Mechanical Engg.

Part B

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1 Vision, Mission and Programme Educational Objectives (100) **Total Marks : 100.00**

1.1 Vision and Mission (5) Total Marks : 5.00

1.1.1 State the Vision and Mission of the institute and department (1) Institute Marks : 1.00

(List and articulate the vision and mission statements of the institute and department)

Vision of the Institute

To be among the best of the institutions for engineers and technologists with attitudes, skills and knowledge and to become an epicenter of creative solutions.

Mission of the Institute

To achieve and impart quality education with an emphasis on practical skills and social relevance.

Department of Mechanical Engineering

VISION

To be a centre of excellence by producing high caliber engineers and technologists, who possess scientific temperament and would engage in design, manufacturing and research

MISSION

The Mechanical Engineering Department is committed to

- Provide efficient engineers for global requirements by imparting quality education
- Create, explore and develop innovations in the fields of Design, Thermal and Manufacturing
- Enhance the skills of young minds so as to become globally competitive with entrepreneurial and managerial skills

1.1.2 Indicate how and where the Vision and Mission are published and disseminated (2) Institute Marks : 2.00

(Describe in which media (e.g. websites, curricula books) the vision and mission are published and how these are disseminated among stakeholders)

Vision and Mission are published and disseminated through the following methods:

Print Media: College Diary, College Brochures,OBE booklet

Electronic Media: College/Departmental Website, Display Monitors

Display Boards: Flexi-Boards, Permanent Wooden Boards

Direct Communication: Orientation Programmes to fresher's/parents/guardians, Induction Programmes to staff members, presentations to visiting academicians/industry personnel, announced during seminars/conferences/workshop.

1.1.3 Mention the process for defining Vision and Mission of the department (2) Institute Marks : 2.00

Articulate the process involved in defining the vision and mission of the department from the vision and mission of the institute.)

The department established the vision and mission through a consultative process involving the stakeholders (students, alumni, parents, professional bodies, faculty, industry, and management) considering the scope for growth of the department and future societal requirements.

The process to arrive at the Mission and Vision of the department is as follows:

1. This process reviews aspirations of our Institution in the light of the vision and mission of some of best educational institutions running similar programs.
2. Feedback from all stakeholders are considered
3. Departmental Advisory Board (DAB)/Departmental Development and Monitoring Committee (DDMC) make the draft.

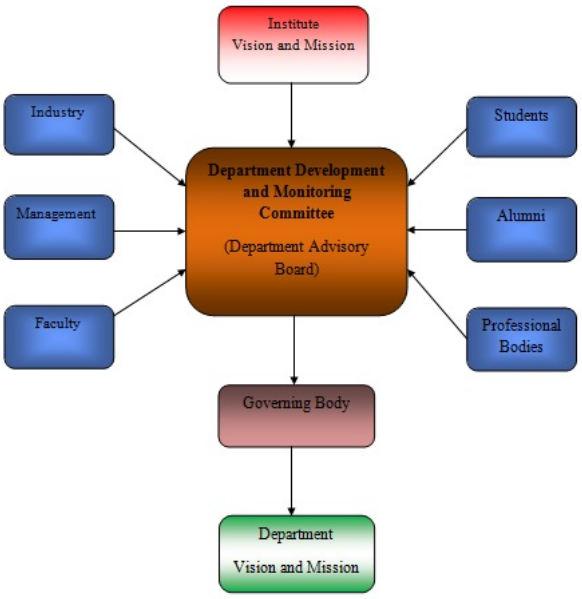


Figure 1: The process for defining the Mission and Vision of the department

4. These proposals are ratified by the Governing Body.

1.2 Programme Educational Objectives (15) — Total Marks : 15.00

1.2.1 Describe the Programme Educational Objectives (PEOs) (2) — Institute Marks : 2.00

(List and articulate the programme educational objectives of the programme under accreditation)

PEO 1: Graduates of the program will be able to utilize opportunities for successful career in the field of mechanical engineering to meet the demands of industry and also excel in post graduate and research programs.

PEO 2: Graduates of the program will have comprehensive knowledge to understand and practice mechanical engineering and applications and solutions in societal and global context.

PEO 3: Graduates of the program will be able to inculcate good scientific and engineering temperament so as to enable them analyze, design, and create novel product innovations and solutions for the real time problems in the industry.

PEO 4: Graduates of the program will be able to practice with professional and ethical responsibility, effective communication skills, practice team spirit, multidisciplinary approach and engage in lifelong learning a prerequisite for a successful professional career.

