback will be taken from the students for faculty appraisal.
5. Faculty will be reviewed periodically to check their improvement in performance
6. Principal and HoD shall give suggestions to Faculty member for further improvement if required.

Faculty Appreciation Methods:

Faculty securing more than 90% score is acknowledged and will be appreciated through one or more of the following:

1. Monitory benefits, 2. Promotions, 3. ppreciation Letters, 4. Certificate of Excellence, 5. Additional responsibilities based on their interests

All Faculty Improvement Program:

1. All faculty members will be encouraged to take-up research related works and paper presentation.
2. Encouraged to take up MOOC and or NPTEL courses for knowledge enhancement.
3. Encouraged to attend webinars, seminars, workshops, FDPs and conferences
4. Encouraged to conduct workshops, FDPs, conferences and trainings.
5. Motivated to take-up higher responsibilities.
6. Motivated to carryout projects in their areas of interest for implementation of their innovative ideas.

Fig.5.8.1 Faculty Perpormance Appraisal Process

Fig.5.8.2 Faculty Assesment Template

Fig.5.8.3 Faculty Assesment Sample

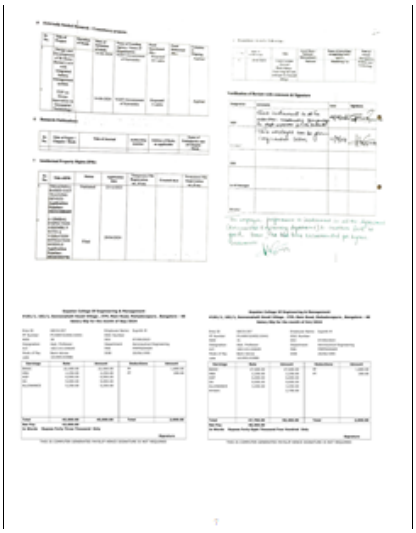


Fig.5.8.4 Faculty Apprisal Evaluation Outcome

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

Total Marks 10.00

Institute Marks : 10.00

Adjunt Faculty appointed.

1. Mr. Shoeb Ahmed Adeel - UAV Technology and Industrial Aerodynamics

Adjunct Faculty:	Mr. Shoeb Ahmed Adeel
Date of Birth:	30th June 1990
Present address	No.10, 10th Main, Adithyanagar, Vidhyaranyapura Post, Bengaluru 560097.
Email ID-	shaan114@gmail.com
Contact No	9590033006
Qualification:	(PhD) in Unmanned Aerial Systems at Rabindranath Tagore University M.Tech. in Aerospace Propulsion Technology. B.E. in Aeronautical Engineering
Present Designation:	Technical Director - Lakshya Pinnacles Pvt. Ltd.

6 FACILITIES AND TECHNICAL SUPPORT (80)

Total Marks 80.00

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

Total Marks 30.00

Institute Marks : 30.00

Sr. No	Name of the Laboratory	Number of students per set up(Batch Size)	Name of the Important Equipment	Weekly utilization status(all the courses for which the lab is utilized)	Technical Manpower Support		
					Name of the Technical staff	Designation	Qualification
1	Measurements and Metrology Labhop	20	• Pressure Gauge • Thermocouple • Linear Variable Differential Transformer • Load Cell • Strain Gauge • Optical Projector / Toolmaker Microscope • Sine Center, Sine bar and Bevel Protractor • Autocollimator / Rolles Set • Lathe Tool Dynometer • Drill Tool Dynameter • Screw Thread Parameter Two Wire & Three Wire • Tally Surf • Tooth Vernier • Gear Tooth Micrometer • Slip Gauge • Optical Flats	09 hrs/week	Dr. G Purushotham	Professor & Head	Ph.D
2	Machine Shop	20	• Shaper Machine • Grinding machine • Surface Grinding Machine • Drilling machine • Power Hacksaw	09 hrs/week	Dr. G Purushotham	Professor & Head	Ph.D
3	Material Testing Lab	20	• Universal Testing Machine • Torsion Testing Machine • Impact Testing • Brinell, Vickers, & Rockwell Hardness Testing • Muffle Furnace • Double disc polishing machine • Magnetic Crack Detector • Microscope • Fatigue Testing Machine • Vicat Needle Apparatus • Metallurgical Microscope • Digital Weighing Machine	09 hrs/week	Mr. Saviraj A S	Assistant Professor	M.Tech in Machine Design
4	Computer Aided Aircraft Drawing	20	• PC • Solid edge software	09 hrs/week	Dr. Siri Konda Mallik	Assistant Professor	Ph.D. in Mechanical Engineering
5	Energy Conversion	20	• Single Cylinder 4 Stroke Air cooled Petrol Engine. • Single Cylinder 2 Stroke Air cooled Petrol Engine. • Single Cylinder 4 Stroke Water cooled Diesel Engine. • Single Cylinder 4 Stroke Air cooled VCR Petrol Engine. • Multi cylinder petrol engine test rig • Abel Flash point apparatus • Penskey martin apparatus • Redwood Viscometer • Bomb Calorimeter • Boy's Gas Calorimeter • Saybold Viscometer • Torsion Viscometer	09 hrs/week	Dr. Manjunath S V	Associate Professor	Ph.D
6	Fluid Mechanics Laboratory	20	• Venturimeter apparatus • Orifice meter • Notch Apparatus • Reciprocating Pump Test • Centrifugal Pump Test • Bernoulli's Theorem Apparatus • Impact of Jet on Vanes • Tilting Flume • Multistage Centrifugal Pump • Kaplan Turbine Test • Pelton Wheel • Francis Turbine Test • Centrifugal Blower Test • Two Stage Reciprocating Air Compressor	09 hrs/week	Mr. Saviraj A S	Assistant Professor	M.Tech in Machine Design
7	Aerodynamics Laboratory	20	• Subsonic wind tunnel	09 hrs/week	Mr. Likhith Raj R	Assistant Professor	M.Tech in Aerospace Propulsion Technology
8	Aircraft Structures Laboratory	20	• Beam Test Set Up With Various end Condition • Wagner Beam Set Up • Column Test Apparatus • Vibration Of Beam Set Up • Unsymmetrical Bending Setup	09 hrs/week	Mr. Suprith M	Assistant Professor	M.Tech
9	Modelling and Analysis Lab	20	• PC • ANSYS software, • Projector	09 hrs/week	Mr. Suprith M	Associate Professor	M.Tech
10	Flight Simulation Laboratory	20	• PC • MATLAB software, • Projector	09 hrs/week	Mr. Likhith Raj R	Assistant Professor	M.Tech in Aerospace Propulsion Technology
11	Aircraft Propulsion Laboratory	20	• Propeller Test Rig • Free Jet & Wall Jet Set Up • Low Speed Cascade Wind Tunnel • Bomb Calorimeter • Forced Convective Apparatus • Measurement Of Nozzle Flow Set Up • Measurement of Burning Velocity Set Up	09 hrs/week	Dr. Manjunath S V	Associate Professor	Ph.D

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

Total Marks 25.00

Institute Marks : 25.00

Sr. No	Facility Name	Details	Reason(s) for creating facility	Utilization	Areas in which students are expected to have enhanced learning	Relevance to POs/PSOs
1	GRIT Lab	• Flight Simulator • Thrust Rig • Foam Cutting Machine • Hand Tool Kit • Data Processing Units	Easy access for research and project activities and to know about recent trends in science and technology.	Complete semester is open to utilize for Faculties and Students	Research and Academic Projects	PO1,PO2,PSO1
2	Skill Lab	• 3D Printer • Laser Cutting Machine • Mini Wind Tunnel • Wind Blower • Vertical Wind Tunnel • Advanced Vibration Setup	To provide hands-on experience in prototyping, aerodynamics testing, and vibration analysis, fostering innovation and practical skills essential for engineering and design projects.	Complete semester is open to utilize for Faculties and Students	Research And Academic Projects	PO1,PO3,PO4, PSO1,PSO2
3	Analysis and Simulation Research Laboratory	• Hypermesh • MATLAB • ANSYS • NX Nastran • Solid Works • CATIA	To enhance design and analysis capabilities, promotes interdisciplinary collaboration, and provides hands-on experience with industry-standard tools essential for modern engineering applications.	Complete semester is open to utilize for Faculties and Students	Research And Academic Projects	PO1,PO3,PO4, PSO1,PSO2
4	Project/Product Development center	Innovation Lab	To provide students with dedicated space and resources for hands-on project work and research, fostering creativity, collaboration, and practical application of their knowledge.	Complete semester is open to utilize	• RC Plane Modelling • Quad copters • Drones	PO5,PO9,PO8, PSO1,PSO2
5	Demo Models	Different aircraft models	Improve the imagination and creativity	Demo hours	Design using AUTO CADD	PO10
6	Smart Laboratories	• Desktop computers •LCD Projector • Internet Facility •Respective software •Comfortable desks •Chairs and teaching aids	For better understanding of CAAD, DMAL and. SIM Lab experiments.	Class hours and Demo hours	Simulation and Modelling	PO3,PO5,PSO1
7	LAN Network	Local Area Network connects all computers in the laboratory for easy accessibility and security reasons.	Facility to staff and students for easy access of internet	Demo hours	More knowledge apart from curriculum and Better understanding	PO5,PO9,PSO2
8	Smart Boards for Interactive Teaching	Smart boards are integrated into classrooms for enhanced teaching and learning experiences.	Students benefit from visually engaging and interactive lessons.	Available throughout the semester to support regular classes and collaborative learning.	Helps in project work, demonstrations, and concept clarity through advanced teaching methods.	PO5, PO1, PO2
9	Manual Record facilities	•Institute and Department's Vision and Mission statements • Approved PEO and PSO of the Dept. • Course outcomes •CO-PO Mapping •List of Experiments •Theoretical and Analytical Explanations of each experiments •Questionnaires	The students will understand the content of each lab in advance. It will acts as a guidelines, instruction, handbook, to undertake the each experiments in each lab. To tabulate the obtained value by each experiments.	Complete semester is open to utilize	• Better understanding of all the experiments • Tabulating obtained data • Do's and Don'ts • Safety measures	PO1,PSO1
10	E-journal Facility	• IEEE, • Springer link, • Elsevier • NDL	Easy access for research and project activities and to know about recent trends in science and technology.	Complete semester is open to utilize	Better understanding and Project purpose	PO1,PO2,PO3, PO4,PSO1, PSO2

6.3 Laboratories: Maintenance and overall ambiance (10) Total Marks 10.00

Institute Marks : 10.00

6.3 Laboratories: Maintenance and Overall Ambiance

The periodic and regular maintenance of the labs is carried out by the technical and supporting staff of the department. The below mentioned steps are followed in maintenance.

1. Preventive maintenance of machines and equipment's as per manufacturing standards by internal staff.
2. Yearly overhauling of machines through external expert organization.
3. Calibration of equipment and instrument by maintenance.
4. Daily housekeeping and maintenance of lab for neatness.
5. Good working ventilation, air conditioning and exhaust system in labs and machine shops for working comfort.
6. Stock verification is done periodically for the identification of available machineries and tools to avoid missing of tools and also to update the facilities

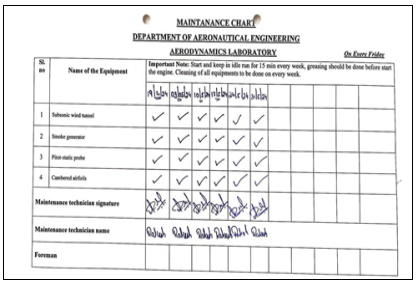
6.3.1 Weekly Maintenance

Preventive maintenance of the equipment's is done by the internal staff on weekly basis. The technical staff will monitor the condition of each machinery/equipment/instruments on weekly basis as per the predefined schedule. Maintenance chart is prepared for each laboratory and condition of all machinery is recorded.

Table 6.3.1.1 Maintenance schedule of Labs

Sl. No.	Name of the Lab	Day
1	Measurements and Metrology Lab	Monday
2	Machine Shop	Thursday
3	Material Testing Lab	Monday
4	Computer Aided Aircraft Drawing	Friday
5	Energy Conversion	Tuesday
6	Fluid Mechanics Laboratory	Tuesday
7	Aerodynamics Laboratory	Wednesday
8	Aircraft Structures Laboratory	Monday
9	Modelling and Analysis Lab	Friday
10	Flight Simulation Laboratory	Friday
11	Aircraft Propulsion Laboratory	Wednesday

Sample of Maintenance Chart: The Figure **6.3.1.1** depict weekly maintenance chart for the Aerodynamics labs. Such kind of charts is maintained for each lab and is signed by technical staff after checking the condition of the machineries. The foreman and the Head of Department will monitor the charts every week.



MAINTANANCE CHART

DEPARTMENT OF AERONAUTICAL ENGINEERING

AERODYNAMICS LABORATORY

On Every Friday

Sl. no	Name of the Equipment	Important Note: Start and keep in idle run for 15 min every week, greasing should be done before start the engine. Cleaning of all equipments to be done on every week.									
		9/8/24	16/8/24	23/8/24	30/8/24	6/9/24	13/9/24				
1	Subsonic wind tunnel	✓	✓	✓	✓	✓					
2	Smoke generator	✓	✓	✓	✓	✓					
3	Pitot-static probe	✓	✓	✓	✓	✓					
4	Cambered airfoils	✓	✓	✓	✓	✓					
Maintenance technician signature											
Maintenance technician name		Rahul	Rahul	Rahul	Shashikant	Rahul					
Foreman											

Fig. 6.3.1.1 Weekly Maintenance Chart for Aerodynamics Lab

6.3.2 Servicing and Repairs (Breakdown Maintenance)

In addition to the preventive maintenance, servicing and repair of the machineries and equipment is done by professional consultants and also the replacement of the parts worn and torn is done periodically by the technical staff.

Table 6.3.2.1 Service and Repairs done during Academic year 2023-2024

Sl No	Laboratory	Maintenance Details	Remarks
1	Modeling & Analysis Laboratory	Motherboard	**Service Tags:** 1YDHMJ3, BYDHMJ3, 6YDHMJ3, BOFHMJ3. **Challan No:** DNKA00000926531 **Company:** Dell Technologies
2	Computer Aided Aircraft Drawing	Motherboard, processor, mechanical, pad, Thermal and Syringe	**Service Tag:** FYDHMJ3 **Challan No:** DNKA00000926531 **Company:** Dell Technologies
3	Aerodynamics Lab	Inclined Manometer Bend Glass Tubes	**Invoice No:** 105 **Company:** New Tech Engineers

6.3.3 Cleanliness

- The neatness of the machineries and instruments is ensured by the technical staff after every session of the class.
- The students are instructed to clean the machineries and workplace immediately after completing their work.
- Utmost priority is given to cleanliness and all labs are maintained in clean and neat condition by housekeeping staff on daily basis.

6.3.4 Ambience of Labs

- All these labs are well designed, built spacious and built to the Industry standards.
- Good ventilation, accessibility, north lighted roof makes the labs safe and comfort places to work.
- Larger doors provide additional safety at the time of emergency to rush out for safety.
- There is a good natural light inside the labs due to north lighted roof which enables to work without any electrical bulbs glow. This saves lot of energy and expenses.

Table 6.3.4.1 Areas of various laboratories and also the area prescribed by VTU.

Sl. No.	Name of the Laboratory	Carpet Area Available (Sq. meters)	Carpet Area required as per University and AICTE (Sq. meters)
1	Measurements and Metrology Lab	98	66
2	Machine Shop	196	200

3	Material Testing Lab	107	66
4	Computer Aided Aircraft Drawing	128	66
5	Energy Conversion	70	66
6	Fluid Mechanics Laboratory	188	66
7	Aerodynamics Laboratory	117	66
8	Aircraft Structures Laboratory	100	66
9	Modelling and Analysis Lab	128	66
10	Flight Simulation Laboratory	128	66
11	Aircraft Propulsion Laboratory	145	66

6.4 Project laboratories (5) Total Marks 5.00

Institute Marks : 5.00

A dedicated project lab has been established where students are allowed to work on their projects beyond regular working hours, including holidays. Major projects developed independently by students include RC planes, quadcopters, water rockets, and etc..

GRIT Laboratory:

The GRIT Laboratory features a state-of-the-art Flight Simulator alongside essential tools like the Thrust Rig, Foam Cutting Machine, Hand Tool Kit, and Data Processing Units. These facilities ensure seamless access for research and academic projects, empowering students and faculty to explore recent trends in science and technology. Open for the entire semester, the lab serves as a hub for innovative research and hands-on learning.

Fig. 6.4.1 Gopalan Research Innovation & Training Centre (GRIT)

Skill Laboratory:

The Skill Laboratory is equipped with a 3D Printer, offering students and faculty an opportunity to gain practical experience in prototyping, aerodynamics testing, and vibration analysis. This lab plays a critical role in nurturing innovation and developing practical skills essential for engineering and design projects. It remains open throughout the semester to support academic and research activities.

Fig. 6.4.2 Skill Lab

Innovation Lab:

The Innovation Lab functions as a dedicated Project/Product Development Center, providing ample space and resources for students to engage in hands-on project work and research. Designed to foster creativity, collaboration, and the practical application of knowledge, the lab is accessible throughout the semester, encouraging transformative learning experiences.

Fig. 6.4.3 Students Working in Skill Lab

Table 6.4.1 Utilization of project lab facilities by students during academic year 2023-24

Sl No	Title of Project / Competition	Facilities available at Laboratory	Utilization
1	Boeing IIT National Aero Modeling Competition	Skill Lab - Foam Cutter Innovation Lab	To design and fabricate a wing and fuselage
2	Experimental and Computational Analysis of Sandwich Beams for Aircraft Structures	ANSYS Software	For Analyzing Sandwich beam in GRIT LAB
3	Design and Development of Drover	Solidworks	Solidworks used for Designing of Drover
4	Design and Structural Analysis of Fixed Wing Micro Aerial Vehicle (MAV)	3d Printer	To fabricate Rudder
5	Modular Electric Propulsion System for Aircraft: An Adaptive and Interchangeable Power Plant	Innovation Lab	To carry out the complete design and development of modular Propulsion System
6	Design and Development of a Six Degrees of Freedom Testing Mechanism for Assessing Attitude Angles and Propulsion Performance in RC Planes and Drones	Skill Lab - 3d Printer Innovation Lab	3d Printed design for testing Degrees of Freedom Testing Mechanism
7	Biometric Design of a Flapping Wing Micro Air Vehicle for Enhanced Manoeuvrability	3d Printer	3d Printed flapping mechanism for Orinthopter
8	A Workshop on "RC AEROMODELING"	Foam Cutter – Skill Lab Innovation LAB	For developing wing and fuselage
9	EAGLE (AE Students Association) and ENVICTUS (AE Students Club)	Space – Innovation LAB	Innovation Cell allotted for students club and association

6.5 Safety measures in laboratories (10)

Total Marks 10.00

Institute Marks : 10.00

Sr. No	Laboratory Name	Safety Measures
1	Measurements and Metrology lab	• Students are instructed to follow safety norms. • Students are strictly informed to wear proper uniform and shoes while working in lab. • Immediately report any spills, equipment malfunctions, injuries or other perceived safety hazards to your Instructor or staff member. • Instruments should be carefully used in order to preserve its sensitivity. • Fire Extinguishers are kept for emergency requirement.
2	Machine Shop	• Safety glasses with side shields or goggles to cover prescription glasses shall be worn in near machines having rotating parts. • Loosely fitting clothing may become entangled in rotating machinery so don't wear it in the shop or labs. • When working on any equipment the appropriate safety equipment for hand, eye and hearing protection must be used. • Keep your working area neat and well organized. • When working with machine tools, keep your fingers well away from the tool. • In the event of any problems arising while operating a piece of equipment, shut down the equipment and report the problem to the instructor. • Report any personal injury to the instructor for treatment. Report any hazard you notice to the instructor. • Obey the safety regulations posted on the Safety boards.
3	Material Testing lab	• You may only enter the laboratory when authorized to do so. The professor, lab manager or assigned research assistant must be present at all times. • You have the primary responsibility for your safety. Do not do anything you feel is unsafe - talk to someone in charge. • Working alone or playing in the lab is completely prohibited. • Keep the lab area clean at all times. Place trash in appropriate receptacles. Return equipment immediately to where it was taken from. • Avoid bulky, loose or trailing clothes. Remove all kind of loose jewellery.
4	Aerodynamics lab	• Report all accidents, injuries, and breakage of glass or equipment to instructor immediately. • Before running the wind tunnel, ensure that there are no loose materials inside it, or anything attached that can be dislodged. • Keep pathways clear by placing extra items (books, bags, etc.) on the shelves or under the work tables • First-aid kits are available in the lab for minor injuries. • Do not attempt to clean up any bodily fluids under any circumstances. • Students are strictly informed to wear proper uniform and shoes while working in lab. • In case of fire or hazardous chemical spill evacuate the premises immediately. • Fire Extinguishers are kept for emergency requirement.
5	Aircraft Structures lab	DOs: 1. Maintain Discipline and Silence inside the Laboratory 2. Conduct Yourself with Responsibility 3. Handle Lab Equipment's and Instruments with utmost care 4. Replace the materials in proper place after work to keep the lab area tidy 5. Inform the Person-In-charge if anything found faulty or Not working 6. Students are not allowed to work in Laboratory alone without prior permission or without presence of the teacher 7. Apply Load Slowly 8. Remove the loading completely from the specimen after completing the experiment 9. Switch off the System power supply after completing the experiment 10. Ensure that safety devices are adequate, appropriate and in good working order DONTS: 1. Do not eat food, drink beverages or chew gum in the laboratory and do not use laboratory use laboratory glassware as containers for food or beverages. 2. Do not write anything on the Lab Facilities provided 3. Do not apply load harshly 4. Miss Handling of the Equipment's and Instruments is not permitted 5. Usage of Mobile Phones or any electronic devices is not permitted 6. Do not wander around the room, distract other students, startle other students or interfere with the laboratory experiments of others.
6	Aircraft Propulsion Lab	DOS: 1. Maintain Discipline and Silence inside the Laboratory 2. Conduct Yourself with Responsibility 3. Handle Lab Computer Systems with utmost care 4. Replace the materials in proper place after work to keep the lab area tidy 5. Inform the Person-In-charge if anything found faulty or Not working 6. Students are not allowed to work in Laboratory alone without prior permission or without presence of the teacher 7. Switch off the System power supply after completing the experiment 8. Ensure that safety of Computer systems are adequate, appropriate and in good working order DON'TS: 1. Do not eat food, drink beverages or chew gum in the laboratory and do not use laboratory glassware as containers for food or beverages. 2. Do not write anything on the Lab Facilities provided 3. Miss Handling of the Equipment's and Instruments is not permitted 4. Usage of Mobile Phones or any electronic devices is not permitted 5. Do not wander around the room, distract other students, startle other students or interfere with the laboratory experiments of others
7	Energy Conversion	• A clean and oil free engine room contributes greatly to overall safety. • No unauthorised personnel may operate equipment or machinery. • Dirty rags, cotton waste etc. must be removed and all such waste must be collected and disposed of according to the instructions set out in the Safety and Environmental Procedures. • No oil leak collecting tins, trays or other temporary means of collection are allowed. Save all around tanks and machinery must always be kept clean and drainage trays clean. • To prevent fires, any possible source of uncontrollable heat must be protected and any fuel leakage must be cleaned up and the source identified and eliminated.