1.2.2 State how and where the PEOs are published and disseminated (2) — Institute Marks : 2.00

(Describe in which media (e.g. websites, curricula books) the PEOs are published and how these are disseminated among stakeholders)

PEOs are published and disseminated through the following methods:

Print Media: Departmental Brochure/Booklets, Course Registers,OBE booklet

Electronic Media: College/Departmental Website, Display Monitors

Display Boards: Notice Boards

Direct Communication: Orientation Programs to freshers /parents, Induction Programs to staff members.

1.2.3 List the stakeholders of the programme (1) — Institute Marks : 1.00

(List stakeholders of the programme under consideration for accreditation and articulate their relevance)

The Stake holders for the program are

1. Students

2. Employer

3. Faculty

4. Parents

5. Industry

6. Alumni

7. Management

8. Professional bodies

Students: Students seek quality environment at the Institute which includes good infrastructure, qualified faculty and conductive learning environment. They expect the qualification to be well recognized for an employment with reputed industry or for admission in the best educational institution or to prepare for a career of one's own choice. Students also play a key role in program enhancement. The inputs/feedback given by the student helps in redesigning the curriculum and in introducing new innovative practices to meet the industry needs.

Employer: The employer looks for recruiting the students from the institution who can be trained easily, deployed rapidly and contributes for Organizational and societal growth. Industry also sees institutions as a complementary asset to their R&D. They being one of the direct beneficiaries provide the necessary direction and growth plans. The feedback from the employer helps to fill the curriculum gaps so as to meet the current trends.

Faculty: Faculty acts as facilitator for the students to achieve their goals. Faculty play important role in guiding the students and motivating them. Faculty wants to improve their credentials and growth in profession. Faculty takes pride in associating with a reputed institution and builds their career. They also play a crucial role in designing the program and establishing the PEOs / POs. The consistency of the program is maintained by different committees formed by the faculty.

Parents: Parents seek quality education for their ward for a better future and career through the institution. Parents' expectations are also given consideration in the development of curriculum.

Industry: In most cases industry needs to hire the best students from good institutions such that these well trained students are readily employable, trainable and contribute to their growth. Industry also sees institutions as a complementary asset to their R&D. Industry, being one of the direct beneficiary provides the necessary direction and growth plans.

Alumni: The Alumni take pride in their educational institution from where they graduated. The Alumni prefer to maintain traditions by guiding their juniors on approaches to get better professional growth. The present social networking sites have made better interaction between Alumni and students. The Alumni contributes to the institution at times financially and other times through technical guidance and also gives feedback for the development of the Institution. Alumni feedback is more important in redesigning the course content because they actually faced the field problem with the knowledge imparted during their education. They can judge whether the level of knowledge they have gained is at par with industry requirements or not.

Management: The Management is a facilitator for imparting quality education by providing best infrastructure, qualified faculty members and latest equipment and software. Management also focuses on the professional growth of the students. Management can enhance their social standing through the institution.

Professional Bodies: Professional bodies are groups of experienced professionals with lots of experience in their respective profession. They have knowledge of the latest developments in the field and what skills the young engineers should have to flourish in their career. The opinions of professional bodies are given due consideration.

1.2.4 State the process for establishing the PEOs (5) Institute Marks : 5.00

(Describe the process that periodically documents and demonstrates that the PEOs are based on the needs of the programme's various stakeholders.)

We draw upon the inputs from stake holders typically the faculty, alumni, industry, professional bodies input to formulate our PEOs.

Faculty: The faculty members of the department are one of the key stake holders empowered to evaluate the feedback received from all other stake holders, proposing improvements in the curriculum, the outcomes and objectives, and in implementing any ratified changes. All changes in the curriculum are initiated by the faculty. Additionally, all the faculty members continually interact with all of the other stakeholders, allowing for the opportunities to receive, apart from formal, the informal feedback.

Alumni: The Alumni provides vital inputs for drafting and to review our PEOs. The inquiry includes opinion on the current courses, its shortfall, suggestive changes to be considered in revising curriculum, their success in careers and suitability of preparation attributed to the curriculum they were tutored in, any advice they have to give to current students, and what they have to do for succeeding in their careers.

Regular input from alumni is obtained via following interactions:

Surveys: Formatted Survey data is utilized to gather comprehensive information for scrutiny and analysis.

Alumni visits: Formal and informal visits by the alumni gives scope for direct personal interaction, discussions and also gives an opportunity to collect and record information required for improving the program based on their professional experiences.

Alumni faculty interaction: Alumni will be regularly i0nteracting with some of the faculty with whom they are more conversant and they share their experiences, feelings, problems etc. which will be more useful in redesigning the programme.

Employers: Input from employers plays a vital role in the formulation and review of the PEOs which reflect on the success and relevance of the designed courses. Employers are at the forefront of the practice of the profession; hence their feedback is important. They give us early indications of changing or new trends in the profession. The information is gathered from employers using both formal surveys and various informal interactions. In such interactions, employers are inquired about their views on the needs and direction of growth of the domain and correspondingly what the goals should be in educating the students.

Regular input from employers is obtained via the following interactions:

Surveys: Industry is directly or indirectly interacted with, during institutional visits for guest lectures, workshops, seminars, placement drives or for any other informal interaction and the opportunity is utilized to fill in the Survey Form designed for formulating PEOs.

Tours: Department regularly arranges tours to industries as part of their courses education processes. Discussions with the industries and the visiting faculty help gain additional information on the current needs of industry with regard to our graduates, and thereby contribute the understanding needed to formulate or revise our PEOs.

Professional Bodies: Professional Bodies like CII, NASSCOM periodically express the status of industry which are noted and utilized during formulating or reviewing the PEOs.

The PEOs are established through the following steps:

Step 1: Vision and Mission of the Institute and Department are taken as the basis to interact with all the key stake holders.

Step 2: All documents relating to the Program and the department are also forms the necessary inputs. These include instructional materials which are collected for all the courses. The Outcomes in terms of courses are listed for the program and the Graduate attributes are taken into account apart from information collected from Alumni in terms of career achievements, contribution to society, ethical practices and intellectual contributions.

Step 3: Programme Coordinator consults the key stakeholders in the light of current status of the institute, teaching learning environment, student and faculty quality and infrastructure. Feedback from prospective employers and current employers of alumni are collected.

Step 4: Programme Assessment Committee reviews and recommends within the guidelines defined for the formulation of the PEOs to DAB (DDMC).

Step 5: DAB (DDMC) finalizes the PEOs and submits to Academic Council.

Step 6: PEOs suggested by DAB (DDMC) are ratified by the Academic Council.

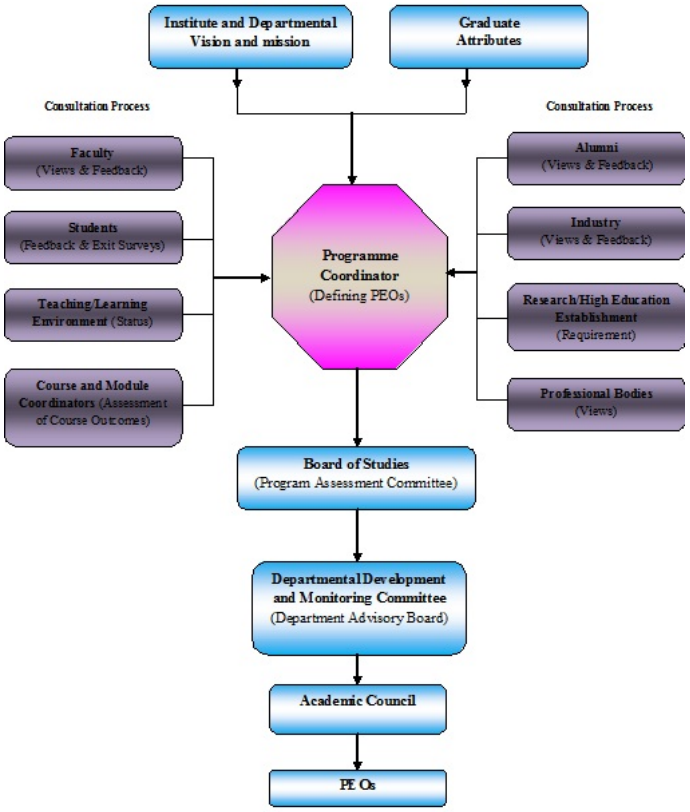


Figure 2: The process of establishing PEOs

1.2.5 Establish consistency of the PEOs with the Mission of the institute (5) Institute Marks : 5.00

(Describe how the Programme Educational Objectives are consistent with the Mission of the department.)

The department mission is in consistence with that of the institute. The PEOs are consistent with the mission of department as described by mapping wherein it gives evidence on the agreement between mission and the PEOs. The Mechanical Engineering-PEOs reflect the expected accomplishments of the graduates a few years after their graduation. These objectives are consistent with the Mission statement as is evident from the statement above.

By educating students in Mechanical Engineering, they are being molded for careers in professional practice, leadership and by providing them with a broad based education including communication and life-long learning skills. This also develops and strengthens their ability to solve practical problems of social relevance, for civic contribution as well as professional practice.