8	Fluid Mechanics Lab	• Students are instructed to follow safety norms. • Students are strictly informed to wear proper uniform and shoes while working in energy conversion lab. • Conduct yourself in a responsible manner at all times in the laboratory. Don't talk aloud or crack jokes in lab. • Students are not allowed to touch any equipment, chemicals or other materials in the laboratory area until you are instructed by Teacher or Technician • Before starting Laboratory work follow all written and verbal instructions carefully. If you do not understand a direction or part of a procedure, ASK YOUR CONCERN TEACHER BEFORE PROCEEDING WITH THE ACTIVITY • Every Student should know the locations and operating procedures of all safety equipment including, first AID KIT (s) and Fire extinguisher. Know where the fire alarm and the exits are located.	
9	Computer Aided Aircraft Drawing	DOS: 1. Maintain Discipline and Silence inside the Laboratory 2. Conduct Yourself with Responsibility 3. Handle Lab Computer Systems with utmost care 4. Replace the materials in proper place after work to keep the lab area tidy 5. Inform the Person-In-charge if anything found faulty or Not working 6. Students are not allowed to work in Laboratory alone without prior permission or without presence of the teacher 7. Switch off the System power supply after completing the experiment 8. Ensure that safety of Computer systems are adequate, appropriate and in good working order 9. Keep the bags in the designated area DON'TS: 1. Do not eat food, drink beverages or chew gum in the laboratory and do not use laboratory glassware as containers for food or beverages. 2. Do not write anything on the Lab Facilities provided 3. Miss Handling of the Equipment's and Instruments is not permitted 4. Usage of Mobile Phones or any electronic devices is not permitted 5. Do not wander around the room, distract other students, startle other students or interfere with the laboratory experiments of others	
10	Modelling and Analysis Lab	• Students are instructed to follow safety norms. • Ensure you are fully aware of your facility's/building's evacuation procedures. • Activities in the lab(s) that are considered by the lab aides to be abusive to the software, hardware, and\or personnel may result in expulsion from the lab(s) and denial of future use of the lab • Do not modify any software or files. Do not overwrite the operating system.	
11	Flight Simulation Laboratory	DOs: 1. Maintain Discipline and Silence inside the Laboratory 2. Conduct Yourself with Responsibility 3. Handle Lab Equipment's and Instruments with utmost care 4. Replace the materials in proper place after work to keep the lab area tidy 5. Inform the Person-In-charge if anything found faulty or Not working 6. Students are not allowed to work in Laboratory alone without prior permission or without presence of the teacher 7. Switch off the System power supply after completing the experiment 8. Ensure that safety devices are adequate, appropriate and in good working order 9. Keep the bags in the designated area DONTS: 1. Do not eat food, drink beverages or chew gum in the laboratory and do not use laboratory use laboratory glassware as containers for food or beverages. 2. Do not write anything on the Lab Facilities provided 3. Miss Handling of the Equipment's and Instruments is not permitted 4. Usage of Mobile Phones or any electronic devices is not permitted 5. Do not wander around the room, distract other students, startle other students or interfere with the laboratory experiments of others.	

7 CONTINUOUS IMPROVEMENT (50)

Total Marks 50.00

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

Total Marks 20.00

Institute Marks : 20.00

POs Attainment Levels and Actions for Improvement- (2023-24)

POs	Target Level	Attainment Level	Observations
PO 1 : Engineering Knowledge			
PO 1	2.43	1.63	67.3 % of the target achieved.
Action 1: Remedial classes were conducted for foundational aeronautical subjects like Aerodynamics, Propulsion, and Aircraft Structures. Action 2: A 4-week offline internship program on “MATLAB, SIMULINK, PYTHON, SOLIDWORKS & ANSYS” enhanced technical skills and foundational knowledge. Action 3: Workshops on “Basics and Applications of AURDINO” and “RC AEROMODELING” provided hands-on knowledge of engineering concepts. Action 4: Industrial visits to Gopalan Aerospace India Pvt. Ltd. and ISTRAC of ISRO provided students with insights into practical engineering applications.			
PO 2 : Problem Analysis			
PO 2	2.13	1.40	65.8 % of the target achieved.
Action 1: SMART AERO HACKATHON - 2023 offered students an opportunity to solve real-world aeronautical challenges. Action 2: Mini-projects were completed by students to analyze aircraft systems such as landing gear mechanisms and flight control systems. Action 3: The Aeromodelling RC Aircraft workshop facilitated hands-on experience in problem-solving and design challenges. Action 4: Academic visits to IISc, Bangalore and U R Rao Satellite Centre of ISRO exposed students to cutting-edge research and analysis methods in aerospace.			
PO 3 : Design/development of Solutions			
PO 3	1.9	1.22	64.2 % of the target achieved.
Action 1: “Mold & Build,” a practical session on composite fabrication, provided insights into the design of lightweight materials. Action 2: A workshop on “Open VSP” enabled students to design aerodynamic structures efficiently. Action 3: Projects such as the design of UAVs and aircraft components were completed to enhance innovation and problem-solving skills. Action 4: Participation in Spark-Tank, an intra-collegiate startup pitch contest, encouraged students to develop entrepreneurial design solutions.			
PO 4 : Conduct Investigations of Complex Problems			
PO 4	1.82	1.03	56.8 % of the target achieved.
Action 1: Students completed research-based mini-projects on topics such as wind tunnel testing and propulsion efficiency. Action 2: Students collaborated on research-based projects showcased during the Project Exhibition. Action 3: Industrial visits to ISTRAC of ISRO and U R Rao Satellite Centre of ISRO helped students understand investigative practices in satellite technology. Action 4: Data analysis training in MATLAB and ANSYS was provided during the internship program.			
PO 5 : Modern Tool Usage			
PO 5	2.08	1.40	67.3 % of the target achieved.
Action 1: Students were trained in using tools like Open VSP, SolidWorks, and ANSYS for aeronautical applications. Action 2: A 4-week offline internship program focused on modern software tools and their application in engineering. Action 3: The Aeromodelling RC Aircraft workshop provided hands-on training in simulation and real-time testing. Action 4: Academic visits to IISc, Bangalore introduced students to advanced research tools and methodologies.			
PO 6 : The Engineer and Society			
PO 6	1.44	0.94	65.2 % of the target achieved.
Action 1: Awareness programs such as No Tobacco Day encouraged students to understand societal responsibilities. Action 2: The “IGNITING MINDS” tribute to Dr. APJ Abdul Kalam inspired students to contribute meaningfully to society. Action 3: Industrial visits to Gopalan Aerospace India Pvt. Ltd. and ISTRAC of ISRO highlighted societal contributions of aerospace technologies. Action 4: Seminars on aviation safety and its societal implications were conducted.			
PO 7 : Environment and Sustainability			
PO 7	1.94	1.21	62.6 % of the target achieved.
Action 1: Mini-projects on green aviation technologies and sustainable aircraft designs were completed by students. Action 2: The Heritage Tour to Visvesvaraya Industrial and Technological Museum emphasized the integration of historical innovations into modern sustainable practices. Action 3: Seminars on climate impact mitigation strategies for aviation were organized. Action 4: National Science Day (RADIANCE) celebrations included discussions on sustainable development in science.			
PO 8 : Ethics			
PO 8	2.2	1.63	74.2 % of the target achieved.
Action 1: Mini-projects addressing ethical challenges in aerospace engineering, such as safety vs. cost considerations, were conducted. Action 2: Discussions on professional ethics, including the responsibilities of aeronautical engineers, were held. Action 3: Students presented reports on ethical dilemmas encountered in aviation history.			
PO 9 : Individual and Team Work			
PO 9	1.57	1.15	73.4 % of the target achieved.
Action 1: Students participated in collaborative mini-projects showcased during the Project Exhibition. Action 2: The Inauguration of EAGLE (AE Students’ Association) and ENVICTUS (AE Students’ Club) fostered teamwork and leadership. Action 3: ESPERANZA 2023 and Departing Flight 2024 events provided platforms for group activities and student collaboration. Action 4: Students worked in teams during the Aeromodelling RC Aircraft workshop and SMART AERO HACKATHON - 2023.			
PO 10 : Communication			
PO 10	1.82	1.34	73.7 % of the target achieved.
Action 1: Students developed communication skills through participation in events like Spark-Tank startup pitch contests. Action 2: Technical writing workshops focusing on reports, papers, and presentations were organized. Action 3: Interactive sessions during events like ESPERANZA 2023 and RADIANCE honed students’ interpersonal communication skills. Action 4: Students created posters and presented their research findings during the Project Exhibition.			
PO 11 : Project Management and Finance			
PO 11	1.57	1.14	72.8 % of the target achieved.
Action 1: Mini-projects involving budgeting and resource allocation were completed to enhance project management skills. Action 2: Industrial visits, including Gopalan Aerospace India Pvt. Ltd., provided insights into project management practices. Action 3: Participation in Spark-Tank helped students gain experience in managing entrepreneurial projects.			
PO 12 : Life-long Learning			
PO 12	1.39	0.94	67.8 % of the target achieved.
Action 1: Students were encouraged to complete online courses on advanced aeronautical topics through MOOCs. Action 2: Academic visits to leading research institutions like IISc, Bangalore inspired a culture of continuous learning. Action 3: Mentorship sessions with alumni motivated students to pursue lifelong learning in aerospace engineering. Action 4: The 4-week offline internship program emphasized skill development in evolving technologies.			

PSOs Attainment Levels and Actions for Improvement- (2023-24)

PSOs	Target Level	Attainment Level	Observations
PSO 1 : Apply their knowledge in the domain areas of Aerodynamics, Aircraft Propulsion, Aircraft Structures and Flight mechanics by acquiring knowledge in basic engineering, mathematics, science and Aeronautical engineering			
PSO 1	2.05	1.41	68.7 % of the target achieved.
Action 1: Domain-specific mini-projects and workshops on aerodynamics, propulsion, and structural analysis were conducted. Action 2: Industrial visits to Gopalan Aerospace India Pvt. Ltd., CSIR-NAL, and ISTRAC of ISRO enriched practical domain knowledge. Action 3: Students gained experience in composite materials during the “Mold & Build” session.			
PSO 2 : Graduates will exhibit professionalism, team work in their chosen profession and adapt to current trends, technologies, research and industrial scenarios by pursuing lifelong learning.			
PSO 2	1.8	1.2	66.8 % of the target achieved.
Action 1: Professional development programs, including participation in SMART AERO HACKATHON - 2023 and workshops, enhanced teamwork and adaptability. Action 2: Team-building activities like the Aeromodelling RC Aircraft workshop strengthened collaboration. Action 3: Events like Spark-Tank encouraged students to adapt to emerging trends in technology and research.			

7.2 Academic Audit and actions taken thereof during the period of Assessment (10) Total Marks 10.00

Institute Marks : 10.00

7.2 ACADEMIC AUDITING

Academic auditing is a faculty-driven initiative that emphasizes ongoing self-reflection, collaboration, teamwork, and peer feedback. It involves structured discussions among faculty members and peer reviewers, all working toward the common objective of enhancing quality processes in teaching and learning to foster student success.

Objectives of Academic Auditing

1. To improve the teaching and learning process and ensure consistent quality in technical education across the system.
2. To oversee the effective functioning of technical education.
3. To encourage faculty to adopt and integrate ICT in the teaching and learning process.
4. To establish feedback mechanisms for assessing teacher performance through student evaluations and aiding curricular development.
5. To ensure the availability of computer, internet, and library facilities.

Academic Audit Process Flowchart

1. The Head of the Department (HOD) assigns subjects to faculty members based on their expertise and interests.
2. Faculty members prepare lesson plans, course outcomes, and study materials for their respective subjects and submit them for HOD approval.
3. Academic documents, including the teacher's diary, academic records, attendance records, Statement of Activities (SOA), Internal Assessment (IA) mark sheets, syllabus completion reports, and student performance reports, must be updated and submitted to the HOD for regular approval.
4. At the end of the semester, Semester-End Examination (SEE) results, course attainments, and course files are prepared and submitted for review by the Program Assessment Committee (PAC).

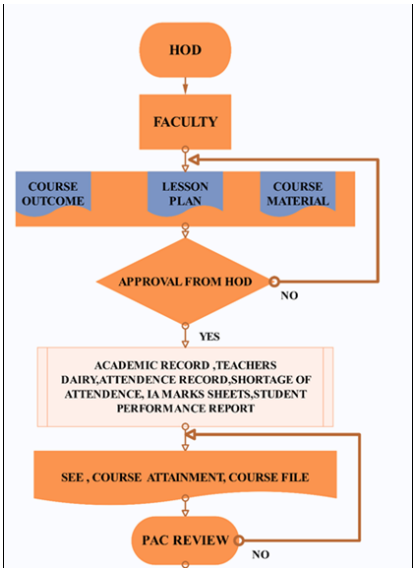


Fig. 7.2.1 Academic Audit Flowchart

7.2.1 Internal Academic Auditing

The Internal Quality Assurance Cell (IQAC) was established to uphold the quality of education at Gopalan College of Engineering and Management. The audit committee, led by the IQAC coordinator, includes senior faculty members from various departments. Audits are conducted to review subject-specific lesson plans, laboratory manuals, subject attainment, and other quality measures. The audit report is submitted to the Head of Department (HOD) and the Principal for further action. The HOD then holds a department meeting to share the auditor's feedback with faculty members and advises them on necessary corrective measures.

Table 7.2.1.1 Internal Academic Auditing

Sl. No	Academic Activities	Associated Practices	Audit Responsibilities and Personnel	Frequency of Audit
1	Curriculum Planning and Execution	• Adherence to VTU academic calendar • Timetable • Staff workload • Course Files preparations • Basic course / elective course// projects/internship	IQAC, HODs and Department coordinators	Once in a semester
2	Teaching & learning process	• Student faculty ratio(SFR) • Cadre ratio • Support staffs • Class rooms • Laboratory • Seminar hall • Teaching aids • Reading materials preparations	IQAC, HODs and Department coordinators	Once in a semester
3	Academic events auditing	• Events organized by the department • Students' participation in ✓Conference ✓Workshops ✓Seminars ✓Technical and cultural fest ✓Industrial visits	IQAC, HODs and Department coordinators	Once in a semester
4	Result	• Tutorials class • Additional class • Result analysis of SEE	IQAC, HODs and Department coordinators	Once in a semester
5	Laboratory Files	• Lab manuals • Student lab records • Hardware lab service & maintenance	IQAC, HODs and Department coordinators	Once in a semester
6	Industry interactions	• Industry MOU's • Industry training for faculty members	IQAC, HODs and Department coordinators	Once in a semester

7	Student Counselling	• Mentoring the students • Mentor book updating	IQAC, HODs and Department coordinators	Once in a semester

7.2.2 External Audit

The external audit is carried out by ISO, Local Inspection Committee and NAAC.

Table 7.2.2.1 List of committees and date of their visit to institution

Sl. NO	Committee Visited	Certificate Issuance Date
1	NAAC	15/02/2021
2	ISO	02/03/2023
3	Local Inspection Committe (VTU)	07/11/2024

Fig. 7.2.2.1 NAAC Certificate

Fig. 7.2.2.2 ISO Certificate

Fig. 7.2.2.3 Local Inspection Committee Certificate

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

Total Marks 10.00

Institute Marks : 10.00

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

The Aeronautical Engineering department at Gopalan College of Engineering and Management has consistently achieved strong placement results for its students. Each year, around 5-10 companies specializing in aerospace and engineering visit for campus recruitment, ensuring that a significant number of eligible candidates secure positions in their field.

In each graduating batch, some students pursue higher studies, achieving qualifying scores in competitive exams like GATE, GRE, and IELTS, while a few choose the path of entrepreneurship in aerospace or related industries.

Assessment criteria include:

- **Placements:** Number of placements, quality of offers, roles in core aerospace and engineering industries, and salary packages.
- **Higher Studies:** Performance in exams such as GATE, GRE, and admissions into premier institutions in aerospace engineering.
- **Entrepreneurship:** Number of students establishing their own aerospace-related ventures.

Table 7.3.1 Student Placement, Higher studies, Entrepreneurships

Student Placement, Higher studies, Entrepreneurships	2023-24	2022-23
Total No. of Final Year Students (N)	37	45
No. of students placed in companies or Government Sector (x)	23	35
No. of students admitted to higher studies with valid qualifying scores(GATE or equivalent State or National Level Tests, GRE, GMATetc.)	5	0
No. of students turned entrepreneur in engineering/technology (z)	3	0

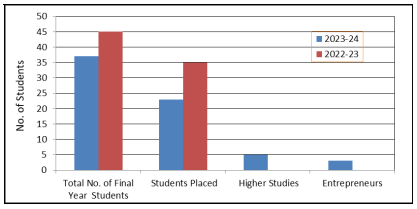


Fig. 7.3.1 Student Placement, Higher studies, Entrepreneurships

Placement quality will be further improved by taking up the following action plans:

- Campus placements enable students to secure high-paying jobs even before they complete their courses. Gopalan College of Engineering and Management is effectively focused on providing quality training to enhance both the quality and quantity of placements.
- Most companies evaluate how well-prepared students are for industry roles. Therefore, training programs are tailored to address real-world challenges and focus on the skills currently in demand. This kind of industry-specific training increases students chances of being placed in top-tier companies.
- Encouraging students to pursue industry certifications from leading companies further strengthens their portfolios, helping them secure mainstream jobs with competitive salaries.
- Internships offer students valuable, hands-on experience. By motivating students to intern with top companies, they not only gain practical skills but also build stronger portfolios, which significantly improves their chances of landing desirable positions.

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

Total Marks 10.00

Institute Marks : 10.00

Item		2024-25	2023-24	2022-23
National Level Entrance Examination	No of students admitted	1	0	0
COMEDK	Opening Score/Rank	57177	0	0
	Closing Score/Rank	57177	0	0
State/ University/ Level Entrance Examination/ Others	No of students admitted	27	36	12
KCET	Opening Score/Rank	65175	75211	44062
	Closing Score/Rank	301147	200902	162120
Name of the Entrance Examination for Lateral Entry or lateral entry details	No of students admitted	1	1	3
KDCET	Opening Score/Rank	3807	12789	2394
	Closing Score/Rank	3807	12789	16230
Average CBSE/Any other board result of admitted students(Physics, Chemistry&Maths)		94	91	89