PEOs	Mission of Department		
	Quality Education	Create explore and develop innovations	Entrepreneurial, Managerial and life -long learning Skills
PEO 1: Graduates of the program will be able to utilize opportunities for successful career in the field of mechanical engineering to meet the demands of industry and also excel in post graduate and research programs.	**High**	Medium	**High**
PEO 2: Graduates of the program will have comprehensive knowledge to understand and practice mechanical engineering and applications and solutions in societal and global context.	**High**	**High**	Medium
PEO 3: Graduates of the program will be able to inculcate good scientific and engineering temperament so as to enable them analyze, design, and create novel product innovations and solutions for the real time problems in the industry.	**High**	**High**	Medium
PEO 4: Graduates of the program will be able to practice to professional and ethical responsibility, effective communication skills, practice team spirit, multidisciplinary approach and engage in lifelong learning a prerequisite for a successful professional career.	**High**	Medium	**High**

1: Slight (Low) 2: Moderate (Medium) 3: Substantial (High) ***If there is no correlation, put "-"***

*Note: Wherever the **word "process" is used in this document its meaning is process formulation,** notification to all the concerned, and implementation*

1.3 Achievement of Programme Educational Objectives (30) — Total Marks : 30.00

1.3.1 Justify the academic factors involved in achievement of the PEOs (15) — Institute Marks : 15.00

(Describe the broad curricular components that contribute towards the attainment of the Programme Educational Objectives.)

The following are the academic factors involved in the achievement of the PEOs:

1. By introducing courses in core engineering, basic sciences, mathematics, management, allied engineering and elective courses, seminars and projects that form the programd components.
2. The academic factors are decided by Academic Council and Board of Studies which involve university professors, Industrial experts and subject experts from the department. These committees play main role to frame the curriculum.
3. Student participation in Internship programs and Major Projects.
4. By conducting continuing education and professional development programs for the faculty.
5. By effective monitoring of all systems and processes including the feedback.
6. By providing budgetary resources and modern infrastructure.
7. By developing and maintaining quality in teaching.
8. By collaborating with leading institutions, professional bodies and industries.
9. By effectively employing appropriate technologies to enhance instructions and student learning.

Course Component	PEOs	Curriculum Content (% of total number of credits of the program)	Total number of contact hours	Total number of Credits
Basic Sciences	2,3	15	41	30
Engineering Sciences	2,3	11.5	30	23
Humanities and Social Sciences	2,3	7.5	21	15
Program Core	1,2,3,4	49.5	133	99
Program Electives	1	7	16	14
Open Electives	1,3	1.5	4	3
Project(s)	2,3,4	6	13	12
Internships/Seminars	1,4	1	3	2
Any other (Comprehensive viva)	3	1	3	2
	Total number of Credits			200

1.3.2 Explain how administrative system helps in ensuring the Achievement of the PEOs (15) — Institute Marks : 15.00

(Describe the committees and their functions, working process and related regulations.)

To ensure achievement of PEOs and goals of Outcome Based Education a well-structured administrative hierarchy exists in the institute. Administrative System to ensure achievement of PEOs is as follows:

1. **Course Coordinator:** One of the faculty among those teaching same course, monitors and reviews the activities related to attainment of course outcomes
2. **Module Coordinator:** Senior faculty coordinates and supervises the faculty teaching similar like courses.
3. **Program Coordinator:** Interacts and maintains liaison with key stakeholders like students, faculty and administration. Coordinator conducts and interprets various surveys required to assess to POs and PEOs.

In order to monitor and ensure Outcome Based Education the Institution level committees and department level committees are created.

1. Class Coordinators Committee
2. Program Assessment Committee
3. Board of Studies
4. Departmental Advisory Board
5. Academic Council

Committee	Chair	Members	Responsibilities
Class Coordinators Committee (CCC)	Program Coordinator	1. Faculty of a particular course 2. Student	1. To tap the suggestions of the students, to enhance teaching-learning process. 2. To monitor and improve the relations and shortfalls between academics and teaching environment. 3. Review of activities related to attainment of course outcomes

		representatives	**Committee Scheduled meetings:** Two times a semester or as and when needed.
Program Assessment Committee (PAC)	Program Coordinator	1. Module coordinators. 2. Faculty of a particular course. 3. Class coordinators.	1. To monitor feedbacks from stake holders and taking action thereafter on academic matters. 2. To monitor assessment and attainment of COs, POs and PEOs. 3. Evaluate Program effectiveness and propose necessary changes for continues environment. 4. Motivate faculty and students to attend workshops, developing projects, working models, paper publications and research. 5. Inter act with students, faculties, Program coordinator, Module coordinators, and external stakeholders in facilitating PEOs. **Committee Scheduled meetings:** Two times a semester or as and when needed.
Board of Studies	Chairman Board of Studies	1. Programme coordinators of the department 2. All teaching faculty of each course/ specialization offered. 3. Module coordinator 4. Two external experts in the program concerned and nominated by the Academic Council. 5. One expert to be nominated by the Vice-chancellor from a panel of six recommended by Principal of the institute. 6. Not more than two persons to be co-opted for their expert knowledge including those belonging to concerned profession or industry. 7. One post-graduate meritorious alumni nominated by the Principal. 8. The Chairman Board of Studies may with the approval of the Principal of the Institute co-opt: a. Experts from outside the institute whenever special courses of studies are to be formulated. b. Other members of the staff of the same faculty.	1. To prepare, frame and modify the syllabus for various courses keeping in view the Program Objectives of the Program. 2. Evaluates program effectiveness and proposes continuous improvement. 3. To suggest panel of names for appointment of examiners; and coordinate research, teaching, extension and other academic activities in the program / institute. 4. To suggest new methodologies for innovative teaching and evaluation techniques and tools. 5. To review implementation of institutional quality assurance in the department for improving program. 6. Guiding in evolving POs and Cos based on assessement. **Committee Scheduled meetings:** As and when necessary.

Departmental Development and Monitoring Committee (DDMC) (Departmental Advisory Board)	Head of the Department	1. All faculties are members- one among them will act as Secretary. 2. Members may be co-opted from other programs, University and industry as per requirement	1. To formalize the departmental Vision and Mission. 2. To plan and monitor the growth of programs of the department. 3. Develops and recommends new or revised PEOs. 4. To ensure infrastructure, support facilities and activities to ensure attainment of PEOs. **Committee Scheduled meetings:** Two times a semester or as and when needed.
Academic Council	Principal	1. Heads of Departments 2. Four faculty members other than the Heads of Departments representing the various categories (by rotation and seniority). 3. Four persons including educationalists of repute, one person from the industry and engineering related to the activities of the institute, who are not in the service of the institute and nominated by the Governing Body. 4. Three nominees of the parent university 5. A faculty member nominated by the Principal of the institute to act as Member Secretary.	5. To formalize the departmental Vision and Mission. 6. To plan and monitor the growth of programs of the department. 7. Develops and recommends new or revised PEOs. 8. To ensure infrastructure, support facilities and activities to ensure attainment of PEOs. **Committee Scheduled meetings:** Two times a semester or as and when needed.

1.4 Assessment of the Achievement of Programme Educational Objectives (40) **Total Marks : 40.00**

1.4.1 Indicate tools and processes used in assessment of the attainment of the PEOs (10) Institute Marks : 10.00

Describe the assessment process that periodically documents and demonstrates the degree to which the Programme Educational Objectives are attained. Also include information on:

a) A listing and description of the assessment processes used to gather the data upon which the evaluation of each programme educational objective is based. Examples of data collection processes may include, but are not limited to, employer surveys, graduate surveys, focus groups, industrial advisory committee meetings, or other processes that are relevant and appropriate to the programme;

b) The frequency with which these assessment processes are carried out.

Describe the assessment process that periodically documents and demonstrates the degree to which the Program Educational Objectives are attained. Also include information on:

a) A listing and description of the assessment processes used to gather the data upon which the evaluation of each program educational objective is based. Examples of data collection processes may include, but are not limited to, employer surveys, graduate surveys, focus groups, industrial advisory committee meetings, or other processes that are relevant and appropriate to the program;

The following assessment processes are used for the assessment of the achievement of the PEOs

S.NO	Method	Assessment Tool	Description
1	**Direct**	Oral & Written Exams	Objective, subjective, theory, practical, seminar and viva evaluation
2		Projects	Mini & Major project evaluation
3	**Indirect**	Student Exit Survey	Passing out students
4		Alumni Survey	Old batches of the students
5		Employer Survey	Industries which recruit our students
6		Industry Survey	Leading industry in the domain of particular

			program

PEOs (Program Educational Objectives) relate to the career and professional accomplishments of students after they graduate from the program. Consequently, assessment and evaluation of the objectives requires assessment tools that can be applied after graduation. The PEO's assessment process and methods are tabulated. However, keeping the significance of contribution of the curriculum and the assessment opportunities such as placement data and higher education entrance performance, these assessments are taken as supplementary evidence.

b) The frequency with which these assessment processes are carried out.