8 FIRST YEAR ACADEMICS (50)

Total Marks 44.49

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

Total Marks 5.00

Institute Marks : 5.00

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

Name of the faculty member	PAN No.	Qualification	Date of Receiving Highest Degree	Area of Specialization	Designation	Date of joining	Teaching load (%)			Currently Associated (Yes / No)	Nature Of Association (Regular / Contract)	Date Of leaving(In case Currently Associated is 'No')
							CAY	CAYm1	CAYm2			
Dr. SARIKA C	AMJPC5239Q	M.Sc. and PhD	18/01/2018	CHEMISTRY	Assistant Professor	01/08/2017	100	100	100	Yes	Regular	
Mr.VIJAY TAL/	AJAPV5370R	M.Phil	30/12/2008	SOLID STATE PHYSICS	Assistant Professor	09/08/2017	100	100	100	Yes	Regular	
Mrs.CHAITRA	BIEPC6922N	M.Sc	30/06/2019	NUCLEAR PHYSICS	Assistant Professor	18/03/2024	100	0	0	Yes	Regular	
Dr. RAJASRI S	BCKPS6076F	ME/M. Tech and PhD	15/11/2000	PHYSICS AND ATMOSPHERIC SCIENCE	Professor	01/08/2024	100	0	0	Yes	Regular	
Mrs. REKHA M	DFFPM7521P	M.Phil	05/10/2009	MATHEMATICS	Assistant Professor	01/08/2016	100	100	100	Yes	Regular	
Mrs. CHANDRI	BGFPC0624N	M.SC. (Mathematics)	01/04/2017	MATHEMATICS	Assistant Professor	03/05/2024	100	0	0	Yes	Regular	
Mrs. REVATHI	AXZPR7227G	M.SC. (Mathematics)	30/06/2009	MATHEMATICS	Assistant Professor	09/08/2024	100	0	0	Yes	Regular	
Dr. PALLE PRA	ARRPP1567D	M.SC. (Mathematics) and PhD	15/07/2011	MATHEMATICS	Assistant Professor	13/08/2024	100	0	0	Yes	Regular	
Mrs. ANUPAM/	AXBPA5098E	M.E/M.Tech	21/01/2017	COMPUTERSCIENCE ANDENGINEERING	Assistant Professor	14/11/2022	100	100	0	Yes	Regular	
Mrs. JYOTHI D	AIEPJ1947K	M.E/M.Tech	07/01/2010	VLSI DESIGN AND EMBEDDED SYSTEMS	Assistant Professor	13/07/2022	100	100	100	Yes	Regular	
VANDANA H M	DXNPM8965B	M.E/M.Tech	01/10/2019	POWER ELECTRONICS AND DRIVES	Assistant Professor	05/08/2024	100	0	0	Yes	Regular	
Mr. RAJA D	BVHPR2864J	M.E/M.Tech	01/06/2012	ADVANCED MATERIALS TECHNOLOGY	Assistant Professor	22/02/2013	100	100	100	Yes	Regular	
Mr. SREENIVA	AJVPD4157B	M.E/M.Tech	30/03/2007	COMPUTERAIDED DESIGNAND COMPUTERAIDEDMANUFACTURING	Assistant Professor	01/08/2011	100	100	100	Yes	Regular	
Mr. ARASU KU	BGIPA9894B	M.E/M.Tech	25/11/2010	ADVANCED MATERIALS TECHNOLOGY	Assistant Professor	03/02/2014	100	100	100	Yes	Regular	
Dr.NATARAJAI	AEIPK0250Q	M.Sc. and PhD	18/06/1998	POLYMERS AND COMPOSITION	Professor	02/01/2024	100	0	0	Yes	Regular	
Mrs.SPURTHI	DSNPS9853M	M.Sc	13/07/2010	INDUSTRIAL CHEMISTRY	Assistant Professor	18/03/2019	100	100	100	Yes	Regular	
Dr.NATARAJAI	AGAPN1710A	ME/M. Tech and PhD	14/09/2018	CAD CAM AND COMPOSITES	Associate Professor	01/03/2019	100	0	0	Yes	Regular	
Mr. NAVEENA	AALPN3751G	B.E/B.Tech	27/11/1985	ELECTRONICS	Assistant Professor	21/08/2019	100	100	100	Yes	Regular	
Mr.KARTHEEK	CCQPK8110D	M.E/M.Tech	06/11/2015	COMPUTER VISION	Assistant Professor	05/07/2023	100	0	0	Yes	Regular	
Mrs THANGA L	BFAPM3743Q	M.Phil	30/04/1994	MATHEMATICS	Assistant Professor	02/05/2016	100	100	0	Yes	Regular	
Mr. GANGAPP/	BGOPG6937P	MA	06/05/2010	KANNADA	Assistant Professor	04/06/2017	100	100	100	Yes	Regular	
Mr. M KARTHII	EBXPK7790F	M.Sc	05/05/2017	ORGANIC CHEMISTRY	Assistant Professor	01/07/2023	100	100	0	Yes	Regular	
Ms. BALAVIDH	AXHPB6989R	M.SC. (Mathematics)	13/11/2013	MATHEMATICS	Assistant Professor	01/08/2015	0	100	100	No	Regular	29/08/2024
Mr. H.SENTHIL	FHFPS3008R	M.E/M.Tech	01/06/2013	VLSI DESIGN	Assistant Professor	11/01/2021	0	100	100	No	Regular	13/07/2024
Dr. N Y MAHAI	ATRPN2879B	M.Sc. and PhD	01/02/2018	CRYSTAL GROWTH	Associate Professor	25/08/2010	0	100	100	No	Regular	06/04/2024
Dr. K. SIRIKOI	DNPPK7624K	ME/M. Tech and PhD	13/07/2020	MACHINE DESIGN	Assistant Professor	02/11/2022	0	100	100	Yes	Regular	
Dr.SHIVASHAI	CWUPS1651R	ME/M. Tech and PhD	07/03/2024	ADVANCED MATERIAL	Assistant Professor	14/09/2010	100	0	0	Yes	Regular	
Mr. RAVINDRA	BPXPR8078G	M.E/M.Tech	19/09/2015	INDUSTRIALAUTOMATIONAND ROBOTICS	Assistant Professor	08/02/2017	0	0	100	No	Regular	31/03/2023
Mrs. UPASANA	CQCPM2589L	M.E/M.Tech	18/04/2011	COMPUTER SCIENCE AND ENGINEERING	Assistant Professor	13/05/2022	0	100	100	No	Regular	07/12/2023
Mr.LOHITH C	APEPL5297A	M.E/M.Tech	02/06/2014	COMPUTER SCIENCE AND ENGINEERING	Assistant Professor	31/12/2021	0	0	100	No	Regular	18/10/2023
Mr.NARENDRA	BVHPN3408G	M.Sc	05/06/2012	PHYSICS	Assistant Professor	19/04/2023	0	100	0	No	Regular	04/09/2024
Ms. LUNA SHF	EVLPS5786R	M.Phil	20/11/2008	ENGLISH	Assistant Professor	06/07/2018	0	100	100	No	Regular	27/07/2024
Mrs.PRIYANKA	ATHPP7389M	M.Phil	30/04/2009	PHYSICS	Assistant Professor	20/08/2024	100	0	0	Yes	Regular	
Ms.JAYANTHI	BOJPB7589F	MA	30/03/2016	ENGLISH	Assistant Professor	22/08/2024	100	0	0	Yes	Regular	
Mrs.KAVITHA I	AMLPA3557D	M.E/M.Tech	10/04/2004	MACHINE LEARNING	Assistant Professor	26/08/2024	100	0	0	Yes	Regular	
Ms.LIKITHA K	BIYPL2845R	M.SC. (Mathematics)	14/09/2022	MATHEMATICS	Assistant Professor	05/12/2022	100	100	100	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)
2022-23(CAYm2)	300	19	16	5
2023-24(CAYm1)	360	21	17	5
2024-25(CAY)	510	27	19	5
Average	390	22	17	5

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

Institute Marks : 3.00

Year	x (Number Of Regular Faculty with Ph.D)	y (Number Of Regular Faculty with Post graduate Qualification)	RF (Number Of Faculty Members required as per SFR of 20:1	Assessment Of Faculty Qualification [(5x + 3y) / RF]
2022-23	2	13	15	3.00
2023-24	2	16	18	3.00
2024-25	5	19	25	3.00

Average Assessment: 3.00

8.3 First Year Academic Performance (10) Total Marks 6.49

Institute Marks : 6.49

Academic Performance	2024-25	2023-24	2022-23
Mean of CGPA or mean percentage of all successful students(X)	6.99	7.80	6.64
Total Number of successful students(Y)	54.00	18.00	41.00
Total Number of students appeared in the examination(Z)	60.00	21.00	42.00
API [X*(Y/Z)]	6.29	6.69	6.48

Average API[(AP1+AP2+AP3)/3] : 6.49

Assessment [1.5 * Average API] : 6.49

8.4 Attainment of Course Outcomes of first year courses (10) Total Marks 10.00

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

Institute Marks : 5.00

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

The course outcome assessments are carried out by two methods.

1. Direct method

2. Indirect method

Direct method of Assessment: Direct method gives the course outcomes through Continuous internal assessments (CIA), seminars, assignments and University semester end examinations (SEE). The attainment of each COs in each internals are calculated systematically and recorded. A target is set to attain each COs, and the attainment percentage is compared at the end of the semester. If the set target is attained, a higher attainment level is set for the next academic year. On the other hand if the target is not reached, then suitable actions are planned to attain the same in future.

The various tools for assessing the students

- Continuous Internal Assessments
- Assignment (Seminar/Quiz/unit test/Mini projects)
- Semester end examinations

Table 8.4.1a Components of Direct Assessment

2021 scheme regulation under VTU – With effect from 2021	**2022 scheme regulation under VTU –With effect from 2022**
1. Internal assessment tests (IA) 2. Assignments/Quiz 3. Group discussion / seminars / quiz 4. Semester end examination **(SEE) 50%-SEE+50% CIE**	1. Internal assessment tests (IA) 2. Continuous Comprehensive Assessments (CCAs) 3. Semester end examination **(SEE) 50%-SEE+50% CIE**

Course Outcome (CO) Attainment

I. **CO Attainment through CIE**

CO attainment illustrates the performance of a student in a particular course. CO attainment is calculated based on students score in each assessment tools. CO's for every course is followed as prescribed by VTU and is distributed by Course instructor based on the Bloom's taxonomy in all assessment parameters for theory and laboratory courses. For every Internal Assessments, Assignments/ Quiz/ Seminar/ Group discussion conducted the course instructor maintains a separate database of marks secured in course file which is reviewed and approved by HOD's. Based on which marks are considered for the calculation of attainment.

Theory Course assessment: Internal Assessments, Assignments/ Quiz/ Seminar/ Group discussion.

Laboratory Course assessment: Conduction of experiments, Internal Assessments.

II. **CO Attainment through SEE**

CO attainment through SEE will be derived from the Marks scored by the students in the university examination in that particular course.

As SEE distribution of CO secured by each student is not disclosed by university, for justification and validation of data score the SEE marks secured by each student is evenly distributed.

PART 2-INDIRECT ASSESSMENT

Indirect method includes course end survey for particular course in a semester. Feedback will be collected at the end of every course are mapped to CO's. It contributes 20% towards CO attainment.

A. **PROCESS INVOLVED IN SETTING THE COURSE TARGET AND ATTAINMENT ASSESSMENT:**

The department collects the previous years CO data and arrives at the target for the subsequent year for all the courses mentioned in the curriculum. The flow chart for calculating the CO attainment process is given in Figure 8.4.1.

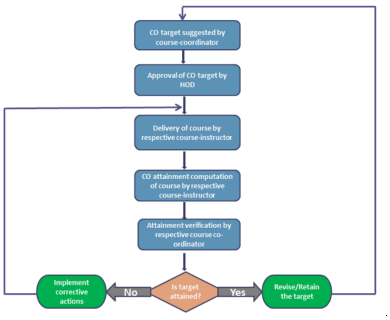


Figure 8.4.1.1 Flow Chart of CO Target Fixation and Attainment Process

• The assigned course target is reviewed by the course coordinator and approved by the department HOD.

• If the set course target is achieved, target for subsequent academic year is revised to higher level by the department.

• If not, the root cause is analyzed and necessary actions are taken to achieve the same in the subsequent academic year.

B-ASSESSMENT TOOLS FOR COURSE OUTCOMES EVALUATION DIRECT ASSESSMENT TOOLS

Table 8.4.1b Direct Assessment Tools for 2021 and 2022 Scheme Courses

2021 Scheme (Academic Year 2021-22)		
Theory Courses (3 Credit /1 Credit)	**Engineering Visualization Course (3 Credit)**	**Lab Courses (1 Credit)**

CIE-Internal Assessment Test- Three Internal Assessment Tests conducted for 40 marks and each scaled down to 20 Marks (3 Credit). Three Internal Assessment Tests of MCQ pattern conducted for 20 Marks (1 Credit). **CIE-Assignment-**Two Assignments conducted for 50 marks and each scaled down to 10 Marks. **CIE-Seminar/Quiz/Group discussion -** conducted for 20 marks. **CIE-Total-CIE-IA Test + CIE-**Assignment + CIE-Seminar/Quiz/Group discussion=100 marks scaled down to 50 Marks **SEE-**One exam for 100 marks scaled down to 50 Marks. **Max. AssessmentMarks:** CIE: 50 Marks SEE: 50 marks	**CIE-Drawing -** Marks for each drawing are evaluated, added and scaled down to 30 Marks. **CIE-IA Test-**One IA Test conducted for 100 marks and scaled down to 20 Marks. **SEE-**One exam for 100 marks scaled down to 50 Marks. **Max. AssessmentMarks:** CIE: 50 marks SEE: 50 marks	**CIE-Experiment Conduction -** Experiment conduction and record evaluation marks of all the experiments are scaled down to 30 Marks. **CIE-IA Test -**Two IA Tests conducted for 100 marks and scaled down to 20 Marks. **SEE-**One exam for 100 marks scaled down to 50 Marks. **Max. AssessmentMarks:** CIE: 50 marks SEE: 50 marks

2022 Scheme (Academic Year 2022-23 Onwards)	
Theory Courses (3 Credit/2 Credit/1 Credit)	**Integrated course (I/C) or Integrated Professional Core Course (IPCC Course) (4 Credit)**
CIE-Internal Assessment Test - Two Internal Assessment Tests conducted for 40 marks and average of the tests scaled down to 25 Marks (for 3 Credit/2 Credit Courses). Average of 2 Internal Assessment Tests of MCQ pattern conducted for 25 Marks (for 1 Credit Course) **CIE-CCAs** Any two assessments are evaluated and scaled down to 25 Marks. **SEE-**One exam for 100 marks scaled down to 50 Marks. **Max. AssessmentMarks:** CIE: 50 marks SEE: 50 marks	**CIE-Internal Assessment Test -** Two Internal Assessment Tests conducted for 40 marks and average of the tests scaled down to 15 Marks. **CIE-CCAs:** Any two assessments are evaluated and scaled down to 10 Marks. **CIE-Practical:** Experiment conduction and record evaluation marks of all the experiments are scaled down to 15 Marks. **CIE-Practical Test -** One Test conducted for 50 marks scaled down to 10 Marks. **SEE -** One exam for 100 marks scaled down to 50 Marks. **Max. AssessmentMarks:** Total CIE-Theory: 25 marks Total CIE-Practical: 25 marks SEE: 50 marks

INDIRECT ASSESMENT TOOLS

Indirect method of Assessment

Indirect attainment of COs is determined from Course End Surveys of the respective courses.

The course end survey is taken the students for the individual COs at the end of the respective semester.

Overall CO attainment is calculated as shown below:

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

Record the Attainment of Course Outcomes of all Courses with Respect to Set Attainment Levels

Program shall have set Course Outcome attainment levels for all courses. (The attainment levels shall be set considering average performance levels in the university examination or any higher value set as target for the assessment years. Attainment level is to be measured in terms of student Performance in internal assessments with respect to the Course Outcomes of a course in addition to the performance in the University examination).

Attainment level is correlated to 3, 2 or 1 depending on the marks scored as given below.

Attainment level 3: The students scoring more than 60% of the marks out of the relevant maximum marks for that CO

Attainment level 2: The students scoring between 50% and 60% of the marks out of the relevant maximum marks for that CO

Attainment level 1: The students scoring between 40% and 50% of the marks out of the relevant maximum marks for that CO

Note:

If percentage of students scored above class Average in CIA≥60% Attainment level is 3

Else if <60% but ≥50% Attainment level is 2

Else if <50% but ≥40% Attainment level is 1

Else Attainment level is 0

From the individual students performance consolidated CO attainment calculation is made

8.4.2 Record the attainment of Course Outcomes of all first year courses (5) Institute Marks : 5.00

Academic Year: 2023-24 Programme: B.E Stream Applicable: ME

Table: 8.4.2.1- CO Attainment of all first year course of AE branch for AY 2023-24 (CAYm1)

Sl. No.	Course Name	Course Code	Course Handled by	Faculty Responsible	Course Index	Overall CO Attainment Level					CO Attainment
						CO1	CO2	CO3	CO4	CO5	
1	Mathematics I for Mechanical Engg. Stream	BMATM101	Prof. Balavidhya S	Dept. of Mathematics	C101	2	2	2	2	3	55.24
2	Applied Chemistry for ME Stream	BCHEM102	Prof. Spurthi Y L	Dept. of Chemistry	C102	3	3	3	3	3	62.88
3	Computer-Aided Engineering Drawing	BCEDK103	Prof. Raja D	Dept. of ME	C103	3	3	2	3	3	61.9
4	Introduction to C Programming	BSC1K104E	Prof. Upasana Mahajan	Dept. of CSE	C104	3	3	3	3	3	68.68
5	Renewable Energy Sources	BETCK105E	Dr. Arasu Kumar	Dept. of ME	C105	2	3	3	3	1	88.92
6	Communicative English	BENGK106	Prof. R Naveena Nesan	Dept. of ECE	C106	3	1	3	1	3	64.96
7	Samskrutika Kannada	BKSKK107	Prof. Shreyas H C	Dept. of CV	C107	3	3	3	3	3	96.14
8	Balake Kannada	BKBKK107	Prof. Shreyas H C	Dept. of CV	C108	3	3	3	3	3	96.85
9	Scientific Foundations for Health	BSFHK258	Prof. Spurthi Y L	Dept. of Chemistry	C109	3	3	3	3	3	81.92
10	Mathematics-II for Mechanical Engg. Stream	BMATM201	Prof. Likitha K C	Dept. of Mathematics	C110	3	3	3	3	3	79.84
11	Applied Physics for ME Stream	BPHYE202	Prof. Chaitra M M	Dept. of Physics	C111	3	3	2	1	2	57.68
12	Elements of Mechanical Engineering	BEMEM203	Dr. Natarajan T	Dept. of ME	C112	3	3	2	3	3	66.67
13	Introduction to Python Programming	BPLCK205B	Prof. shailesh kumar	Dept. of CSE	C113	3	3	3	3	1	65.80
14	Introduction to Electronics Communication	BESCK205C	Prof. Jyothi	Dept. of ECE	C114	3	0	2	1	2	52.41
15	Professional Writing Skills in English	BPWSK206	Prof. R Naveena Nesan	Dept. of ECE	C115	3	0	3	1	1	55.15
16	Indian Constitution	BICOK207	Prof. R Naveena Nesan	Dept. of ECE	C116	3	3	0	3	3	65.04
17	Innovation and Design Thinking	BIDTK258	Dr. Velmurugan P	Dept. of ME	C117	3	3	3	0	0	57.12

Academic Year: 2023-24 , Programme: B.E AE

Table 8.4.2.1: Sample attainment of Theory Reneweble energy sources for 1st semester under 2022 scheme

Academic Year	2023-24	Course Outcome Number	Course Outcome	CO Attainment	Target
Scheme	2022	CO-1	Describe the environmental aspects of renewable energy resources. In Comparison with various conventional energy systems, their prospects and limitations.	3	3
Course Number	C105	CO-2	Describe the use of solar energy and the various components used in the energy production with respect to applications like-heating, cooling, desalination, power generation.	3	3
VTU Course Code	BETCK105E	CO-3	Understand the conversion principles of wind and tidal energy	2	3
Course Name	RENEWABLE ENERGY SOURCES	CO-4	Understand the concept of biomass energy resources and green energy.	3	3
		CO-5	Acquire the basic knowledge of ocean thermal energy conversion and hydrogen energy.	1	3

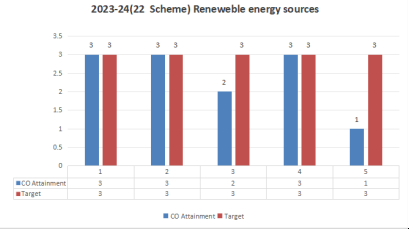


Fig 8.4.2.1: Sample attainment of Theory Reneweble energy sources for 1st semester under 2022 scheme.

Table 8.4.2.1: OVERALL CO ATTAINMENT (OA) of 1st Semester Reneweble energy sources for AE branch for AY 2023-24

CO	0.00	Attainment level through CIE	Percentage of students scored above Class Average Marks in SEE	Attainment level through SEE	Direct CO Attainment (DA) = 0.5*SEE+0.5*CIE	Direct CO Attainment level	Indirect CO Attainment (IDA)	Indirect CO Attainment level	Overall CO Attainment =0.8*DA+0.2*IDA	Overall CO Attainment level
C508.1	148.72	3	56.41	2	102.57	3	87.80	3	99.61	3
C508.2	151.28	3	56.41	2	103.85	3	89.43	3	100.96	3
C508.3	151.28	3	56.41	2	103.85	3	91.06	3	101.29	3
C508.4	151.28	3	56.41	2	103.85	3	92.68	3	101.61	3
C508.5	0.00	0	56.41	2	28.21	0	92.68	3	41.10	1
Average	120.51	2.40	56.41	2.00	88.46	2.40	90.73	3.00	88.92	2.60

Academic Year: 2023-24 Programme: B.E AE

Table 8.4.2.2: Sample attainment of Theory Physics Course 2nd semester under 2022 scheme

Academic Year	2023-24	Course Outcome Number	Course Outcome	CO Attainment	Target
Scheme	2022	CO-1	Elucidate the concepts in oscillations, waves, elasticity and material failures	3	3
Course Number	C111	CO-2	Discuss the fundamentals of Thermoelectric materials and their application	3	3
VTU Course Code	BPHYM202	CO-3	Summarize the low temperature phenomena and generation of low temperature	2	3
Course Name	APPLIED PHYSICS FOR ME STREAM	CO-4	Explain the various material characterization techniques	1	3
		CO-5	Practice working in groups to conduct experiments in physics and perform precise and honest measurements.	2	3

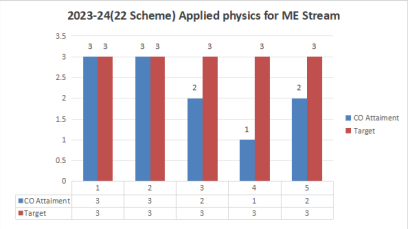


Fig 8.4.2.2: Sample attainment of Theory Physics Course for 1st semester under 2022 scheme.