Frequency of the Assessment Processes

Assessment Tool	Description	Assessment Cycle	Evaluation Cycle	Documentation and Maintenance
Mid Exams	Internal Evaluation	Twice in a semester	Twice in a semester	Marks are recorded in department and examination cell.
End Exams	External Evaluation	Once in a semester	Once in a semester	Result Recorded at examination cell and department
Assignments	Before Every Mid Exam	Twice in a semester	Twice in a semester	Course Register
Viva	End of the Semester	Once in a semester	Once in a semester	Lab Register
Seminars	General and Technical	Once in a semester	Once in a semester	Course Register
Lab Exams	Internal and External experimental evaluation	Once in a semester	Once in a semester	Lab record, Examination Cell
Comprehensive Viva	Internal Evaluation	Once in four years	Once in four years	Examination Cell
Projects	Mini and Major project evaluation	Once in four years	Once in four years	Examination Cell
Surveys	All Stake Holders	Once in a year	Once in a year	Recorded in department

1.4.2 Give evidences for the attainment of the PEOs (30) Institute Marks : 30.00

File Name
Higher Studies
Surveys
Minutes of Meeting
Placements
Placement proof
Result analysis

We have introduced the Outcome Based Education system in full spirit in GRIET from 2014. Therefore it will take three more academic years to have students having experienced the learning environment as per new defined PEOs and three to five years from exit for them to experience the field of their careers. In the absence of such complete data, the evaluation guidelines are given, however attainment of the PEOs are commented based on available data.

However criteria for level of attainment of PEOs have been formulated for the essential processes indicated before. The existing alumni and graduate performances and surveys are presented as a representative data for future discussions.

PEO	Assessment	Good	Average	Below Average	Attainment
PEO 1	Performance	Above 60% distinctions	40-60% with distinctions	Below40% with distinctions	Above 60% distinctions
	Placements	Above 70% placement record	40 - 70 % placement record	Less than 40 % of students selected off campus	Above 50% placements are done in recent passed out batch.
	Higher Education	Above 35% graduates pursue higher education	20-35% of graduates pursue higher education	Below 20 % of graduates pursue higher education	Above 35 % for higher education
	Alumni	Above 70% satisfied with their training.	50-70% satisfied with their training.	Below 50% satisfied with their training.	Above 75% satisfied
	Industry	Returned for subsequent	Returned for subsequent	Reluctant to come for	Returned for subsequent

		placement drives with more intake	placement drives	placement drives	placement drives with more intake
	Employer	Highly satisfied graduates performance	Satisfied graduates performance	Not satisfied graduates performance	Highly satisfied graduates performance
	Student Exit Survey	Above 80% graduates are satisfied with their curriculum	60-80% graduates are satisfied with their curriculum	Below 60% graduates are satisfied with their curriculum	Above 90% graduates are satisfied with their curriculum
PEO 2	Alumni Survey	Above 60% graduates are in Mechanical Engineering Profession working in large teams	40-60% graduates are in Mechanical Engineering Profession working in large teams	Below 40% graduates are in Mechanical Engineering Profession working in large teams	Above 65% are in Mechanical Engineering Profession working in large teams
	Employer Survey	Above 65% of graduates possess good managerial skills	50-65% of graduates possess good managerial skills	Below 50% of graduates possess good managerial skills	Above 70% of graduates possess good managerial skills
	Industry Survey	Above 70% graduates are familiar with modern tool usage	40-70% graduates are familiar with modern tool usage	Below 40% graduates are familiar with modern tool usage	Above 80% graduates are familiar with modern tool usage.
PEO 3	Alumni Survey	Above 60% graduates are in Mechanical Engineering Profession working in large teams	40-60% graduates are in Mechanical Engineering Profession working in large teams	Below 40% graduates are in Mechanical Engineering Profession working in large teams	Above 65% are in Mechanical Engineering Profession working in large teams
	Alumni	Above 70% satisfied with their training.	50-70% satisfied with their training.	Below 50% satisfied with their training.	Above 75% satisfied
	Placements	Above 70% placement record	40 - 70 % placement record	Less than 40 % of students selected off campus	Above 50% placements are done in recent passed out batch.
PEO 4	Alumni Survey	Above 70% have undergone for additional courses and qualifications.	50-70% have undergone for additional courses and qualifications.	Below 50% have undergone for additional courses and qualifications.	Above 70% have undergone for additional courses and qualifications.
	Employer survey	Above 55% of graduates were able to analyze societal problems	40-55% of graduates were able to analyze societal problems	Below 40% of graduates were able to analyze real time problems	Above 60% graduates were able to analyze societal problems

1.5 Indicate how the PEOs have been redefining in the past (10)

Total Marks : 10.00

Institute Marks : 10.00

(Articulate with rationale how the results of the evaluation of PEOs have been used to review/redefine the PEOs)

Management has introduced the Outcome Based Education system in GRIET from 2014.. Therefore students, having experienced the learning environment as per newly defined PEOs are yet to graduate from the Institute. The PEOs have been defined based on the vision and mission of institution and the department. These PEOs suit the curriculum given by the affiliating university JNTUH and used the feedback received from the stakeholders through surveys. The continuous process of assignments, direct and indirect assessments and evaluation will lead to the revision and refinement of the PEOs. A mechanism is provided to review the results of the evaluation of our outcome based education system at the end of each academic year. Our Institute is first year of outcome based education and will review and redefine the PEOs at the end of the program.