Table 8.4.2.2: OVERALL CO ATTAINMENT (OA) of 2nd Semester Physics for AE branch for AY 2023-24

CO	Percentage of students scored >=60%in CIE	Attainment level through CIE	Percentage of students scored above Class Average Marks in SEE	Attainment level through SEE	Direct CO Attainment (DA) = 0.5*SEE+0.5*CIE	Direct CO Attainment level	Indirect CO Attainment (IDA)	Indirect CO Attainment level	Overall CO Attainment =0.8*DA+0.2*IDA	Overall CO Attainment level
C202.1	55.17	2	55.17	2	55.17	2	90.52	3	62.24	3
C202.2	52.07	2	55.17	2	53.62	2	90.23	3	60.94	3
C202.3	42.76	1	55.17	2	48.97	1	87.36	3	56.64	2
C202.4	24.13	0	55.17	2	39.65	0	91.09	3	49.94	1
C202.5	45.86	1	55.17	2	50.52	2	91.09	3	58.63	2
Average	44.00	1.20	55.17	2.00	49.59	1.40	90.06	3.00	57.68	2.20

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
C101	1	1.54	0.99	0.67	0	0	0	0	0	0	0.55	0.55
C102`	1.89	0.63	0.63	0	0	0	0.63	0	0	0	0	0
C103	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C104	2.06	1.92	1.92	0.68	PO5	PO6	PO7	PO8	PO9	PO10	PO11	1.38
C105	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C106	0	0	0	0	0	0	0	0	0	1.71	0	0
C107	0	0	0	0	0	0.96	0	0.96	0	1.92	0	0.96
C108	0	0	0	0	0	0.97	0	0.97	0	1.94	0	0.97
C109	0	0	0	0	0	1.64	0	0	0	0	0	0
C110	2.4	1.6	1.75	0.95	0.95	0	0	0	0	0	0	1.6
C111	1.43	0.95	0.09	0	0.38	0	0	0.28	0.28	0	0	0
C112	1.99	1.33	0	0	0	0.66	0.66	0	0	0.66	0	0
C113	1.69	1.54	1.54	0.45	0	0	0	0	0	0	0	1.13
C114	0.92	1.04	0.73	0.34	0.4	0.52	0	0	0	0	0	0.52
C115	0	0	0	0	0	0	0	0	0.2	1.14	0	0
C116	0	0	0	0	0	0	0.38	0.56	0.19	0	0	0
C117	0	0	0	0	0	0	0.38	0.56	0.19	0	0	0

PO Attainment Level

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
Direct Attainment	1.67	1.32	1.09	0.62	0.58	0.95	0.51	0.67	0.22	1.47	0.55	1.02

PSOs Attainment:

Course	PSO1	PSO2
C101	0	0
C102	0	0
C103	PSO1	PSO2
C104	1.66	0
C105	0	0
C106	0	0
C107	0	0.96
C108	0	0.97
C109	0	0
C110	0	0
C111	0	0.95
C112	0	0
C113	1.69	0
C114	0	0
C115	0	0
C116	0	0
C117	0	0

PSO Attainment Level

Course	PSO1	PSO2
Direct Attainment	1.68	0.96
CO Attainment	1.68	0.96

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

POs Attainment Levels and Actions for Improvement- (2023-24)

POs	Target Level	Attainment Level	Observations
PO 1 : Engineering Knowledge			
PO 1	2.82	1.67	60% of target level is achieved. Knowledge of science and mathematics is used for engineer application
Action 1: conduction of bridge courses for the first-year students. Action 2: conduction of tutorial classes to emphasize the application of mathematics, science, and engineering fundamental			
PO 2 : Problem Analysis			
PO 2	2.35	1.32	56% of target level is achieved. The knowledge of mathematics and science used to analyze the problems
Action 1: Incorporation of more numerical problems in regular and tutorial classes.			
PO 3 : Design/development of Solutions			
PO 3	2.15	1.09	51% of target level is achieved. Innovative skills and learning the basic essential concepts in public help
Actions 1: More importance could be given from first year itself to build students prepare themselves for Design and development of solutions to solve engineering problems			
PO 4 : Conduct Investigations of Complex Problems			
PO 4	1.6	0.62	38% of target level is achieved. Expose to experimental analyze of the data
Actions 1: Difficulty level of the complex problems and concepts will be observed on the basis of the student's academic performance and suitable steps will be taken to solve the problem.			
PO 5 : Modern Tool Usage			
PO 5	2.17	0.58	27% Target level is achieved. Few first year course are fundamental and modern to usage is related with the syllabus
Action 1: Students need to learn modern tool usage from first year itself to create interest and identify the importance of the subject in engineering and hence more number of first year subjects could give importance to this po			
PO 6 : The Engineer and Society			
PO 6	1.5	0.95	63% of target level is achieved. Conducted environmental awareness program
Action 1: Organizing blood donation camp, yoga, safety awareness and cultural programmes.			
PO 7 : Environment and Sustainability			
PO 7	2.67	0.51	19% of target level is achieved. Conducted environmental awareness program
Action 1: World Environmental day and plantation programmes organized. Action 2: Guest lectures are arranged for improving the knowledge and sustainable development			
PO 8 : Ethics			
PO 8	2	0.67	34% target level is achieved. UHV information shared
Action 1: More case studies and presentations are made to enhance ethical principles and exhibit high degree of professionalism.			
PO 9 : Individual and Team Work			
PO 9	2.1	0.22	11% of target level is achieved. Students were performed activities as individual and team
Action 1: Students will be encouraged to participate in conferences/seminars/workshops. Action 2: Additional Co-Curricular activities will be initiated. Students will be motivated to participate in such activities.			
PO 10 : Communication			
PO 10	2.22	1.47	66% of target level is achieved. The importance of good communication needs to be emphasized to students and assignments based on report writing and documentation can be given to students.
Action 1: Communication and presentation training will be imparting as part of academic time table.			
PO 11 : Project Management and Finance			
PO 11	1.5	0.55	37% of target level is achieved. Only few courses are related to PO11
Action 1: Students are encouraged to participate in technical competition right from the beginning of the course to acquire project management skills.			
PO 12 : Life-long Learning			
PO 12	1.41	1.02	73%of target level is achieved. Students are motivated to enhance the skill as life long learning (Soft skill program)
Action 1: Proctors guide the students to set their goals and task-related strategies. Action 2: Motivating Students to take up higher studies.			

PSOs Attainment Levels and Actions for Improvement- (2023-24)

PSOs	Target Level	Attainment Level	Observations
PSO 1 : Apply their knowledge in the domain areas of Aerodynamics, Aircraft Propulsion, Aircraft Structures and Flight mechanics by acquiring knowledge in basic engineering, mathematics, science and Aeronautical engineering			
PSO 1	2.7	1.68	62% of target level is achieved
Action 1 :More training needs to be given on Programming technologies.			
PSO 2 : Graduates will exhibit professionalism, team work in their chosen profession and adapt to current trends, technologies, research and industrial scenarios by pursuing lifelong learning.			
PSO 2	2.4	0.96	40% of target level is achieved
Action 1: Students are motivated to take up the real-life problems which gives exposure to latest technologies			

9 STUDENT SUPPORT SYSTEMS (50) Total Marks 50.00

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

Institute Marks : 5.00

The mentoring system at our institution focuses on professional guidance, career advancement, and holistic development. Each mentor, responsible for 20 students, meets mentees weekly to provide academic, co-curricular, and career support. First-year students are mentored by the Basic Science department, while higher semester students are assigned mentors within their respective departments. Mentors foster trust, guide students through challenges, and act as key points of contact for parents. The system enhances academic performance, reduces dropouts, and encourages participation in extracurricular activities, leadership programs, and career-focused initiatives, ensuring students are well-prepared for personal and professional success.

Type of Mentoring: Professional guidance/career advancement/all-round development.

Number of Faculty Members: 1 for every 20 students

Frequency of Meetings: 1 hour per week

Details of Mentoring System

I. Objective of Mentoring System

The objective of the mentoring system is to support students personal, academic, and career needs. This helps students identify their strengths and work on them with constructive criticism, encouragement, and praise from their mentors (full-time teaching faculty).

Mentoring is essential for students to achieve emotional stability and promote clarity in thinking and decision-making for overall progress.

Practice:

The mentoring system is systematically implemented in the institution, as outlined below.

II. Mentor Allotment

First Year Students

First-year students are under the care of the Basic Science department.

A class coordinator (full-time teaching faculty) is assigned to each section; and two to three mentors are allocated based on class strength.

The class coordinator also serves as one of the mentors.

Each mentor is responsible for a maximum of 20 students.

Higher Semester Students

Full-time teaching faculty members from the respective department are assigned to each student by HODs during the 3rd semester. Students remain under the same mentor until the completion of the course.

A class coordinator is assigned for each semester, with two to three mentors allocated based on class strength.

The class coordinator also serves as one of the mentors.

Each mentor is responsible for a maximum of 20 students.

III. Role of Mentor

Mentors play a vital role during the students course of study.

Mentors discuss various personal and academic-related issues, fostering a healthy bond and creating trust and confidence with the mentee to encourage them to share their problems.

Mentors guide, motivate, and encourage students in times of need.

Mentors help mentees make the right decisions, instil ethics, and develop interpersonal skills.

Mentors act as a primary point of contact for parents/guardians in times of need.

IV. Efficacy of Mentoring System

The prevailing mentoring system operates on the principle of "**TO GROW**":

Tunes up the quality of the teaching-learning process through student-centric practices.

Objective to provide continuous support in problem-solving, individual care, and improves students self-confidence.

Governs with equality to all students to learn and achieve their goals, utilizing physical facilities and resources effectively.

Readiness to take up any given role or responsibility to build interpersonal skills.

Organizes activities (academic/extra/co-curricular) that enhance students skill development.

Withstands the risk of failures and quickly bounces back, providing support over personal/academic/extra/co-curricular activities.

V. Meeting Schedule

- The mentor meets the mentee once a week as mandatory
- The mentoring hour is scheduled in the timetable

VI. Mentoring Activities

Week 1:

First Year Students:

1st Session:

- Collection of personal and academic details.
- One-on-one introduction mentor-mentee.

Higher Semester Students:

1st Session:

- Collection of personal and academic details from the Basic Science department.
- Allotment of department mentors by HOD.
- One-on-one introduction mentor-mentee.

Week 2 Onwards:

Mentor meets the mentee personally during the respective slots to discuss various aspects such as mentees strengths, weaknesses, interests, dislikes, etc., to create a strong bond.

Address any circulars related to academic/co-curricular activities received from the University/Institution.

Academic Support:

- A week before the commencement of every internal assessment test, mentors gather feedback on the level of understanding of each course.
- If any learning difficulty is identified, the course instructor is informed, and course counseling is provided.
- Mentees are advised to prepare a learning schedule before internal assessment, and the mentor tracks the follow-up of the schedule.
- Before every internal assessment test, any attendance shortage is identified, and the mentor supports the students progress.
- Mentors communicate with parents/guardians regarding attendance shortages (if any) before every internal assessment test.
- If a mentee has secured low/failing marks in any course after every internal assessment test, it is identified and addressed.
- Mentors have one-on-one conversations with course instructors and mentees regarding each mentees performance and encourage improvement.
- Mentors communicate with parents/guardians regarding academic scores after every internal assessment test.
- Mentors maintain academic records in the department file for easy tracking even in the mentors absence.

Co-curricular/Extra-curricular Support:

- Mentors monitor students participation in co-curricular activities.
- Mentor provides suggestions/information on suitable events to students.
- Mentors motivate students to participate in multiple activities to enhance their technical and life skills.
- Students are encouraged to engage in inter-departmental projects based on their interests.
- Information regarding various state and national-level symposiums, seminars, conferences & competitions, training programs, workshops, etc., is provided.
- Students participate in various inter-college/intra-college co-curricular and extracurricular activities.
- Students involvement in NSS participation is monitored by mentors and reported to HODs.

- Mentors identify potential talents among students and encourage them to participate in various extra-curricular activities like sports, photography, and social activities.
- Participation in extra-curricular activities molds their character and personality.
- Students emerge physically and mentally strong. Such participations increase students confidence.

Career Support:

Mentors, through the Career Guidance Cell, guide students to achieve their career aims by organizing programs such as:

- Awareness programs for higher studies in India & abroad.
- Motivational programs.
- Entrepreneurial skill development programs.
- Placement training programs.
- Skill development programs.

VII. Efficacy Achieved through Mentoring System

Through this effective mentoring system:

a. Academic Progress:

- Students academic performance has improved.
- Attendance shortfalls have reduced.
- The dropout rate is minimized.
- Peer learning is developed, improving the quality of outcomes.
- Students securing university ranks have increased.
- Students pursue certification courses/MOOC courses.
- The conduction of tutorial/remedial classes has shown a considerable increase in overall results.

b. Co-curricular/Extra-curricular Progress:

- Many inter-departmental projects, symposiums, conferences & competitions, training programs, workshops have made students industry-ready.
- Students actively participate in programs organized at the college level, like Science day, Voters day, Teachers day, Drug eradication day, Ambedkhar Jayanthi, Kannada Rajosthava, etc.
- Students develop leadership skills by organizing society interactive programs like NSS Activities, blood donation day, Free eye Camp, Tree plantation program, Swatch Bharat Program, Fit India Program, etc.
- Students participate in cultural activities and sports organized by the University/other colleges and receive rewards and awards.

c. Career Progress

- All mentors, with the assistance of the placement enhancement coordinator of each department, along with the Career Guidance Cell, encourage students to participate in various awareness programs organized by the institution.
- Student placements are ensured through the training programs organized by the Placement Cell.
- In-house and external job fairs, HR conclaves are scheduled to enhance student placements, resulting in a consistent increase in the number of students placed over the years.
- Many students receive multiple job offers upon program completion, further highlighting the success of the mentoring support.

GOPALAN COLLEGE OF ENGINEERING AND MANAGEMENT
Hoodi, Bangalore - 560 048

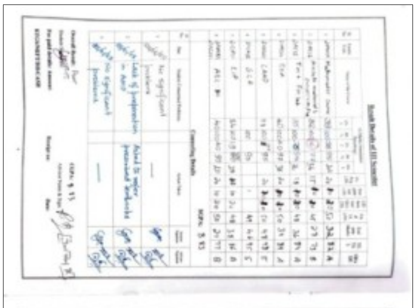
STUDENT COUNSELING FORM

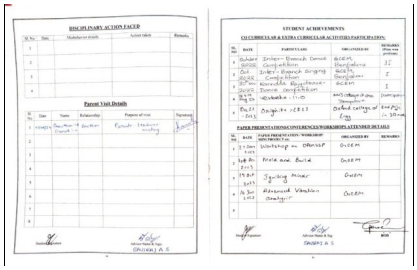
Name	Gowtham. Y. V	USN	1GD21AE011
Year of joining	2021	Nationality: Blood Group	Indian O+
E-mail	gowthamyv[illegible]@gmail.com	Mob. No.	97408778[illegible]
% of marks in SSLC	81%	% of marks in PUC	93%
Parents information:	Father		Mother
Name	Venkataramana. Y. K	Name	Padma. G
Occupation	Daily wage worker	Occupation	Housewife
E-mail	-	E-mail	-
Mob. No.	9591959577	Mob. No.	8618848486
Special Skills/Interests (If any)			
Permanent Address with Pin code		Present Contact Address (If different from Permanent Address)	
(100) House no, [illegible], Chintamani, Chikkaballapur, Karnataka		74, Bhadraiah building, Geetha Clinic Road, Devarandra, K. R. Puram.	

Details of Person to contact in case of Emergency:
Name: Ganesh. Y. V Relationship: Brother
Address: 74, Bhadraiah building, Geetha Clinic Road, [illegible]
Mobile No. [illegible] E-mail [illegible]@gmail.com

RESULT DETAILS

Semester		I	II	III	IV	V	VI	VII	VIII
Result	SGPA	8.95	9.05	8.8	8.68	8.5	8.8		
	CGPA	8.95	8.95	8.85	8.83	8.79	8.73		
Backlogs if any									
Backlog courses completed (Semester)									
Remarks									





DISCIPLINARY ACTION FACED

Sl. No	Date	Misdemeanor details	Action taken	Remarks
1				
2				
3				
4				

Parent Visit Details

Sl. No	Date	Name	Relationship	Purpose of visit	Signature
1	10/08/23	Sharmila K Gowda	Parent	Parent meeting	
2					
3					
4					
5					
6					
7					
8					

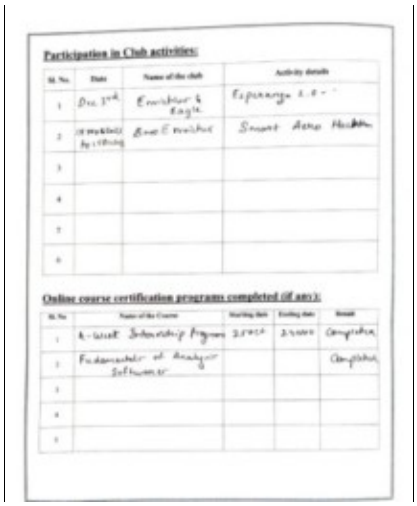
STUDENT ACHIEVEMENTS

CO-CURRICULAR & EXTRA CURRICULAR ACTIVITIES PARTICIPATION:

Sl. No	DATE	PARTICULARS	ORGANIZED BY	REWARDS (Prize won/ position)
1	October 2023	Inter-Branch Carrom Competition	ECE/EPL Bangalore	3rd
2	Oct 2023	Inter-Branch Singing Competition	ECE/EPL Bangalore	2nd
3	27th Nov 2023	Kannada Rajyotsava	ECE/EPL	1
4	30th Nov 2023	Dance competition	ECE/EPL	
5	Aug 23 - Dec 23	Volunteering in Cleanliness drive	AMC college & Bangalore	Participation
6	Aug 23 - Dec 23	Completed 2 online courses	Oxford college of Engg	Certificate

PAPER PRESENTATIONS/CONFERENCES/WORKSHOPS ATTENDED DETAILS

Sl. No	DATE	PAPER PRESENTATION / WORKSHOP / CONFERENCE Title	ORGANIZED BY	REWARDS
1	1st Jun 2023	Workshop on Chemist	ECE/EPL	
2	5th Jun 2023	Trees and Soil	ECE/EPL	
3	19th Jun 2023	Spring Mixer	ECE/EPL	
4	4th Jun 2023	Advanced Vacation Training	ECE/EPL	



Participation in Club activities:

Sl. No.	Date	Name of the club	Activity details
1	Dec 3rd	Environment & Eagle	Esperanza 2.0 -
2	19 May 2023	Env E Institute	Smart Home Hackathon
3			
4			
5			
6			

Online course certification programs completed (if any):

Sl. No	Name of the Course	Starting date	Ending date	Result
1	4-week Internship Program	2 Oct 23	2 Nov 23	Completed
2	Fundamentals of Analysis Software			Completed
3				
4				
5				

Sample of Student counselling and academic performance report.

*****

9.2 Feedback analysis and reward /corrective measures taken, if any (10) Total Marks 10.00

Institute Marks : 10.00

Student feedback surveys are instrumental in creating a culture of improvement, fostering accountability, and ensuring that the educational experience remains student-focused and of the highest quality.

Feedback collected for all courses:

- Feedback is collected for all courses from the undergraduate students of I, II, III & IV year.

The feedback collection process:

1. Class committee meetings:

- Conducting regular class committee meetings with HOD, senior faculty, class advisors, and individual subject handling faculties.
- A group of five students from each class participates in these meetings.
- Topics covered include syllabus completion, teaching methodology, and conduct of teaching, non-teaching, and administrative staff.
- Any feedback, grievances, issues raised during the meeting is noted in the minutes of meeting and the same is resolved immediately or later based on the nature of issues.

2. Student feedback surveys:

Feedback Questionnaire:

The student feedback questionnaire is administered online using ERP software/MS Teams /Google Forms twice in a semester. Feedback 1 is collected after the first 30 days of teaching, and corrective actions are implemented based on this feedback. Feedback 2 is gathered during end of the semester.

Students are required to complete a questionnaire for each course they have taken.

Indices used for measuring the quality of teaching & learning until AY 2023-2024:

Feedback 1:

1. Punctuality
2. Clarity of Explanation
3. Alertness & Confidence (Managing Class)
4. Availability for Discussions
5. English Communication

Feedback 2:

1. Answering to Questions/Clarifying doubts
2. Subject Knowledge
3. Syllabus Coverage
4. Motivation
5. Amicability

Marks Allotted for each indices:

- Very good: 10
- Good: 7
- Poor: 2
- Very Poor: 0

Indices using for measuring the quality of teaching & learning from AY 2024-2025:

1.Has the Teacher covered the entire Syllabus as prescribed by the University/ College/ Board?

2.Has the Teacher covered relevant topics beyond the syllabus?

3.Effectiveness of Teaching-Learning in terms of: Interactive classroom /Laboratory sessions/Use of modern teaching aids.

4.Effective use of MOOCs.

5.Mentor/Guide the students to excel in his/her subject/profession/is the teacher your Role Model.

6.Support for the development of Students' skill Practical demonstration/Hands-on training

7.Encourages creativity, out of box thinking, innovation and queries on emerging areas.

8.Willingness to offer help and advice to students beyond the classroom and multidisciplinary areas.

9.Counseling of students to face societal and professional challenges.

10. Has the teacher shown fairness in the evaluation?

Open Ended Questions:

- Your Comment on Academic facilities – Any improvement needed.
- Your comment on Extracurricular facilities.
- What do you like about your teacher?
- Any other Comments/ What suggestions do you have, to improve the teachers teaching?

Marks Allotted for each indices:

- Excellent: 10
- Very good: 8
- Good: 6
- Average: 4
- Poor: 2

Consolidated is done only for the first 10 questions using the formula, last four are open ended questions:

Consolidated = (Excellent * 10) + (Very Good * 8) + (Good * 6) + (Average * 4) + (Poor * 2) /Total Number of Entries

Conclusion is arrival at by using the following conditions on a 10 point Scale.

- If total Consolidated value is greater than 9, then the result is **OUTSTANDING**
- If total Consolidated value is greater than 8 and less than 9, then the result is **VERY GOOD**
- If total Consolidated value is greater than 6 and less than 8, then the result is **GOOD**
- If total Consolidated value is greater than 4 and less than 6, then the result is **AVERAGE**
- If total Consolidated value is 2 and below 2, then the result is **POOR**

Collection Methods:

- Online modes: ERP software (edumerge, Pupilpod) /MS Teams platform / Google Forms
- Feedback 1 is taken after the first 30 days of teaching, with corrective actions implemented.
- Feedback 2 is taken at the end of the semester.

Average Percentage of students who participate:

- In average, 70 – 90% percentage of students participated for each course in the feedback process.

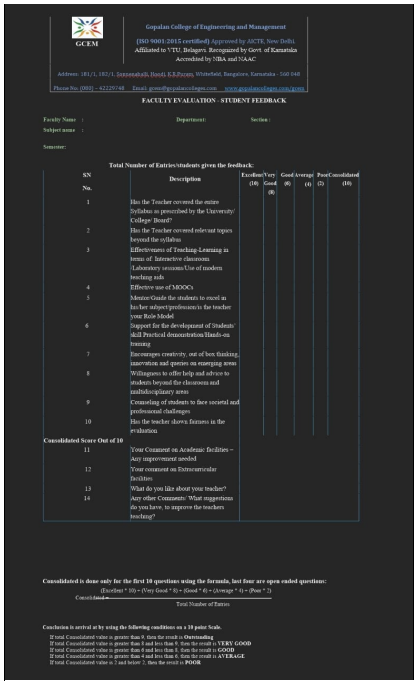
The feedback analysis process:

Data Analysis:

- Collected data is analysed for various indices for measuring the quality of teaching & learning.
- Summary of quantitative data (faculty wise & course wise) is provided to respective instructors as individual reports.
- Consolidated report is submitted to HOD/Principal for further action.

Corrective Measures:

- Faculty members with consolidated feedback scores '**less than 5**' are engaged in discussions to identify and address any problems or issues.
- Counseling sessions with HOD and Principal are conducted.
- Motivated to attend faculty development programs to enhance teaching methods.



Gopalan College of Engineering and Management

(ISO 9001:2015 certified) Approved by AICTE, New Delhi.
Affiliated to VTU, Belagavi. Recognized by Govt. of Karnataka
Accredited by NBA and NAAC

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Phone No: (080) - 42229748 Email: gcem@gopalancolleges.com www.gopalancolleges.com/gcem

FACULTY EVALUATION - STUDENT FEEDBACK

Faculty Name : Department: Section :
Subject name :
Semester:

Total Number of Entries/students given the feedback:

SN No.	Description	Excellent (10)	Very Good (8)	Good (6)	Average (4)	Poor (2)	Consolidated (10)
1	Has the Teacher covered the entire Syllabus as prescribed by the University/ College/ Board?						
2	Has the Teacher covered relevant topics beyond the syllabus						
3	Effectiveness of Teaching-Learning in terms of: Interactive classroom /Laboratory sessions/Use of modern teaching aids						
4	Effective use of MOOCs						
5	Mentor/Guide the students to excel as his/her subject professors/ is the teacher your Role Model						
6	Support for the development of Students' skill/Practical demonstration/Hands-on training						
7	Encourages creativity, out of box thinking, innovation and queries on emerging areas						
8	Willingness to offer help and advice to students beyond the classroom and multidisciplinary areas						
9	Counseling of students to face societal and professional challenges						
10	Has the teacher shown fairness in the evaluation						
Consolidated Score Out of 10							
11	Your Comment on Academic facilities – Any improvement needed						
12	Your comment on Extracurricular facilities						
13	What do you like about your teacher?						
14	Any other Comments/ What suggestions do you have, to improve the teachers teaching?						

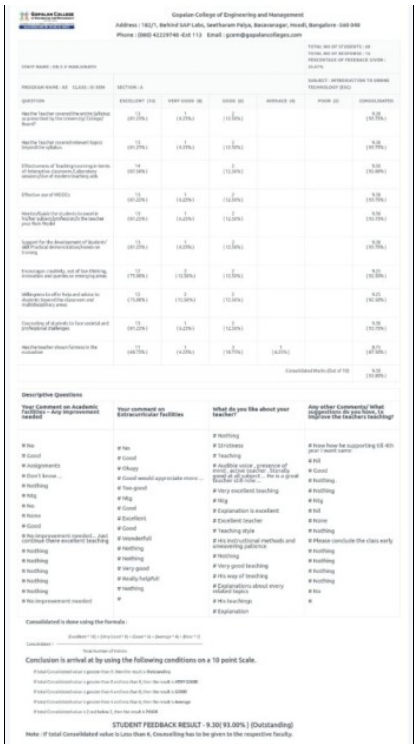
Consolidated is done only for the first 10 questions using the formula, last four are open ended questions:

$$\text{Consolidated} = \frac{(\text{Excellent} * 10) + (\text{Very Good} * 8) + (\text{Good} * 6) + (\text{Average} * 4) + (\text{Poor} * 2)}{\text{Total Number of Entries}}$$

Conclusion is arrived at by using the following conditions on a 10 point Scale.

If total Consolidated value is greater than 9, then the result is **Outstanding**
If total Consolidated value is greater than 8 and less than 9, then the result is **VERY GOOD**
If total Consolidated value is greater than 6 and less than 8, then the result is **GOOD**
If total Consolidated value is greater than 4 and less than 6, then the result is **AVERAGE**
If total Consolidated value is 2 and below 2, then the result is **POOR**

Sample student feedback form.



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Address : 181/1, Behind SAP Labs, Seetharam Palya, Ramanagar, Hoodi, Bangalore - 560 048
Phone : (080) 42229748 -Ext 113 Email : gcem@gopalancolleges.com

Descriptive Questions

Your Comment on Academic facilities – Any improvement needed	Your comment on Extracurricular facilities	What do you like about your teacher?	Any other Comments/ What suggestions do you have, to improve the teachers teaching?
No Good Assignments Don't know ... Nothing Nil No None Good No improvement needed ... Just continue these excellent teaching Nothing Nothing Nothing Nothing Nothing No improvement needed	No Good Okayy Good would appreciate more ... Too good Nil Good Excellent Good Wonderfull Nothing Nothing Very good Really helpfull Nothing #	Nothing Sir/mam Teaching Audible voice ...presence of mind ...active teacher ...literally good at all subject ... He is a great Teacher still now ... Very excellent teaching Nil Explanation is excellent Excellent teacher Teaching style His instructional methods and unwavering patience Nothing Very good teaching His way of teaching Explanations about every related topics His teachings Explanation	Now how he supporting till 4th year I want same Nil Good Nothing.. Nothing Nil None Nothing Please conclude the class early Nothing Nothing Nothing Nothing Nothing No #

Consolidated is done using the formula :

Conclusion is arrived at by using the following conditions on a 10 point Scale.

STUDENT FEEDBACK RESULT - 9.30(93.00%) (Outstanding)

Note : If total Consolidated value is Less than 6, Counselling has to be given to the respective faculty.

Sample feedback form filled by the student.

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9.3 Feedback on facilities (5) Total Marks 5.00

Institute Marks : 5.00

Student feedback provides valuable insights into the quality of facilities on campus. It helps identify areas that may need improvement or enhancement, allowing the college administration to address issues and ensure that facilities meet the standards expected by students.

Regular feedback contributes to a positive and well-supported campus environment, aligning facilities with the evolving needs of the student body.

Student Feedback Collection Process:

- Students Class Committee meeting is conducted twice in semester to address their problems.
- Suggestion box is also placed to collect feedback from the students.
- Every year at the end of the even semester, i.e. in the months of March and April, a feedback form is issued to the students by online platform MS form or google form, and the students fill it out.

Questionnaire for collecting feedback on facilities is given below.

1. **Teaching – Learning process**

Are the teaching methods and the opportunities for practical learning employed by faculty members effective, innovative and interactive?

2. **Classroom facilities**

Are classrooms equipped with adequate space, light, ventilation and modern teaching aids?

3. **Laboratory facilities**

Are the laboratories equipped with resources and well maintained?

4. **Availability and accessibility of resources in library**

Are the engineering reference materials and resources up-to-date and accessible?

5. **Use of ICT in teaching**

Are ICT tools effectively employed in teaching & learning process?

6. **Tech forums**

Are Tech Forum provides a venue to explore and discuss emerging enterprise technology?

7. **Placement cell**

Are the placement cell arranging adequate interviews with prospective companies and provide required training to the students based on the needs of the company through external trainers or through the internal resource members?

8. **Office help**

Are the office staffs helpful for admin related activities?

9. **Internet facility**

How reliable is the campus-wide Wi-Fi and internet connectivity?

10. **The auditorium and seminar halls**

Are auditorium and seminar halls adequate and well maintained?

11. **Common room**

Are common rooms adequate and well maintained?

12. **The facilities for safety and security**

Are there adequate facilities for safety and securities such as CCTV, fire extinguisher etc.?

13. **The facilities for extracurricular activities (sports and cultural)**

Are there adequate sports facilities and recreational facilities to support for physical and mental well-being?

14. **The drinking water facility**

Are the drinking water facility is adequate for the students?

15. **The rest rooms**

Are rest rooms adequate and well maintained?

16. **The first aid and medical facility**

Are first aid and medical emergencies facilities on campus adequate and effective?

17. **Hostel**

Are hostel facilities comfortable and well-maintained?

18. **College canteen**

Are the quality of food and the overall dining experience good?

19. **Transport**

Is the transportation system for commuting to and from the college reliable?

20. **Parking facility**

Is the parking facility adequate?

Analysis:

The feedback given by the students is consolidated and analysed for a scale of 1to 5. The respective section in-charges, General Manager (admin), Facility Manager and Principal discuss the findings in the consolidated report with the management and come out with necessary actions.

Corrective Measures:

Based on the feedback, various corrective actions have been taken such as improvement in canteen facility, purified water supply, internet bandwidth, cleanliness and facility for co-curricular and extra-curricular facilities.

Some points are listed below.

1. All classrooms are equipped with Smart Interactive boards as an ICT tool for enhanced teaching and learning.
2. The number of display charts in laboratories has been increased for better comprehension.
3. In response to students' requests, the internet bandwidth speed has been increased from 100 Mbps to 300 Mbps.
4. The quantity of general, novel, and competitive books in the library has been increased.
5. Recommendations from the Hostel Welfare Committee have been implemented to ensure food quality in the hostel.
6. A softening plant has been installed on the premises to treat water for multi-purpose usage.
7. Additional RO plants have been installed to ensure ample availability of drinking water on the premises.
8. CCTVs have been installed in corridors and parking areas.
9. Old computer systems in many labs have been replaced with new systems with high-end configurations.
10. GRIT lab and skill lab in the Aeronautical Department and IOT and Data Science skill labs in the ECE and CSE departments have been established.
11. Separate canteen facility is started.

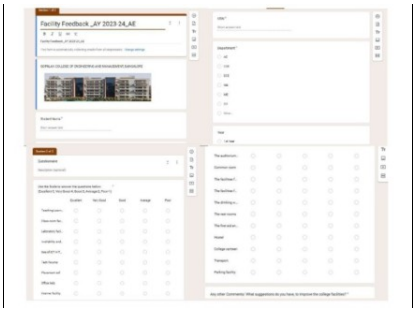


Fig. 9.3.1 Sample feedback form.

Fig. 9.3.2 Sample feedback form.

Fig. 9.3.3 Facilities provide by the Management for the students.

*****

9.4 Self-Learning (5) Total Marks 5.00

Institute Marks : 5.00

Self-Learning:

Our institution emphasizes self-learning by encouraging students to explore concepts beyond the syllabus through recorded video lectures from IITs and VTU, NPTEL resources, mini-projects, internships, and research activities via GRIT. Skill labs in IoT and Data Science offer hands-on experience, while annual symposiums and digital library facilities support knowledge acquisition. Students utilize MOOCs, webinars, and e-learning modules for advanced learning, gaining exposure to industry trends. Modern infrastructure, extended library hours, and computer access beyond class hours further facilitate learning. These initiatives enhance academic excellence, placements, and co-curricular achievements, fostering holistic development and corporate readiness among students.

A. Scope for self-learning:

Encouragement for learning and implementing concepts beyond the syllabus based on students interests is a focal point.

- Recorded video lectures from prestigious institutions such as IITs and VTU University (e-Shikshana) and expert insights through NPTEL videos can be accessed by the students
- The opportunity to undertake mini-projects during the course duration is actively promoted.
- Students are encouraged to adapt to industrial needs through internships and industrial visits.
- Participation in research & innovation activities is promoted through professional bodies and the Gopalan Research Innovation and Training Centre (GRIT).
- Skill labs such as IoT and Data science plays a crucial role in enhancing self-learning by providing students with practical and hands-on experiences.
- Acquiring managerial skills and information is facilitated through annually conducted symposiums.
- The GCEM Digital Library is well-equipped with computers, allowing users to access e-resources, the Institutional Repository (IR), and e-learning courses through the internet.
- Computer facilities with internet access are available beyond regular class working hours.
- The library is accessible beyond its regular working hours.

B. Facilities, materials for learning beyond the syllabus, Webinars, MOOCs, etc., and their effective utilization:

Facilities:

a. Modern infrastructure, state-of-the-art equipment, and well-equipped classrooms.

b. Well-stocked libraries with extended hours of availability.

c. Computer facilities with internet access beyond regular class hours.

d. Availability of recorded video lectures from IITs, VTU University, and expert NPTEL videos.

e. Platforms for mini-projects and in-plant training.

Here are some key components and an evaluation of their effectiveness:

Library Resources:

Facilities: Access to an extensive collection of books, journals, and research papers.

Materials: Textbooks, reference materials, and online databases.

Scope: Allows students to explore advanced topics and conduct in-depth research beyond the standard curriculum.

Evaluation: Highly effective. Libraries provide a foundational resource for self-learning, offering a diverse range of materials for students to delve into topics of interest.

Online Learning Platforms (MOOCs - Massive Open Online Courses):

Facilities: Integration with popular MOOC platforms like NPTEL – SWAYAM, IIT-Bombay spoken tutorial and VTU e-Shikshana.

Materials: Video lectures, quizzes, assignments, and discussion forums.

Scope: Offers courses on cutting-edge technologies and emerging trends in engineering.

Evaluation: Very effective. MOOCs provide flexibility, enabling students to learn at their own pace and explore specialized areas of interest.

Webinars and Workshops:

Facilities: Arrangement of regular webinars and workshops by experts.

Materials: Live or recorded sessions, presentation materials, and interactive discussions.

Scope: Covers contemporary topics, industry trends, and practical applications.

Evaluation: Effective. Webinars and workshops enhance real-world relevance, providing students with insights into the industry and practical knowledge beyond the standard curriculum.

E-Learning Modules:

Facilities: Access to an online learning management system (LMS) with supplementary modules.

Materials: Multimedia content, interactive quizzes, and virtual labs.

Scope: Reinforces theoretical concepts with practical applications.

Evaluation: Effective. E-learning modules provide a blended learning approach, catering to various learning styles and preferences.

The improvements in self-learning facilities have yielded significant positive outcomes:

Better Placements:

- Modern infrastructure, equipped classrooms, and practical training contribute to better corporate readiness.
- Improved facilities result in increased placements in prestigious companies.

Academic Excellence:

- Well-stocked libraries and advanced laboratories foster a conducive learning environment.
- Access to a variety of learning resources leads to improved academic performance

Co-curricular Success:

- Sports complexes, auditoriums, and cultural centers provide platforms for showcasing talents.
- Active participation in sports, cultural events, debates, and competitions leads to accolades and recognition.

In conclusion, the upgraded facilities have been instrumental in the overall development of students, positively impacting placements, academic performance, and co-curricular success. The institution actively utilizes these resources to foster an environment conducive to self-learning and holistic growth.

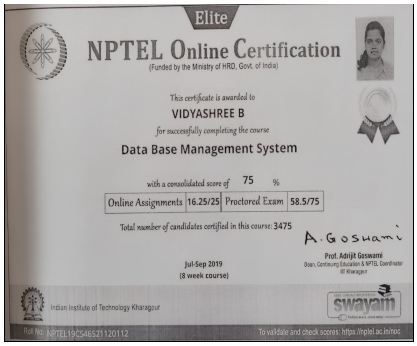


Fig 9.4.1 Sample NPTEL Course completion certificate.

9.5 Career Guidance, Training, Placement (10) Total Marks 10.00

Institute Marks : 10.00

CAREER GUIDANCE CELL

SKILLS DEVELOPMENT PROGRAM

There are many jobs across the country with the economy getting better and MNCs exploring the human resource. Also, there are so many Universities offering the best Post Graduate Courses, to which a section of Students want to join. Why, then, would someone need Career guidance? The process of recruitment or Higher Studies seems simple enough – study, graduate, apply, and get a job or a University Seat. Well, truth be told, it is much more difficult than this. There are plenty of jobs, of course, but there is also stringent competition to match the availability. Plus, many people lose out on jobs even though they are qualified because they do not have knowledge about how the system actually works. In universities, students come from all wakes of lives. They come from different parts of the country including rural areas. Some individuals may not be aware of how things work. Some others may not be confident enough to walk into an interview even though they are skilled. These problems are more common than one can imagine; which make the task of Career Guidance more formidable.

The Institute helps each student in exploring Career opportunities by inviting various companies for campus recruitment to students in the final year of the program and shall graduate at the end of the academic year. The final placements, at the Institute, are a result of very systematic interaction with the industry and continuous career counselling of the students, by the Career Guidance Cell. Right from the beginning of the program, students are continuously counselled with regard to their career aspirations and options, which in turn are vigorously follo wed up with the potential companies for participating in the placement program of the Institute. This not only helps the students in getting their 'dream' jobs but also assists the visiting placement companies in identifying the 'right' candidate for their organization. Students willing to continue their higher education, are also provided Guidance and counseling from reputed Organizations and Universities, so that a right selection is done.

The success behind our Career Guidance program can be traced to the Skill Development Program inducted to complement our mission and vision which collectively promote the overall success of students. This ensures that students of GCEM pick the right kind of work they want to do.

SKILLS DEVELOPMENT PROGRAM

Objective: Problem Solving, Business Communication, Personality Development, Bridging the Industry Academia gap, Industry readiness

Excellence is achieved through training & habituation. Training polishes the spirit. The Career Guidance cell of GCEM spearheads and conducts numerous programs since the first year which enables our students to excel in recruitment, and be placed in Organizations of repute.

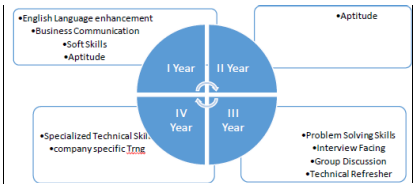
The Career Guidance Cell has been conducting various Programs on Problem Solving, Soft Skills, Technical Refresher courses for all its students under the Skills Development Program (SDP). The SDP was launched in the Year 2021, with the objective of making a student 'Industry Ready' and bridge the gap between classroom teaching and Industry needs. The Career Guidance Cell regularly conducts various programs which are part of their weekly schedule. The Program exposes the students to the various requirements of the 'Interview Preparedness'. The modules that are covered under the SDP are English Language enhancement, Business Communication Skills, Problem Solving skills, Soft Skills, Technical Certification Programs. As part of the Soft Skills, the students are facilitated with the sessions on Self Awareness, Self-Motivation, Interpersonal and Intrapersonal Skills, Group Discussions, debates, Interview facing, Etiquettes etc.

Also, as part of the SDP are the Programs that are offered under the MoU with various Reputed Industries as part of the bridging the Industry-Academia gap. Training are imparted on various Industry tools, and certified by Industry, which will enhance a Student's Career opportunity and Higher Education prospects. The Course offered under SDP are regularly revised every semester with a regular interaction with Industries.

SKILLS DEVELOPMENT PROGRAM

The Programs under SDP is offered under SDP is embedded within the regular time table. SDP is offered to the Students of all the branches in all the semesters. The program is planned with due consultation from Industry Experts, domain experts and periodically refined.

The Programs offered specifically are:



SKILLS DEVELOPMENT PROGRAM

MODULE 1: Objective : Prepare a Strong foundation towards transforming a Student into a Professional

Target Audience : I Year – All Branches/ Sections

1	SMART Goal Setting English Language Enhancement - Verbal ability
2	Verbal ability English comprehension Group Discussion – Roles, Phases, Effectiveness, Strategies, Traits
3	Verbal ability Effective Communication - Assertiveness Group Discussion
4	Verbal ability Interpersonal Skills Group Discussion
5	Verbal ability Intrapersonal Skills – Team Dynamics Group Discussion
6	Verbal ability Group Discussion Adapting to Corporate Life- Corporate Grooming & Dressing, Ethics
7	Verbal ability Group Discussion Resume Writing
8	Verbal ability Group Discussion Interview Facing
9	Verbal ability Group Discussion Mock Interviews
10	Verbal ability Group Discussion Mock Interviews

SKILLS DEVELOPMENT PROGRAM

Certification Course on Industry Oriented Programs

Module : 2

- To provide hands on experience to the students to the recent technologies practiced in the industry.
- To enable all the students to have exposure to industry and technologies
- To work on Industry related projects in the Final Year with infrastructure and equipment akin to the Industry.

Course Frequency : Weekly Two hours

SKILLS DEVELOPMENT PROGRAM

MODULE 3:

- Problem Solving Skills
- **Group Discussion**
- Interview Facing

Target Audience : All Branch – III Year

Frequency : Weekly Two Hours

COURSE COVERAGE : The following is only suggestive, Based on the continuous review with Corporates and Training Vendors, the course coverage will be enhanced

·Problem Solving Skills

Quantitative Aptitude	• Average • Ratio & Proportion • Partnership • Percentages • Profit & Loss • Time & Work • Time, Speed & Distance • Permutation & Combination • Probability • Simple Interest & Compound Interest • Alligation & Mixture • Number System • Data Interpretation • Ages • Clocks & Calendars
Logical Reasoning	Number Series • Seating Arrangement • Blood Relations • Syllogisms • Puzzle Test • Coding & Decoding • Direction Sense Test • Visual Reasoning • Letter Series • Analogy • Data Sufficiency
Verbal Ability	• Comprehension • Sentence Correction • Closet Test • Change of Speech • Change of Voice • Ordering of Sentences

- **Group Discussion :** Mock Group Discussion on various topics
- **Interview Facing :** Mock Interviews
- **Resume Writing** : Tips for improving Resume Writing
- **Improve Communication :** Exercises to improve communication, like 'Tell Me about Yourself', Essay Writing.

SKILLS DEVELOPMENT PROGRAM

MODULE 4:

- Problem Solving Skills
- **Company Specific Training for Interviews**
- Interview Facing

Target Audience : All Branch – IV Year

Frequency : Dynamically Scheduled based on Interview Schedules

COURSE COVERAGE : Based on the Interview Schedule, and the requirements of specific companies, Training will be conducted for students eligible for the Recruitment Drive. T he following are suggestive:

- Problem Solving Skills based on company's old Test Paper & Job Description
- **Specific Technical Training –** like C Refresher, Python Programming, C#, Android Programming, Web Programming, IoT
- Mock Interview Schedules

9.6 Entrepreneurship Cell (5) Total Marks 5.00

Institute Marks : 5.00

Entrepreneurship Development Cell (EDC)

The Entrepreneurship Development Cell (EDC) at GCEM fosters innovation and entrepreneurial growth among students through incubation infrastructure, training, mentorship, and awareness campaigns. Equipped with co-working spaces, labs, and advanced technology, EDC provides students with the resources to develop startups. Workshops, skill development programs, and networking events connect students with industry experts and alumni entrepreneurs. As an MSME-approved Business Incubation Center, EDC has facilitated 18 business ideas since 2020. Awareness initiatives like seminars and social media outreach inspire entrepreneurial thinking among the students.

- **Management:**

Faculty Coordinator: Oversees the EDC activities, ensuring alignment with the institutions goals and policies.

Student Coordinators: Enthusiastic student leaders responsible for organizing events, workshops, and outreach programs.

Industry Mentors: Experienced entrepreneurs or professionals who guide and mentor students in their entrepreneurial endeavors.

The following are the roles & responsibilities of **EDC** in our college.

- **Incubation Infrastructure:**

Co-Working Spaces: Physical spaces equipped with workstations, meeting rooms, and necessary amenities for students to work on their startup projects.

Access to Labs and Resources: Utilization of engineering labs, equipment, and other resources

Technology Support: Access to advanced technology, software, and tools to facilitate innovation.

- **Training and Workshops:**

Entrepreneurship Workshops: Workshops on ideation, business model canvas, funding strategies, and startup development.

Skill Development Programs: Training sessions on leadership, communication, financial management, and marketing for budding entrepreneurs.