Redefining of PEOs considers exit students survey, professional bodies view, alumni survey, employer survey, feedback. Department Advisory Board (DAB) consisting of the Head of the Department along with Board of Studies, Program Coordinator prepares the action plan to improve PEOs. After receiving inputs from the internal committees Board of Studies, Academic Council will give the final approval for the necessary improvements.

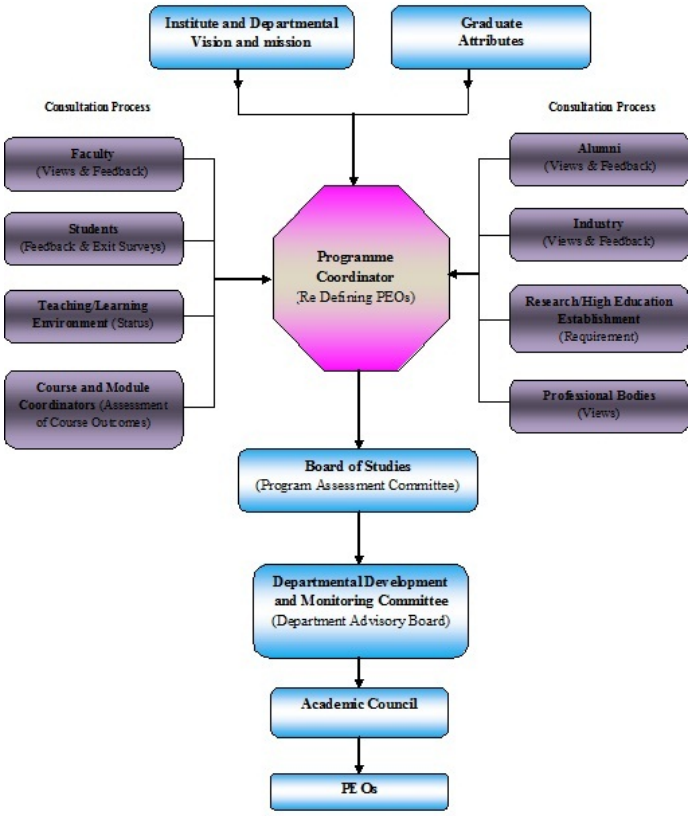


FIgure 3: Redefining of Programme Educational Objectives

2 Programme Outcomes (225) **Total Marks : 225.00**

2.1 Definition and Validation of Course Outcomes and Programme Outcomes (30) **Total Marks : 30.00**

2.1.1 List the Course Outcomes(COs) and Programme Outcomes (POs) (2) Institute Marks : 2.00

(List the course outcomes of the courses in programme curriculum and programme outcomes of the programme under accreditation)

Correlation between Course Outcomes with Programme Outcomes of I B.Tech Mechanical Engineering

I Year I sem

Code	Subject	Course Outcomes
GR14A1001	Linear Algebra and Single Variable Calculus	2. Ability to identify linearity and linear systems, which lie at the core level of many engineering concepts.
		3. Ability to apply the theorems in differential calculus, which form the stepping stones to a broader subject called approximation theory.
		4. Ability to relate commonly occurring natural phenomenon using mathematical symbols and acquire preliminary skills to predict their behavior.
		5. Ability to apply the concepts of matrix rank to analyze linear algebraic systems.
		6. Ability to compute eigen values and vectors for engineering applications.
		7. Ability to describe linear dynamical systems.
GR14A1002	Advanced Calculus	1. Ability to construct a curve using its geometrical properties.
		2. Ability to visualize multivariable functions in the context of function optimization.
		3. Ability to calculate integrals in 2-D and 3-D.
		4. Ability to apply and to estimate characteristics of vector fields.
		5. Ability to apply the concept of curve tracing and geometry to precisely estimate areas and volumes.
		6. Ability to find optional values of functions with and without constraints.