- **Networking and Mentorship:**

Networking Events: Facilitation of events that bring together students, successful entrepreneurs, investors, and industry experts.

Alumni Engagement: Involvement of successful alumni entrepreneurs to share their experiences and provide mentorship.

- **Entrepreneurship Awareness Campaigns:**

Events and Seminars: Organizing events and seminars to raise awareness about entrepreneurship and its impact.

Guest Lectures: Inviting successful entrepreneurs to share their journeys and insights with students.

Social Media Presence: Utilizing social media platforms to share success stories, updates, and opportunities in the entrepreneurial ecosystem.

- **MSME Business Incubation Centre :**

MSME approved GCEM as “HOST INSTITUTE” for “BUSINESS INCUBATION CENTER” on 06.01.2020.

18 Business ideas were submitted to MSME Schemes from 2020 to 2024

- **Effectiveness Measurement:**

Employability and Skill Development: Assessing the impact of entrepreneurship programs on students employability and skill development.

Fig. 9.6.1 Start-up Idea presentation.

Fig. 9.6.2 Talk on entrepreneurship by industry experts.

UDYAM REGISTRATION CERTIFICATE

UDYAM REGISTRATION NUMBER

NAME OF ENTERPRISE

TYPE OF ENTERPRISE *

MAJOR ACTIVITY: SERVICES

SOCIAL CATEGORY OF ENTREPRENEUR

NAME OF UNIT(S)

OFFICAL ADDRESS OF ENTERPRISE

DATE OF INCORPORATION / REGISTRATION OF ENTERPRISE

DATE OF COMMENCEMENT OF PRODUCTION/BUSINESS

NATIONAL INDUSTRY CLASSIFICATION CODE(S)

DATE OF UDYAM REGISTRATION

For any assistance, you may contact:

1. District Industries Centre:

2. MSME-DFO:

Fig. 9.6.3 Student start up registration in UDYAM MSME portal.

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

Institute Marks : 10.00

CO-CURRICULAR & EXTRA-CURRICULAR ACTIVITIES:

The co-curricular and extra-curricular activities at GCEM are designed to promote the holistic development of students by integrating academic learning with personal growth and community engagement. These activities enable students to enhance their skills, knowledge, creativity, and leadership abilities while fostering a sense of social responsibility and cultural appreciation.

Our institution typically offers the following co-curricular & extra-curricular activities contribute significantly to the holistic development of engineering students.

Co-curricular activities:	Extra-curricular activities:
1. Internship Programs 2. Industry Visits 3. Workshops and Seminars 4. Guest Lectures by Industry Experts 5. Skills Development (Soft & professional skills) 6. Student Chapters of Professional Societies 7. Technical Clubs 8. Innovation Club 9. Technical festivals & events	1. National Service Scheme (NSS) 2. Indian Red Cross Society (IRCS) 3. Sports Events and Tournaments 4. Cultural club 5. Cultural and Diversity Celebrations 6. Environmental and Sustainability Initiatives 7. Health and Wellness Programs

CO-CURRICULAR ACTIVITIES:

1. **Internship Programs**

- **Objectives:**

Provide opportunities for students to undertake internships or industrial training programs to gain practical experience and exposure to real engineering projects.

- **Activities:**

For 2018 - 19 Scheme:

Internship - 04 Weeks - End of sixth semester

For 2021 - 22 Scheme:

To derive the benefits of an internship, VTU has introduced three (03) internships at three stages of the B.E./B.Tech program.

- Internship – I: Inter/Intra Institutional Internship - 03 Weeks – End of second semester
- Internship – II: Innovation/Societal/entrepreneurship based Internship - 04 Weeks - End of fourth semester
- Internship-III: Research Internship /Industry Internship - 24 Weeks – During 8th semester

For 2022 - 23 Scheme:

- The mandatory Research internship /Industry internship / Rural Internship - 14 to 20 weeks - During 8th semester

2. **Industry Visits**

- **Objectives:**

Arranging visits to industries, construction sites, or engineering facilities to provide students with a practical understanding of engineering processes and applications

- **Activities:**

At least one industrial visit per semester is provided to all the program students based on their engineering discipline.

Field Survey camp is facilitated for civil engineering students outside the college campus.

3. **Workshops and Seminars**

- **Objectives:**

Organize workshops and seminars on emerging technologies, soft skills, and career development for supplementing academic learning, enhancing practical skills, and providing exposure to industry trends.

- **Activities:**

Organized various workshops and seminars in the following emerging areas for the past 3 years

CS: Cyber Security (https://www.gopalancolleges.com/gcem/images/events/basics-case-studies-research-directions.jpg), Python Programming (https://www.gopalancolleges.com/gcem/images/events/data-exploration-on-google-colab.jpg), Databases and SQL (https://www.gopalancolleges.com/gcem/images/events/Understanding-Databases.jpg), Network Security (https://www.gopalancolleges.com/gcem/cyber-criminology-and-network-security-03.html), IOT application Developement

EC: IOT Technology (https://www.gopalancolleges.com/gcem/pdf/iot-technology-08-05-2023.pdf), Robotics, Probability and Linear Algebra (https://www.gopalancolleges.com/gcem/pdf/Probability-and-Linear-Algebrae.pdf), Electronic Product Design and Embedded systems - IOT Technology

AE: Unmanned Aerial Vehicle (https://www.gopalancolleges.com/gcem/images/events/2022-October-Workshop-on-UAV-01.jpg), CATIA (https://www.gopalancolleges.com/gcem/images/events/Workshop-on-CATIA.jpg), MATLAB (https://www.gopalancolleges.com/gcem/images/events/MATLAB-for-Aeronautical.jpg), Indegenous Developement of UAV, GoAero 2K23

ME: Forging Technology (https://www.gopalancolleges.com/gcem/images/events/Forging_Technology.jpg), Composite Materials (https://www.gopalancolleges.com/gcem/composite-materials-fabrication-and-testing.html), 3-D Printing (https://www.gopalancolleges.com/gcem/online-quiz-on-3-D-printing.html)

CV: pre-stressed concrete (https://www.gopalancolleges.com/gcem/pdf/pre-stressed-concrete.pdf), sustainable materials

General: GATE (https://www.gopalancolleges.com/gcem/images/events/Preparation-and-Future-Prospects.jpg)exam, MS Excel, Profile Building (https://www.gopalancolleges.com/gcem/virtual-on-profile-building-resume-linkedin-digital-mode-platform.html), Essential Interview Skills (https://www.gopalancolleges.com/gcem/virtual-power-seminar-on-essential-interview-skills.html)

4. **Guest Lectures by Industry Experts**

- **Objectives:**

Invite professionals and experts from the industry to deliver guest lectures, providing insights into current industry practices, emerging technologies, and career paths.

- **Activities:**

Organized various guest lecturer sessions from industrial and academic experts in the current and emerging areas.

Web link: https://www.gopalancolleges.com/gcem/events.html (https://www.gopalancolleges.com/gcem/events.html)

5. **Skills Development (Professional & Soft skills)**

- **Objectives:**

Activities are designed to enhance a range of technical and non-technical skills essential for success of students in the engineering profession.

- **Activities:**

Gopalan Research Innovation and Training Centre (GRIT): GRIT is established to promote innovation and research activities on the campus. It promotes undergraduate research and innovation as well as provides training on the recent advancements in the different disciplines of engineering to aspiring young college students.

IoT Skill Laboratory: IoT lab has been setup by the Electronics & Communication Engineering department in collaboration with C-DAC to skill the undergraduate students in the IoT and Embedded system design utilizing state of the art hardware boards and softwares as per industry standards.

Data Science lab: Data Science Lab is configured by Computer science & Engineering department which not only facilitates students to practice basic programming in C, C++, and JAVA; but also learn advanced technologies of computer science such as Machine Learning, Artificial Intelligence, Deep Learning and Data Mining. It also provides computing platform for novel languages like Python, R, and OpenCV and other necessary for building coherent set of ideas, fundamental of Machine Learning, Artificial Intelligence and Deep Learning models and algorithms.

Communication Skills Workshops: Enhance verbal and written communication skills.

Personality Development Programs: Focus on building confidence, leadership, and interpersonal skills.

Professional Development Workshops: Conducting workshops on resume building, interview skills, and professional etiquette to prepare engineering students for job interviews and career advancement.

Gopalan Skill Academy:

Gopalan Skill Academy (A Venture of Gopalan Foundation) expands its portfolio of solutions to offer skill building solutions for the various sectors. As India gears itself for the Green Revolution, Gopalan Skill Academy is geared to leverage massive opportunities that exist in sectors by providing skill building solutions.

In its journey to create a world-class enterprise in the training and skill development domain, Gopalan Skill Academy has ventured into this exercise at our skill centres.

Our centres provide learning solutions for business, Govt., PSUs, Universities, multilateral agencies/ NGOs and individuals.

Web link: https://www.gopalanskillacademy.in/index.php (https://www.gopalanskillacademy.in/index.php)

6. **Student Chapters of Professional Societies**

- **Objectives:**

Participation in students chapters of professional societies IEI, IETE, ICI, etc., organizing technical talks, workshops, and conferences for enhancing technical knowledge, fostering collaboration, and connecting students with industry professionals.

- **Activities:**

Our college is having the following professional society's active student membership.

- IEI - Institution of Engineers (India)
- IETE - The Institution of Electronics and Telecommunication Engineers
- ICI - Indian Concrete Institute

7. **Technical Clubs**

Technical clubs play a vital role in enriching the educational experience of students by engage the students in hands-on projects, workshops, and competition for providing a platform for skill development, hands-on experience, networking, and professional growth.

8. **Innovation Club**

Institution's Innovation Council (IIC) was well set when GCEM received its approval from AICTE to establish IIC on its campus in September 2019 to foster the culture of innovation and start-up ecosystem. Gopalan Research Innovation and Training Centre (GRIT) an interdisciplinary research center for undergraduate students and other research activists. It is reputable not only to promote innovation and research activities of young learners but also aspire them to engage in research activities.

9. **Technical festivals & events**

Conduction of annual events featuring technical competitions, symposiums, workshops, cultural performances, and exhibitions for providing a platform for students to showcase technical skills, creativity, and teamwork.

Web link: https://www.gopalancolleges.com/gcem/events.html (https://www.gopalancolleges.com/gcem/events.html)

EXTRA-CURRICULAR ACTIVITIES:

1. **National Service Scheme (NSS)**

- **Nature of Activity:** Volunteer programs, community service, and social outreach initiatives.
- **Objectives:** Inculcating a sense of social responsibility, community engagement, and leadership skills among students.

Activities Conducted Under NSS in our College (last 3 academic years)

AY 2023-24:

- Fire Fighting Training - 29-06-2023
- One Student One Tree - 07-07-2023
- Swachh Bharat Abhiyan (SBA) - 17-07-2023
- Independence Day - 15-08-2023
- Teachers Day - 05-09-2023
- Fit India Swachhata Freedom Run 4.0 - 30-10-2023
- Kannada Rajyotsava - 28-11-2023
- International Year of Millets (IYM2023) - 29-11-2023
- Stem Cell Drive Awareness - 13-12-2023
- Awareness Program on Constitution of India (Constitution Awareness Jatha) - 15-03-2024
- Anti-Drug Awareness Campaign-SAY NO TO DRUGS - 28-03-2024

AY 2022-23:

- Kanakadasa Jayanthi - 11-11-2022
- World Heritage Day: heritage trip - 19-11-2022
- National constitution day - 26-11-2022
- Kannada rajyotsava - 30-11-2022
- Hope and implementation of nep – 2020 - 09-12-2022 to 12-12-2022.
- Organic farm visit -Gopalan organic farm visit - 28-12-2022
- Indigenous cooking fest and exhibition - 21-01-2023
- National science day - 28-02-2023
- Yuva Sangam (युवा संगम) under ek bharat shreshtha bharat-vigit of nss volunteer - 24-02-2023 TO 04-03-2023
- International Women's Day - 12-03-2023
- International yoga day - 21-06-2023

AY 2021-22:

- Engineer's day - 15/09/2021
- International Women's Day - 12/03/2022
- National service scheme camp - school bell-program (3 days) - 29/04/2022- 01/05/2022
- Anti-terrorism day - 21/05/2022
- Blood donation camp - 14/06/2022
- International yoga day - 21/06/2022

2. **Indian Red Cross Society (IRCS)**

The Indian Red Cross Society (IRCS) is a voluntary humanitarian organization to protect human life and health based in India. Its purpose is to protect life and health and to ensure respect for the human being.

Academic Activities @ GCEM:

- Blood Donation Camp
- Medical Camp
- Eye screening camp

3. **Sports Events and Tournaments**

- **Nature of Activity:** Inter-college sports competitions, intra-college tournaments, sports day and sports leagues.
- **Objectives:** Promoting physical fitness, teamwork, and a healthy competitive spirit among students.

Sports facilities @ GCEM:

Weblink : https://www.gopalancolleges.com/gcem/sports-facility.html (https://www.gopalancolleges.com/gcem/sports-facility.html)

4. **Cultural club**

- **Nature of Activity:** Organizing cultural performances, dance competitions, and various cultural activities
- **Objectives:** Nurturing creativity, self-expression, and teamwork through the arts.

5. **Cultural and Diversity Celebrations**

- **Nature of Activity:** Celebrating festivals, cultural diversity days, and national holidays.
- **Objectives:** Fostering a sense of community and appreciation for cultural diversity among students.

Cultural & Diversity Celebrations activities @ GCEM:

- Kannada Rajyotsava
- Annual cultural festival (Estralis)
- Ethnic day
- Food festival
- Fresher day
- FlashMob
- Independence Day Celebrations
- International Women's Day
- Indigenous Cooking Fest And Exhibition
- Rangoli Competition

6. **Environmental and Sustainability Initiatives**

- **Nature of Activity:** Tree planting drives, awareness campaigns, and eco-friendly initiatives.
- **Objectives:** Instilling a sense of environmental responsibility and sustainability among students.

Activities @ GCEM:

- One Student One Tree
- Organic Farm Visit -Gopalan Organic Farm Visit
- Swachh Bharat Abhiyan
- Fit India Swachhata Freedom Run 4.0

7. **Health and Wellness Programs:**

- **Objectives:** Participating in yoga classes and wellness programs to promote physical and mental well-being.

Activities @ GCEM:

- Yoga awareness programs on International yoga day
- Yoga training sessions for freshers
- Sports activities @ sports day

These co-curricular and extra-curricular activities contribute to the holistic development of students, providing them with opportunities to explore their interests, develop leadership skills, and build a well-rounded skill set alongside their academic studies.

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10 GOVERNANCE, INSTITUTIONAL SUPPORT AND FINANCIAL RESOURCES (120) — Total Marks 120.00

10.1 Organization, Governance and Transparency (40) — Total Marks 40.00

10.1.1 State the Vision and Mission of the Institute (5) — Institute Marks : 5.00

Vision :
To be the institution of choice with contemporary knowledge coupled with values contributes to the society through excellence in technical education and research by continuous innovation
Mission :
• Achieving Excellence in Teaching Learning Process Using State-Of-The-Art Resources. • Develop industrial collaborations to promote research and innovation capabilities of faculty and students. • Inculcate entrepreneur skills with high integrity to serve the society

10.1.2 Governing body,administrative setup,functions of various bodies,service rules, procedures, recruitment and promotional policies (10) — Institute Marks : 10.00

1. **Governing council:**

The Governing council of our college plays a crucial role in shaping the institutions overall direction, policies, and management. The council typically operates in collaboration with the college administration to ensure effective and efficient management.

Composition:

S.No.	Name & Company	Designation	Category
1	**Mr.C.Gopalan** President, Gopalan Foundation	Chairman	Management
2	**Mr.C.Pramod** Vice President, Gopalan Foundation	Member	
3	**Mr.C.Prabhakar** General Secretary, Gopalan Foundation	Member Secretary	
4	**Mr.Varadharajan** Financial Advisor, Gopalan Foundation	Member	Management Advisors
5	**Mr.P.C.Venkata Krishnan** Corporate Advisor, Gopalan Foundation	Member	
6	**Mr.Ram Narain** Auditor, Gopalan Foundation	Member	
7	**Dr.Arun Vikas Singh** Principal, GCEM	Member	Principal
8	**Mr.Arya Rajesh Kumar** CEO, AVOHI Infotech	Member	Industrialist
9	**Dr.Suresha** Principal, SVCE	Member	VTU University Nominee

ROLES & RESPONSIBILITIES OF GOVERNING COUNCIL:

The functions associated with the governing council are

Setting Vision and Mission:

- Define and articulate the colleges mission and vision.
- Establish long-term goals and strategic objectives.

Policy Formulation:

- Develop and approve policies governing various aspects of the colleges operation.
- Ensure that policies align with the colleges mission and comply with relevant laws and regulations.

Financial Oversight:

- Approve the budget and financial plans.
- Monitor financial performance and ensure the college operates within its budget.

Appointment of Leadership:

- Appoint, evaluate, and, if necessary, replace the college principal.
- Appoint key administrative and academic leaders.

Accountability and Evaluation:

- Ensure accountability and transparency in the colleges operations.
- Evaluate the performance of the college against established goals.

Strategic Planning:

- Engage in strategic planning to anticipate challenges and identify opportunities for the colleges growth and development.

Risk Management:

- Identify and manage risks that could impact the colleges stability and reputation.
- Implement measures to address potential challenges.

Legal and Regulatory Compliance:

- Ensure that the college complies with all applicable laws and regulations.
- Address legal and compliance issues as they arise.

Stakeholder Engagement:

- Engage with key stakeholders, including students, faculty, staff, alumni, and the community.
- Foster positive relationships with these groups.

Ethical Oversight:

- Promote ethical behavior and integrity within the college.
- Address ethical concerns and violations as needed.

Review and Approval of Major Decisions:

- Review and approve major decisions, such as the establishment of new programs or significant changes to existing ones.

Meeting Frequency:

- **Two meetings per academic year**

Minutes of meeting:

- **Sample MoM is attached in Annexure.**

2. **Administrative Setup:**

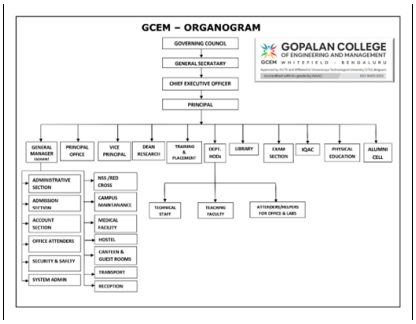
Chief Executive Officer: CEO for Gopalan group of colleges who is providing leadership, direction, and overall management of the institution.

Principal: Head of the college responsible for academic and administrative leadership.

General Manager (Admin): Manages administrative functions, including admissions, records, and general administration.

Heads of Departments: Oversee academic departments and programs.

Organisation Chart:



3. **Internal Quality Assurance Cell (IQAC)**

Internal Quality Assurance Cell (IQAC) started its function from June 2019 in our college. The objectives of IQAC are to develop a system for consistent action to improve and sustain the academic and administrative performance of the Institution.

Composition:

As per guidelines provided by NAAC, Internal Quality Assurance Cell (IQAC) is formed. The IQAC committee list is attached in **Annexure**.

Functions of IQAC:

- Development and application of quality benchmarks/parameters for various academic and administrative activities of the institution
- Facilitating the creation of a learner-centric environment conducive to quality education and faculty maturation to adopt the required knowledge and technology for participatory teaching and learning process
- Conduction of Academic & Administrative audits to ensure
- Arrangement for feedback response from students, parents and other stakeholders on quality-related institutional processes
- Dissemination of information on various quality parameters of higher education
- Organization of inter and intra institutional workshops, seminars on quality related themes and promotion of quality circles
- Documentation of the various programmes/activities leading to quality improvement
- Acting as a nodal agency of the Institution for coordinating quality-related activities, including adoption and dissemination of best practices
- Development and maintenance of institutional database through MIS for the purpose of maintaining/enhancing the institutional quality
- Development of Quality Culture in the institution
- Preparation of the Annual Quality Assurance Report (AQAR) as per guidelines and parameters of NAAC, to be submitted to NAAC

Meeting Frequency:

- 3 or 4 meetings per academic year (online/offline)

The composition of Internal Quality Assurance Cell (IQAC) is attached in Annexure.

4. **List all other academic and administrative bodies:**

S.No.	Name of the Committee	Roles & Responsibilities
1	Department Advisory Board	Providing guidance, support, and expertise to a specific department which includes Strategic Planning, Program Development and Review, Industry Insights, and Advisory Role for Department Head.
2	Students Grievances Redressal Committee	Responsible for addressing and resolving issues, concerns, or grievances raised by students. The committee aims to provide a fair and transparent process for students to express their grievances and seek resolution.
3	Internal Complaint Committee (Women)	To address and redress complaints related to sexual harassment and discrimination against women in the college
4	Anti-Ragging Committee	Creating awareness, preventing ragging incidents, and taking prompt action in case of any reported incidents
5	Students Class committee	Representative body typically formed within a class or group of students to facilitate communication, coordination, and collaboration among students and between students and faculty.

5. **Service rules, policies and procedures:**

The service rules, policies, and procedures of a college govern the employment conditions, conduct, and expectations for faculty and staff.

The college service rules, policies and procedures are framed by Gopalan Foundation – HR division which addresses the following major categories.

- Appointment and Employment
- Recruitment and Promotional Policies
- Faculty & Staff Recruitment
- Job Descriptions and Responsibilities
- Working Hours and Leave Policies
- Confidentiality and Privacy
- Grievance Redressal
- Termination and Resignation
- Compensation and Benefits
- Code of Conduct for faculty and staff
- Performance Appraisal

Its important for employees to be familiar with these service rules and policies to ensure a clear understanding of their rights, responsibilities, and the expectations of the institution. The college has taken various initiatives to disseminate this to the faculty & staff through website, email, interaction meeting (twice the year) etc.

Service rules, policies and procedures for GCEM is attached in Annexure.

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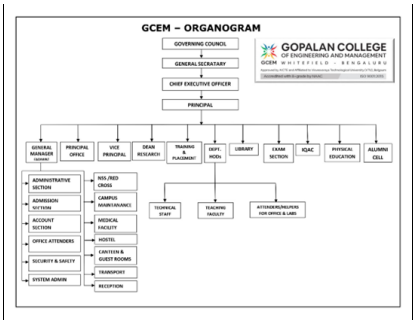
10.1.3 Decentralization in working and grievanceredressal mechanism (10) Institute Marks : 10.00

Decentralization in Administrative Structure:

In our institution, decentralization in working is a key element of our administrative structure. GCEMs administrative structure reflects a commitment to decentralization, distributing decision-making responsibilities across various levels. This approach involves distributing decision-making powers to faculty members, allowing for a more agile and responsive administrative environment.



List of the faculty members who have been delegated powers for taking administrative decisions:

1. Dr.Arun Vikas Singh – Principal
2. Dr.Manoj Challa – Vice Principal
3. Dr.Swathi Y – Director – IQAC & HoD-CS
4. Dr.Natarajan T – IQAC Coordinator & HoD/ME
5. Wg Cdr N Agarwal, Retd - Group Head Admin
6. Mr.Alok – Facility Manager – Admin
7. Dr.Natarajan K – Principal Scientist (Research Head)
8. Dr. Anandha Padmanabhan – HoD /EC
9. Dr.Purushotham - HoD /AE
10. Mr.Chandan – HoD/CV
11. Dr.Sakthi velan – HoD/IS

Starting from the top, the hierarchy includes the Governing Council, General Secretary, Chief Executive Officer, and the Principal. Below the Principal, several key roles and departments contribute to the efficient functioning of the institution.

Decentralized Units under the Principal & Delegated Powers:

- **General Manager / Facility Manager (Admin):**

Facility Management:

- Oversight of campus facilities, including maintenance and security.
- Allocation of office space and facilities for various departments.

Administrative Budget:

- Preparation and management of the administrative budget.
- Authorization of expenditures within the allocated budget.

Event Coordination:

- Planning and coordination of administrative events and functions.

Vendor and Supplier Relations:

- Negotiation and management of contracts with vendors and suppliers.
- Procurement of goods and services for administrative needs.

Collaboration with Academic Departments:

- Coordinating administrative support for academic departments.
- Facilitating communication between academic and administrative units.

Records and Documentation:

- Maintenance of administrative records and documentation.
- Ensuring compliance with record-keeping policies.

- **Principal Office:**

Academic Leadership:

- Setting the academic direction and vision for the institution.
- Providing leadership to faculty and staff in academic matters.

Admissions and Enrollment Management:

- Setting admission criteria and policies.
- Overseeing the enrollment management process.

Faculty Management:

- Recruitment, hiring, and evaluation of academic faculty.
- Faculty development and professional growth initiatives.

Student Affairs:

- Overseeing student services and affairs.
- Handling disciplinary matters and student grievances.

Institutional Policies:

- Developing and implementing institutional policies related to academics.
- Ensuring compliance with educational regulations.

Accreditation and Quality Assurance:

- Ensuring compliance with accreditation standards.
- Implementing quality assurance measures for academic programs.

- **Vice Principal:**

The role of a Vice Principal in the college is involving a combination of administrative, academic, and support responsibilities along with the principal.

- **Dean Research:**

The role of a Dean of Research in our college is pivotal in fostering a research-centric environment and promoting scholarly activities.

- **Department Heads (HODs):**

The Department Heads (HODs) in the college hold a significant role in managing and overseeing the academic and administrative aspects of their respective departments.

Academic Leadership:

- Providing leadership and direction to the faculty within the department.
- Implementing the colleges academic policies within the department.

Faculty Recruitment and Evaluation:

- Participating in the recruitment process for departmental faculty.
- Conducting performance evaluations and providing feedback to faculty members.

Student Advising:

- Providing academic guidance and counseling to students within the department.
- Addressing student concerns related to academic matters.

Class Scheduling:

- Coordinating class schedules within the department.
- Managing faculty assignments and workload distribution.

Research and Publications:

- Encouraging and supporting faculty research initiatives.
- Facilitating the publication of research findings by departmental faculty.

Budget Management:

- Managing the departmental budget and allocating resources appropriately.
- Ensuring fiscal responsibility in line with the colleges financial policies.

Facility and Equipment Oversight:

- Overseeing the use and maintenance of departmental facilities and equipment.
- Initiating requests for upgrades or new resources as needed.

Accreditation and Quality Assurance:

- Ensuring compliance with accreditation standards within the department.
- Implementing quality assurance measures for academic programs.

Professional Development:

- Supporting faculty in their professional development activities.
- Facilitating workshops and training sessions for departmental staff.

- **Other Units:**
- Library, Exam Section, IQAC, Physical Education, and Alumni Cell are taken care by the respective department incharges and staff.

Benefits of Decentralization:

- **Flexibility and Responsiveness:**

Decentralization enhances the institutions ability to respond swiftly to various challenges and opportunities.

- **Empowerment and Ownership:**

Delegating powers empowers individuals in specific roles, fostering a sense of ownership and accountability.

- **Efficient Operations:**

Decentralized decision-making contributes to the efficient functioning of different departments.

Overall, GCEMs organogram reflects a decentralized approach, distributing administrative responsibilities across various levels to ensure a dynamic and responsive academic environment.

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The mechanism and composition of grievance redressal cell including Anti Ragging Committee & Anti - Sexual Harassment Committee.

The establishment of a Grievance Redressal Cell, Anti-Ragging Committee, and Sexual Harassment Committee in an engineering college is crucial for maintaining a safe and respectful academic environment. The mechanism and composition of these committees typically adhere to guidelines set by regulatory bodies like AICTE & VTU.

GRIEVANCE REDRESSAL CELL:

Mechanism:

1. **Submission of Grievances:**
   - Students can submit grievances in writing to the Grievance Redressal Cell.
2. **Investigation:**
   - The cell investigates the grievance, ensuring confidentiality and impartiality.
   - Meetings may be held with the aggrieved party and those against whom the grievance is filed.
3. **Resolution:**
   - The cell recommends solutions or actions to address the grievance.
   - Regular updates are provided to the complainant throughout the process.

Composition:

1. **Chairperson:**
   - Senior faculty member or administrator with experience in conflict resolution.
2. **Members:**
   - Faculty members representing various departments.
   - Student representatives.
   - Non-teaching staff member.
3. **Functions:**
   - Receive and address grievances related to academic, administrative, or personal matters.
   - Maintain records of grievances and actions taken.
   - Provide recommendations for systemic improvements.

STUDENTS GREVIANCE REDRESSL COMMITTEE (SGRC)

Academic year 2024-2025

The Members of the SGRC is as follows,

Sl. No.	Member name	Department	Designation	Contact Number	E mail ID
1.	Dr Arun Vikas Singh	Principal, GCEM	Chair Person	[illegible]	gcemprincipal@gopalancolleges.com
2.	Dr Bhaskar Reddy C M	CEO, Gopalan Colleges	Special Invitee	[illegible]	ceo@gopalancolleges.com
3.	Prof D Raja	Faculty, ME	Convenor	[illegible]	draja_mech@gopalancolleges.com
4.	Prof Chandhan M R	HOD, CV	Member	[illegible]	[illegible]
5.	Dr. Sarika	HOD, Chem	Member	[illegible]	gcemchem@gopalancolleges.com
6.	Dr Rajashree Narendra	Faculty, ECE	Member	[illegible]	[illegible]
7.	Prof Vijaya [illegible]	Faculty, Phy	Member	[illegible]	gcemphy@gopalancolleges.com
8.	Mrs Anitha Raman	P.A. to Principal	Member	[illegible]	gcempa@gopalancolleges.com
9.	Mrs Latha	Hostel Warden	Member	[illegible]	[illegible]
10.	Mr Gowtham	Dept. of AE Final year	Member	[illegible]	[illegible]
11.	Miss Sivani	Dept. of CSE, final year	Member	[illegible]	[illegible]

Signature of Convenor
(D. RAJA, AP, Mech. Engg)

Signature of Chairperson
(Principal, GCEM)
PRINCIPAL

ANTI-RAGGING COMMITTEE:

Mechanism:

1. **Prevention:**
    - Conduct awareness programs to educate students about the consequences of ragging.
    - Display anti-ragging posters and information around the campus.
2. **Monitoring:**
    - Regular monitoring of vulnerable areas on campus.
    - Coordination with hostel authorities to prevent ragging incidents.
3. **Action:**
    - Prompt action in response to any reported incidents of ragging.
    - Coordination with local law enforcement if necessary.

Composition:

1. **Chairperson:**
    - Senior faculty member or administrator.
2. **Members:**
    - Representatives from various departments.
    - Student representatives.
    - Hostel warden
3. **Functions:**
    - Conduct regular awareness programs.
    - Investigate reported incidents promptly.
    - Recommend disciplinary action as per college policies.
    - Maintain records of anti-ragging activities.

Date: 22/09/2024

Anti-Ragging Committee

Academic Year 2024-2025

Sl.No.	Name	Designation	Role	Phone
1.	Dr. Arun Vikas Singh	Principal	Chair person	9942771217
2.	Prof. D. Raja	Faculty, ME	Coordinator	9886277428
3.	Dr. T Natarajan	HOD, ME	Executive members	9842760812
4.	Dr. Deepa	Faculty, ECE	Executive members	9880566588
5.	Prof. Chandan M R	HOD , CV	Executive members	9964666838
6.	Dr. Sarika C	HOD, Basic Science	Executive members	9880912263
7.	Prof. Vijay T	Faculty, Basic Science	Executive members	9164607009
8.	Mrs. Anitha Raman	P A to Principal	Executive members	9448606427
9.	Mrs Latha	Hostel warden	Executive members	8050269895
10.	Mr. Hariyappa	Police Inspector, Mahadevapura, Bangalore.	Executive members	9480801230

Coordinator

Chair person
PRINCIPAL

ANTI - SEXUAL HARASSMENT COMMITTEE: (COLLEGE INTERNAL COMPLAINTS COMMITTEE)

Mechanism:

1. **Awareness:**
    - Conduct workshops and awareness programs on sexual harassment.
    - Provide information on the process of filing complaints.
2. **Complaint Procedure:**
    - Establish a confidential and accessible method for reporting complaints.
    - Ensure a prompt and impartial investigation.
3. **Action:**
    - Take appropriate action against individuals found guilty of sexual harassment.
    - Provide support and counseling to victims.

Composition:

1. **Presiding Officer:**
    - Female faculty member or administrator.
2. **Members:**
    - Faculty members, with a majority being women.
    - Legal expert (optional).
    - NGO representative (optional).
    - Student representatives.
3. **Functions:**
    - Receive and address complaints of sexual harassment.
    - Conduct inquiries in a fair and unbiased manner.
    - Recommend disciplinary actions.
    - Maintain confidentiality throughout the process.

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10.1.4 Delegation of financial powers (10) Institute Marks : 10.00

The financial power delegated to the Principal, Heads of Departments, and relevant in-charges fosters a culture of responsibility, transparency, and effective financial management, ultimately contributing to the overall success of the institution.

1. **DELEGATION OF FINANCIAL POWERS IN BUDGETARY PROCESSES**

Budget Management:

Principals and Heads of Departments are involved in the preparation and management of departmental budgets. They might have the authority to allocate funds within their respective departments based on the approved budget.

In adherence to the principles of financial transparency and decentralized decision-making, our institution has instituted a systematic approach to budgetary processes. The delegation of financial powers to key stakeholders, including the Principal, Heads of Departments (HoDs), and relevant in-charges, plays a pivotal role in the preparation, scrutiny, and execution of annual budgets.

Budget Proposal Preparation:

Heads of Departments (HoDs):

- At the onset of each academic year, HoDs are entrusted with the responsibility of preparing comprehensive budget proposals for their respective departments.
- This includes the estimation of Recurring, Non-recurring, and R&D components, aligning with the academic and research objectives of each department.

Submission and Scrutiny:

Principals Role:

- The budget proposals are submitted to the budget committee through the Principal, who acts as a key conduit in the communication channel.
- The Principal, being delegated financial powers, plays a crucial role in advocating for departmental requirements and ensuring alignment with institutional goals.

Budget Committee:

- The budget committee, comprising the Principal, CEO, Accounts Manager, General Manager, and HoDs, convenes to scrutinize the submitted proposals.
- Each member of the committee, vested with specific financial powers, contributes to the meticulous evaluation and recommendation process.

Recommendation and Approval:

Principal and Budget Committee:

- The Principal and the budget committee collectively recommend finalized budget proposals to the management.
- The delegation of financial powers to the committee members ensures a collaborative and informed decision-making process.

Management Approval:

- Upon receiving recommendations, the management approves the budget, thereby granting the necessary financial powers for the proposed expenditures.

Initiation of Actions:

Heads of Departments and Admin Manager:

- Delegated financial powers empower HoDs to initiate necessary actions based on the approved budget.
- Collaborative efforts with the Admin Manager ensure efficient utilization of allocated funds for departmental needs.

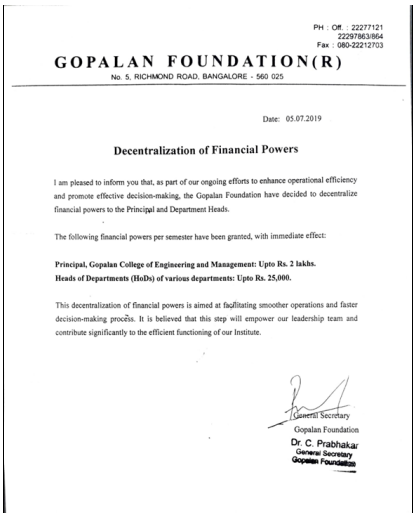
The delegation of financial powers, from budget preparation to approval and subsequent actions, underscores our commitment to decentralized decision-making. This process ensures that the Principal, HoDs, and relevant in-charges actively contribute to the financial management of the institution, fostering a culture of accountability and strategic resource allocation.

2. **EXPENDITURE APPROVAL:**

- Approval of expenditures related to departmental activities, such as equipment purchases, maintenance, and other operational expenses.

Financial powers per semester granted by management:

- **Principal : Upto Rs.2 Lakhs**
- **HoDs : Upto Rs.25,000**



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Fax : 080-22212703

GOPALAN FOUNDATION(R)
No. 5, RICHMOND ROAD, BANGALORE - 560 025

Date: 05.07.2019

Decentralization of Financial Powers

I am pleased to inform you that, as part of our ongoing efforts to enhance operational efficiency and promote effective decision-making, the Gopalan Foundation have decided to decentralize financial powers to the Principal and Department Heads.

The following financial powers per semester have been granted, with immediate effect:

Principal, Gopalan College of Engineering and Management: Upto Rs. 2 lakhs.
Heads of Departments (HoDs) of various departments: Upto Rs. 25,000.

This decentralization of financial powers is aimed at facilitating smoother operations and faster decision-making process. It is believed that this step will empower our leadership team and contribute significantly to the efficient functioning of our Institute.

General Secretary
Gopalan Foundation
Dr. C. Prabhakar
General Secretary
Gopalan Foundation

For smooth running of Institution, the Management has granted the financial powers to the Principal and Heads of Department as mentioned below:

v. The Principal has the financial power to use Rs.25,000 for a single purchase against the expenditure but not exceeding **Rs.2,00,000 per semester**.
v. Heads of the Department can make necessary purchases up to maximum limit of **Rs. 25,000** in a semester with single purchase not exceeding Rs. 5000.

Sl No	Designation	Limit of Sanction
1	Principal	INR 2,00,000/- per semester
2	HOD	INR 25,000/- per semester

The utilisation of funds a follows:

Sl No	Academic Year	Designation	Financial Power	Amount Utilized
1	2023-24	Principal	4,00,000	149000
2		HOD,AE	50,000	10673
3	2022-23	Principal	4,00,000	126000
4		HOD,AE	50,000	11825
5	2021-22	Principal	4,00,000	89000
6		HOD,AE	50,000	3250

3. **FACULTY AND STAFF SALARIES:**

- In some cases, Principal and HoDs may have the authority to recommend or approve Grants and Funding:

4. **GRANTS AND FUNDING:**

- Seeking external grants and funding for departmental projects and research activities.

5. **PROCUREMENT:**

- Approval of purchases for departmental needs, including educational materials, equipment, and supplies.

6. **TRAINING AND DEVELOPMENT:**

- Approval of expenditures related to faculty and staff training, workshops, and professional development.

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

The information on the institution policies, rules, processes and other essential information are available in the college website and the corresponding weblinks are given in the following table.

INFORMATION DETAIL	WEBSITE LINK
Vision & Mission of the Institution	https://www.gopalancolleges.com/gcem/vision-mission.html
Governing board	https://www.gopalancolleges.com/gcem/governing-board.html
Organogram	https://www.gopalancolleges.com/gcem/pdf/gcem-organogram-2023.pdf
Service Rules and Code of Conduct	https://www.gopalancolleges.com/gcem/pdf/regulations/gcem-rules-and-regulations.pdf
Regulations	https://www.gopalancolleges.com/gcem/pdf/regulations/BE-2021-22.pdf https://www.gopalancolleges.com/gcem/pdf/regulations/BE-2018-19.pdf
Academic Calendar	https://www.gopalancolleges.com/gcem/academic-calendar-college.html
Faculty Details	https://www.gopalancolleges.com/gcem/faculty-aeronautical-engineering-department.html https://www.gopalancolleges.com/gcem/faculty-computer-science-engineering-department.html https://www.gopalancolleges.com/gcem/faculty-electronics-communication-engineering-department.html (https://www.gopalancolleges.com/gcem/faculty-electronics-communication-engineering-department.html) https://www.gopalancolleges.com/gcem/faculty-mechanical-engineering-department.html
Admission Process	https://www.gopalancolleges.com/gcem/admission-process.html
Payment Rules	https://www.gopalancolleges.com/gcem/gcem-payment-rules.html
Approval & Accreditation Status	https://www.gopalancolleges.com/gcem/accreditation-status.html
Ph.D – 2023 Regulation	https://www.gopalancolleges.com/gcem/pdf/research/regulation-phd.pdf
AICTE Mandatory Disclosure	https://www.gopalancolleges.com/gcem/pdf/mandatory-disclosure.pdf
Students Scholarship	https://www.gopalancolleges.com/gcem/scholarship.html
Contact Information of college	https://www.gopalancolleges.com/gcem/contact.html

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10.2 Budget Allocation, Utilization, and Public Accounting at Institute level (30) Total Marks 30.00

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

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

Table 1 - CFY 2024-25

Total Income 150000000				Actual expenditure(till…): 138400500			Total No. Of Students 1057
Fee	Govt.	Grants	Other sources(specify) OTHER FEE	Recurring including salaries	Non Recurring	Special Projects/Anyother, specify	Expenditure per student
147500000	0	0	2500000	133100500	5300000	0	130937.09

Table 2 - CFYm1 2023-24

Total Income 116774675				Actual expenditure(till…): 108511550			Total No. Of Students 793
Fee	Govt.	Grants	Other sources(specify) OTHER FEE	Recurring including salaries	Non Recurring	Special Projects/Anyother, specify	Expenditure per student
114686791	0	0	2087884	101971678	6539872	0	136836.76

Table 3 - CFYm2 2022-23

Total Income 89622473				Actual expenditure(till…): 98683735			Total No. Of Students 665
Fee	Govt.	Grants	Other sources(specify) OTHER FEE	Recurring including salaries	Non Recurring	Special Projects/Anyother, specify	Expenditure per student
88905662	0	0	716811	85442469	13241266	0	148396.59

Table 4 - CFYm3 2021-22

Total Income 79723417				Actual expenditure(till…): 83931608			Total No. Of Students 685
Fee	Govt.	Grants	Other sources(specify) OTHER FEE	Recurring including salaries	Non Recurring	Special Projects/Anyother, specify	Expenditure per student
79517636	0	0	205781	76410275	7521333	0	122527.89

Items	**Budgeted in 2024-25**	**Actual Expenses in 2024-25 till**	**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**
Infrastructure Built-Up	4500000.00	2956430.00	3500000.00	2951544.00	4500000.00	3966499.00	1200000.00	1150670.00
Library	300000.00	26570.00	200000.00	22275.00	1100000.00	1082151.00	200000.00	0
Laboratory equipment	6500000.00	2677851.00	6000000.00	4565373.00	8000000.00	7788395.00	7500000.00	6800433.00
Laboratory consumables	300000.00	180000.00	200000.00	83286.00	200000.00	104222.00	200000.00	89870.00
Teaching and non-teaching staff salary	70000000.00	46232580.00	62050000.00	61178576.00	51000000.00	50836315.00	48280000.00	45989252.00
Maintenance and spares	2500000.00	1256380.00	2085000.00	1175113.00	1500000.00	1184095.00	1305000.00	600820.00
R&D	1000000.00	40000	1000000.00	186250.00	3038000.00	2825750.00	24000.00	24000.00
Training and Travel	1500000.00	1038134.00	800000.00	126530.00	1000000.00	813045.00	450000.00	426326.00
	0	0	0	0	0	0	0	0
Others, specify	50000000.00	20580277.00	41000000.00	40811563.00	31000000.00	30862324	30000000.00	28913889.00
Total	**136600000.00**	**74988222.00**	**116835000.00**	**111100510.00**	**101338000.00**	**99462796.00**	**89159000.00**	**83995260.00**

10.2.1 Adequacy of budget allocation (10) Institute Marks : 10.00

A comparison of the budget allocated and the actual expenditure incurred for the current financial year (2024-25) and the three preceding years has been conducted to assess whether the allocated budget was utilized effectively, and to identify any shortfalls or surpluses.

Summary of the adequacy of budget allocation based on our institutional data provided in the above table as follows.

CFY: 2024-25 (Current Financial Year)

- **Total Income**: ₹15,00,00,000
- **Actual Expenditure**: ₹13,84,00,500 (as of now)
- **Expenditure Per Student**: ₹1,30,937.09

Adequacy Analysis:
The budget allocated for Current Financial Year (2024-25) appears to be adequate. Despite a slightly higher budget allocation for infrastructure, laboratory equipment, and teaching staff salaries, the actual expenditure is well-managed and remains within the total income. Investments in laboratory consumables and R&D have been prudent, reflecting a focus on quality education and research support. Our institution has maintained a high expenditure per student, indicating that resources are efficiently directed towards academic excellence.

CFYm1: 2023-24

- **Total Income**: ₹11,67,74,675
- **Actual Expenditure**: ₹10,85,11,550
- **Expenditure Per Student**: ₹1,36,836.76

Adequacy Analysis:
The allocation for this year (2023-24) was efficient, with significant spending on salaries (₹6,11,78,576) and laboratory equipment (₹4,56,53,730). These expenses indicate a priority towards infrastructure enhancement and staff welfare. Despite the lower income compared to CFY, our institution managed to allocate resources efficiently, ensuring no compromises in student quality or institutional growth.

CFYm2: 2022-23

- **Total Income**: ₹8,96,22,473
- **Actual Expenditure**: ₹9,86,83,735
- **Expenditure Per Student**: ₹1,48,396.59

Adequacy Analysis:
The budget for the year (2022-23) reflects strategic investments in laboratory equipment (₹7,78,83,950) and consumables (₹1,04,222), supporting technical education needs. While the actual expenditure slightly exceeded the income, this could be attributed to long-term investment priorities, such as infrastructure expansion and research initiatives. This year shows our institutions commitment to maintaining quality education and research.

CFYm3: 2021-22

- **Total Income**: ₹7,97,23,417
- **Actual Expenditure**: ₹8,39,31,608
- **Expenditure Per Student**: ₹1,22,527.89

Adequacy Analysis:
Despite having the lowest income during the assessment years, our institution effectively prioritized spending on laboratory equipment (₹6,80,04,330) and teaching/non-teaching salaries (₹4,59,89,252). The slight overspending reflects an effort to ensure no compromise in academic delivery and infrastructure maintenance during a challenging financial period.

Overall Justification:

1. **Expenditure Per Student**:
   The expenditure per student has consistently been above ₹1,20,000, showcasing our institution's focus on quality education and infrastructure per capita.
2. **Focus Areas**:
   - **Salaries:** A significant portion of the budget each year is dedicated to staff, ensuring a well-qualified and motivated workforce.
   - **Laboratories and Research:** Investments in laboratory equipment and R&D have steadily increased, reflecting alignment with the institutions goals of fostering innovation and practical learning.
3. **Income vs. Expenditure**:
   While there were years with expenditures slightly exceeding income (2022-23 and 2021-22), this indicates strategic spending on long-term development rather than mismanagement.
4. **Efficient Management**:
   The allocation towards non-recurring expenses, such as infrastructure and special projects, was controlled and prioritized, showing prudent financial management.

*****

10.2.2 Utilization of allocated funds (15) Institute Marks : 15.00

Utilization of allocated funds (Institute level):

Financial Year	Major Utilisation of Budget (Institutions Level)		
	Equipment	Software	R & D
2024-25 (CFY) Till date	Intel Unnati lab Lenova server Intel Xeon – Rs.24,69,740	-	R & D Registration Fee - Rs.40,000
2023-24 (CFYm1)	Computer systems Lab (50 Nos) – Rs.24,00,000 AE Lab equipments - Rs.1,99,629	-	Data Science lab – Rs.11,57,500 R & D Registration Fee - Rs.40,000
2022-23 (CFYm2)	CCP Lab – Rs.18,40,729 Skill Lab – Rs.6,22,308 Smart Board – Rs.3,90,000 Electrical Engg. Lab Equipment – Rs.1,96,175 AE Lab equipments- Rs.45,52,809	Internet – Rs.4,50,000 Edu Merge ERP – Rs.41,172 Cadence Software – Rs.9,00,000	R & D Registration Fee - Rs.38,000 Computers for VLSI lab - Rs.13,27,500 Computers for IOT lab - Rs. 14,60,250
2021-22 (CFYm3)	Smart Board - Rs.1,30,000 EC & CS Lab equipments - Rs.89,208 AE Lab equipments - Rs.56,02,155	Edu Merge – Rs.82,349	R & D Registration Fee - Rs.24,000

Financial Year 2024-25 (CFY)

In the current financial year, the budget primarily focused on upgrading lab infrastructure with significant investment in the Intel Unnati lab. The allocation towards R&D, though modest, highlights ongoing research efforts.

Financial Year 2023-24 (CFYm1)

In FY 2023-24, the budget saw a strong focus on upgrading computer systems and lab equipment, with a notable investment in a Data Science lab. The R&D expenditure remained consistent with previous years.

Financial Year 2022-23 (CFYm2)

FY 2022-23 marked substantial investments across multiple laboratories and equipment, including dedicated resources for emerging fields like VLSI and IoT. Software expenditures focused on enhancing institutional ERP and engineering software, such as Cadence. R&D registration fees indicate sustained research involvement.

Financial Year 2021-22 (CFYm3)

In FY 2021-22, the budget primarily focused on upgrading the AE lab with significant spending on equipment. The software expenditure was minimal, primarily directed towards the Edu Merge ERP system. R&D activities also received attention, though the spending was relatively lower than in later years.

Overall Summary

- **Primary Focus**:
  Across all years, the institution allocated significant funds to laboratory equipment, supporting hands-on learning experiences for students. The Aeronautical Engineering lab consistently received substantial investments, ensuring the provision of state-of-the-art facilities.
- **Software**:
  Software investments were concentrated in specific years, with a notable emphasis on ERP systems and specialized engineering software like Cadence and Edu Merge, which support academic and administrative functions.
- **R&D**:
  The R&D expenditures, although moderate, have remained a steady part of the budget, indicating the institution's focus on fostering research activities, especially with the annual R&D registration fees.

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10.2.3 Availability of the audited statements on the institute's website (5) Institute Marks : 5.00

The institutions financial audited statements for the following last four financial years are available in the college website.
FY 2023-24, FY 2022-23, FY 2021-22 and FY 2020-21

Weblink :
https://www.gopalancolleges.com/gcem/auditing-statements.html

Note:
For the FY 2024-25, audited statement is not uploaded in the website since the financial year is not yet completed now (December 2024).

10.3 Program Specific Budget Allocation, Utilization (30) Total Marks 30.00

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 2024-25

6211000.00		Actual expenditure (till…): 3520619.00		Total No. Of Students 165
Non Recurring	Recurring	Non Recurring	Recurring	Expenditure per student
70000	61,41,000.00	30,739.00	34,89,880.00	21337.08

Table 2 :: CFYm1 2023-24

5765000.00		Actual expenditure (till…): 5584773.00		Total No. Of Students 157
Non Recurring	Recurring	Non Recurring	Recurring	Expenditure per student
65,000.00	57,00,000.00	96,611.00	54,88,162.00	35571.80

Table 3 :: CFYm2 2022-23

9265000.00		Actual expenditure (till…): 8909235.00		Total No. Of Students 146
Non Recurring	Recurring	Non Recurring	Recurring	Expenditure per student
40,00,000.00	52,65,000.00	38,37,471.00	50,71,764.00	61022.16

Table 4 :: CFYm3 2021-22

9930000.00		Actual expenditure (till…): 9310545.73		Total No. Of Students 125
Non Recurring	Recurring	Non Recurring	Recurring	Expenditure per student
50,00,000.00	49,30,000.00	49,66,111.00	43,44,434.73	74484.37

Items	**Budgeted in 2024-25**	**Actual Expenses in 2024-25 till**	**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**
Laboratory equipment	70000	30739.00	100000.00	96611.00	4000000.00	3837471.00	5000000.00	4966111.00
Software	0	0	0	0	0	0	0	0
Laboratory consumable	20000.00	3000.00	20000.00	17190.00	15000.00	9500.00	10000.00	8200.00
Maintenance and spares	20000.00	5000.00	20000.00	4641.00	15000.00	8457.00	10000.00	2394.00
R & D	0	0	0	0	0	0	0	0
Training and Travel	32000.00	13000.00	70000.00	8000.00	15000.00	14000.00	10000.00	5000.00
	69000.00	7000.00	100000.00	81188	722000.00	699880.00	900000.00	787050.00
Total	**211000.00**	**58739.00**	**310000.00**	**207630.00**	**4767000.00**	**4569308.00**	**5930000.00**	**5768755.00**

10.3.1 Adequacy of budget allocation (10)

Institute Marks : 10.00

The Department of Aeronautical Engineering was established in the academic year 2019-20, and currently, two batches of students have graduated from our institution. Therefore, the budget allocated and the actual expenditure were primarily intended for the establishment of laboratories and other facilities during FY 2021-22 and FY 2022-23.

CFY: 2024-25 (Current Financial Year)

- **Total Budget: ₹62,11,000**
- **Actual Expenditure: ₹35,20,619**
- **Expenditure Per Student: ₹21,337.08**

Adequacy Analysis:
The allocation for Current Financial Year **(2024-25)** shows a focus on maintaining recurring expenses, with ₹34,89,880 spent effectively. Non-recurring expenses, particularly laboratory equipment (₹30,739), have been minimal so far, possibly reflecting pending procurement plans. The lower expenditure per student compared to previous years is expected to improve, as there are still 4 months remaining in this academic year.

CFYm1: 2023-24

- **Total Budget: ₹57,65,000**
- **Actual Expenditure: ₹55,84,773**
- **Expenditure Per Student: ₹35,571.80**

Adequacy Analysis:
Budget utilization was highly efficient, with 97% of the budget spent. The focus on recurring expenses (₹54,88,162) ensured consistent academic delivery, while laboratory equipment expenses (₹96,611) supported infrastructure development. The expenditure per student aligns well with program requirements, indicating adequate funding to maintain quality education and resources.

CFYm2: 2022-23

- **Total Budget: ₹92,65,000**
- **Actual Expenditure: ₹89,09,235**
- **Expenditure Per Student: ₹61,022.16**

Adequacy Analysis:
This year saw significant investments in non-recurring expenses, with ₹38,37,471 allocated for laboratory equipment. Recurring expenses (₹50,71,764) also reflect a commitment to operational continuity. The higher expenditure per student suggests a focus on infrastructure upgrades and enhanced student facilities, showcasing strategic allocation of resources.

CFYm3: 2021-22

- **Total Budget: ₹99,30,000**
- **Actual Expenditure: ₹93,10,545.73**
- **Expenditure Per Student: ₹74,484.37**

Adequacy Analysis:
The budget allocation for **(FY 2021-22)** was robust, with major investments in laboratory equipment (₹49,66,111), reflecting efforts to establish strong foundational infrastructure for the program. With an expenditure per student of ₹74,484.37, this year highlights a focus on building long-term capabilities in alignment with academic goals.

Overall Justification

1. **Expenditure Per Student:**
   The department maintained consistent and competitive expenditure per student across the years, ensuring adequate resource allocation for quality education.
2. **Focus on Infrastructure:**
   - Significant investments in laboratory equipment in FY 2022-23 and FY 2021-22 underline the department's efforts to strengthen technical capabilities.
   - Gradual reductions in expenditure in subsequent years (2023-24 and 2024-25) suggest a shift toward operational optimization and leveraging existing infrastructure.
3. **Efficient Recurring Expense Management:**
   High spending on recurring expenses each year reflects the institution's commitment to smooth academic operations and maintaining faculty and staff support.
4. **Flexibility in Non-recurring Allocation:**
   Variability in non-recurring expenses demonstrates adaptability to program needs, with higher budgets during infrastructure expansion phases and optimization in subsequent years.

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10.3.2 Utilization of allocated funds (20) Institute Marks : 20.00

Utilization of allocated funds (Program level):

Financial Year	Utilization Budget For Aeronautical Engineering (Rs.)		
	Equipment	**R & D & Workshop**	**Total (Rs.)**
2024-25 (Till date)	Aeronautical Engineering Lab Equipment – 33,739	Registration Fee for National Level Competition – 10,000	**43,739**
2023-24	Aeronautical Engineering Lab Equipment – 1,99,629	Workshop – 8,000	**2,07,629**
2022-23	Aeronautical Engineering Lab Equipment – 45,52,809	Workshop – 16,500	**45,69,308**
2021-22	Aeronautical Engineering Lab Equipment – 56,02,155	Honorarium – 5,000	**56,07,055**

Over the past four financial years, the budget allocated to the **Aeronautical Engineering Department** has been primarily focused on the procurement of lab equipment and supporting activities for research and development (R&D) and workshops.

1. **2024-25 (Till Date)**:
   This year's expenditure highlights a modest yet essential investment in equipment and competitive participation.
2. **2023-24**:
   This year saw a significant investment in lab equipment, reinforcing the department's commitment to improving practical training.
3. **2022-23**:
   This year marked a major investment in infrastructure, supporting the department's growth and capability for hands-on training.
4. **2021-22**:
   This expenditure reflects a significant investment in lab infrastructure, which was essential for improving the practical training and research facilities available to students.

Overall Summary

- The **Aeronautical Engineering Lab Equipment** consistently received the largest portion of the budget allocation, highlighting the importance of state-of-the-art facilities for practical training.
- **Workshop and R&D** expenses, though smaller in comparison, were essential for supporting hands-on learning and participation in national events, contributing to the overall development of students.
- The budget allocations demonstrate a clear focus on expanding and enhancing the department's infrastructure, which is critical to offering high-quality education and research opportunities in the field of aeronautical engineering.

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10.4 Library and Internet (20) Total Marks 20.00

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

Institute Marks : 10.00

LIBRARY – LEARNING CENTRE:

Library is a vital resource, serving as a hub for academic excellence of students. It provides students access to a diverse range of technical literature, research materials, and reference & text books, fostering a deeper understanding of engineering concepts.

Furthermore, it encourages self-directed learning, research, and exploration, complementing classroom education. The library is a space for collaboration, allowing students to engage in group study sessions and exchange ideas.

Overall, it plays a crucial role in shaping well-rounded and knowledgeable engineers.

GCEM library is housed on the ground floor in a spacious and well-lit building, catering to the learning needs of students and staff members with ample seating capacity.

Facilities available in GCEM library:

Sl. NO.	Particulars	Available
1	Titles	3,646
2	Volumes	16,200
3	International Journals	05
4	National Journals	25
5	E - Journals	VTU - Consortium
6	Member of VTUs E - consortium	Yes
7	Member of National Digital Library	Yes
8	Facility for viewing e - content from NPTEL/Swayam	Available
9	Working Hours	8.00 a.m. to 5.00 pm
10	Area (in Sq.)	400 Sq-m
11	Reading room capacity (in Numbers)	100
13	Library Networking	Available
14	No of Multimedia PCs	08 +02
15	Type of Access	Open Access
16	Library Management Software	Available (Libsoft)
17	Barcode or RF Tab Book Handling	Barcoded

- **BOOKS, JOURNALS, AND OTHER RELEVANT MATERIALS**

Books:

Our college library is a comprehensive repository of knowledge, providing a wealth of resources to support the academic endeavors of students and faculty. As of the latest count, the library boasts an impressive collection of 3,646 titles, encompassing 16,200 volumes of books. This extensive array covers a diverse range of subjects, catering to the multifaceted needs of our engineering community.

Sl. No.	Particulars	Available
1	Titles	3,646
2	Volumes	16,200
3	International Journals	05
4	National Journals	25
5	CD ROMs	678
6	Project Reports	275

Print Journals:

In addition to our rich book collection, the library subscribes to the following 7 print journals, enhancing access to the latest research and developments in various engineering disciplines.

1. IETE Journal of Research
2. Manufacturing Technology Today
3. IOSR Journal of Computer Engineering
4. Indian Journal of Civil Engineering

Newspapers:

Furthermore, recognizing the importance of staying informed about current affairs, the library maintains subscriptions to the following 5 daily newspapers.

1. Prajavani (kannada)
2. Deccan Herald (English)
3. The Times of India (English)
4. The Rajasthan Pathrika (Hindi)

International journals (online):

Sl. No.	Name of the Journal	ISSN NUMBER
01	International Journal of Advance Civil Engineering and Technology	2249-8958
02	International JNL. of Research in Electrical, Electronics & Communication Engineering	2395-0587
03	IOSR Jul. of Computer Engineering	2278-8727
04	Journal of Research in Mechanical Engineering and Applied Mechanics	2321 - 8185
05	Journal of Research in Physics & Applied Sciences	2348-3423

National journals (online):

Sl. No	Name of the Journal	ISSN NUMBER
01	IETE Journal of Research	0377-2063
02	Indian Journal of Civil Engineering	2581-8171
03	INDI.JNL.OF I.T. & COMPUTER ENGG	0976-5166
04	Manufacturing Technology Today	0972-7396
05	Inventi Impact Aerospace Engineering	2250-2882

06	Inventi Impact Modeling & Simulation	*2277-6273*
07	Inventi Impact Navigation & Observation	2277-629X
08	Indian Journal of Physics	0973-1458
09	Jul. of Modern Mechanical Systems & Machining	2409-9848
10	Jul. of Internet of Things & Information Technology	2542-6605
11	Jul. of Computer Programming & Multimedia	2582-8592
12	Jul. of Research in Electrical Circuits & Systems	1793-6454
13	Jul. of Current Trends in Electrical Engineering	2249-4774
14	Journal of Research in Applied Chemistry	2069-5837
15	Journal of Engineering Mathematics & Statistics	2581-7647
16	Jul. of Research in Physics & Applied Sciences	2348-3423
17	Jul. of Aerospace Sciences &Technologies	0972-950X
18	Indian Journal of Chemical Technology	0971457X
19	Indian Geotechnical Journal	2277-3347
20	Indian Concrete Journal	0019-4565
21	Journal of Construction Management	0970-3675
22	Indian Journal of Computer Science	2456 - 4133
23	Journal of Calcutta Mathematical Society	2231-5314
24	Indian Foundry Journal	0379-5446
25	Indian Journal. of Engineering &Material Science	0975-1017

- **E-RESOURCES AND DIGITAL LIBRARY**

VTU – CONSORTIUM FOR E-RESOURCES TO LIBRARIES:

Gopalan College of Engineering and Management, Bengaluru is the member of VTU-Consortium and this institution is licensed to access the following e- Resources for the year 2024-25.

Sl. No.	e-Resources	Access
1.	Elsevier Science Direct	327 e-Journals
2.	IEEE	e-Journals - ASPP package
3.	Springer Nature	689 e-Journals
4.	Taylor and Francis	585 e-Journals
5.	Emerald	Management 271 e-Journals
6.	Proquest- Database	Fulltext-4900, 7800-abstract
7.	Mint book	1360 e-Books
8.	BSP	141 e-Books
9.	Wiley Online Library	270 e-Journals
10.	K-nimbus (Digital Library Platform and Remote Access Solution)	Yes
11.	DrillBit (Plagiarism Originality Online Check)	Yes

E – SHODH SINDHU MEMBERSHIP:

e-ShodhSindhu merging three consortia initiatives, namely UGC-INFONET Digital Library Consortium, NLIST and INDEST-AICTE Consortium and continue to provide current as well as archival access to more than 10,000 core and peer-reviewed journals and a number of bibliographic, citation and factual databases in different disciplines from a large number of publishers and aggregators to its member institutions.

DELNET-Developing Library Network - MEMBERSHIP:

The main objectives of DELNET is to promote resource sharing among the Member-Libraries by collecting, storing and disseminating information and by offering networked library services to users

National Digital Library of India – MEMBERSHIP:

National Digital Library of India (NDLI) is a virtual repository of learning resources which is not just a repository with search/browse facilities but provides a host of services for the learner community.

- **ACCESSIBILITY OF LEARNING RESOURCES**

Users and Borrowing Privileges:

User Type	Service	No. of Book	Period of Lon
Students	Lending books	03	15 Days
	Book Bank Books	04	One Semester
	Reference books	01	7 Days
	SC/ST Book Bank	03	One Semester
	Non- Book Materials	01	7 days
Faculty	Lending & Book Bank	10	180 days
	Reference Books	01	7 Days
	Non- Book Materials	01	7 Days

LIBSOFT:

Library Management software - LIBSOFT is used for Library administration & automation.

Library Staff Details:

Name	Qualification	Designation	ID NO
Mounesha .G	M L I Sc.	Librarian	GCEO1377
Mallika .P	M L I Sc.	Assistant Librarian	GCEO1387

Venktesh Murthy	-	Attender	GCEO1231

- **LIBRARY - SUPPORT TO STUDENTS FOR SELF-LEARNING ACTIVITIES**

College library plays a crucial role in supporting students self-learning activities by providing resources, services, and spaces that facilitate independent study.

Extensive Collection of Resources:

- The library maintains a diverse and comprehensive collection of books, journals, e-books, and other academic resources covering a wide range of subjects.
- Access to online databases and scholarly journals can enhance students ability to explore in-depth topics and conduct independent research.

Digital Resources and E-Learning Platforms:

- Offer access to digital resources, including e-books, online courses, and multimedia materials, to cater to different learning preferences.
- Provide access to e-learning platforms that offer tutorials, quizzes, and interactive content to support self-paced learning.

Information:

- Provide guidance on using library catalogues, databases, and other research tools effectively.

Assistance:

- Librarians are available to assist students in locating relevant resources, refining research topics, and developing effective search strategies.

Study Spaces and Collaborative Areas:

- Comfortable and conducive study environments with a mix of individual study carrels and open collaborative spaces.

Extended Hours and Accessibility:

- Extend library hours during peak study times, especially during exam periods, to accommodate students with varying schedules.
- Ensure that the library is accessible both physically and digitally, allowing students to use resources and services remotely.

Technology Support:

- Provide access to technology resources, including computers, printers, scanners, and software applications that are relevant to students academic needs.
- Offer technical support or training for using specialized software or tools that can aid in research and learning.

Overall, our college library serves as a dynamic hub that empowers students to engage in academic, self-directed learning, and intellectual exploration throughout their academic journey.

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10.4.2 Internet (10) Institute Marks : 10.00

Name of the Internet provider	Metronet (Bell Teleservices India Limited, Bangalore)
Available band width	300 mbps
WiFi availability	6 wi-fi hotspots (one for each floor)
Internet access in labs, classrooms, library and offices of all Departments	LAN internet access in all the labs, library, offices and Smartboards in all the classrooms
Security arrangements	Sophos XG230 firewall

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	Apply their knowledge in the domain areas of Aerodynamics, Aircraft Propulsion, Aircraft Structures and Flight mechanics by acquiring knowledge in basic engineering, mathematics, science and Aeronautical engineering
PSO2	Graduates will exhibit professionalism, team work in their chosen profession and adapt to current trends, technologies, research and industrial scenarios by pursuing lifelong learning.

Declaration

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

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

Head of the Institute
Name : Dr. Arun Vikas Singh
Designation : Principal
Signature :

Seal of The Institution :

Gopalan College of Engineering & Management
181/1,182/1,Hoodi Village,
Bonnenahalli, K.R.Puram,
Whitefield, Bangalore

Place : Bengaluru
Date : 05-12-2024 11:44:37