		7. Ability to apply the concept of multiple integrals in solving problems in vector fields.
GR14A1008	**Engineering Chemistry**	1. Ability to express practical implementation of fundamental theory concepts. 2. Ability to interpret the role of engineering materials such as polymers, energy production and study the environmental applications in the field of engineering and technology. 3. Ability to describe impurities present in water, boiler troubles, removal of impurities. 4. Ability to develop corrosion technology methods that are useful to know about the protection of metals from corrosion by various technologies. 5. Ability to choose electronic materials and their applications in the industry. 6. Ability to categorize advanced polymer materials and their industrial applications. 7. Ability to interpret role of chemistry in different environments and energy production.
GR14A1023	**Engineering Graphics**	1. Ability to describe the conventions and the methods of engineering drawing. 2. Ability to demonstrate drafting practices, visualization and projection skills useful for conveying ideas, design and production of components and assemblies in engineering applications. 3. Ability to perform basic sketching techniques of engineering components. 4. Ability to draw orthographic projections and isometric projections of given engineering components. 5. Ability to practice increasingly use of architectural and engineering scales. 6. Ability to design Computer Aided Drawing and to form foundation for modern tools in engineering graphics. 7. Ability to express machine drawing & Structural drawing
GR14A1018	**Basic Electrical Engineering**	1. Ability to analyze basics of Electrical Engineering and practical implementation of Electrical fundamentals. 2. Ability to apply various applications of commonly used electric machinery. 3. Ability to perform numerical solutions to fundamental electrical engineering. 4. Ability to analyze basic principles involved in electrical engineering concepts 5. Ability to apply practical methods of basic house wiring. 6. Ability to apply electrical concepts in generation and transmission of power. 7. Ability to Apply electrical Fundamentals in development of mechatronics
GR14A1012	**Engineering Mechanics - STATICS**	1. Ability to recollect the basic physical concepts of statics. 2. Ability to discriminate the static behavior of the mechanical components under loading. 3. Ability to apply the concepts of centroid, MI and product of Inertia in solving the practical problems under static behavior. 4. Ability to apply the concepts of mass moment of Inertia in solving the practical problems under static behavior. 5. Ability to analyse the truss applications. 6. Ability to analyse the principle of virtual work to static problems. 7. Ability to examine the free body diagrams and resultant force.
GR14A1024	**Business Communication and soft skills**	1. Ability to recognize the role and importance of language and communication skills. 2. Ability to find the importance of the formality in communication. 3. Ability to equip with critical thinking, writing, listening and acquires the ability to work in teams. 4. Ability to indicate the role and importance of various forms of communication skills. 5. Ability to present themselves in various formal social and professional situations. 6. Ability to meet the requirements of corporate communication. 7. Ability to make use of them in their respective professional fields.
		1. Ability to assemble a computer and its peripherals, forming foundation for applying hardware in engineering solutions. 2. Ability to analyze and use the software and internet as productivity tool with

		2. Ability to analyse and use the software and internet as productivity tool with professional ethics for all engineering application.
		3. Ability to install different software.
GR14A1026	**IT Workshop**	4. Ability to implement hardware and software in troubleshooting software related problems.
		5. Ability to explore the internet for information extraction and other innovative applications.
		6. Ability to interpret the Network hardware and network services.
		7. Ability to discuss database concepts and designing a static web page.
		1. Ability to explain engineering problems with a solid foundation in Chemistry.
		2. Ability to express practical implementation of fundamental concepts.
		3. Ability to estimate the impurities present in water.
GR14A1030	**Engineering Chemistry Lab**	4. Ability to modify lubricants for various purposes.
		5. Ability to prepare advanced polymer materials.
		6. Ability to measure the strength of an acid present in secondary batteries.
		7. Ability to find the Fe^{+2}, Ca & Cl^{-} present in unknown substances/ores using titrimetric and instrumental methods.
I Year II sem		
		1. Ability to calculate improper integrals like Beta and Gamma Functions and to apply the idea of domain transformation for easy problem solving.
		2. Ability to break down the skill of decomposing a periodic and non-periodic function in to fundamental components using Fourier series and Fourier transforms.
		3. Ability to differentiate between ODE and PDE and acquire the skill of finding analytical solutions of such equations.
GR14A1003	**Transform Calculus and Fourier Series**	4. Ability to calculate definite integral values using Beta and Gamma Functions.
		5. Ability to develop the skill of evaluating Laplace and inverse Laplace transform to solve linear systems under initial and boundary conditions.
		6. Ability to solve problems on function optimization with and without constraints.
		7. Ability to apply the concept of multiple integrals in solving problems in vector fields.
		1. Ability to explain the distinction between analytical and approximate solutions arising in mathematics.
		2. Ability to apply skills that equip us to approximate a hidden function using data.
		3. Ability to apply methods that provide solutions to problems hitherto unsolvable due to their complex nature.
GR14A1004	**Numerical Methods**	4. Ability to develop the skill of determining approximate solutions to problems having no analytical solutions in different contexts.
		5. Ability to solve problems related to cubic spline fitting and approximation of functions using B-splines and least squares.
		6. Ability to develop the skill of finding approximate solutions to problems arising in linear differential equations.
		7. Ability to develop the skill of finding approximate solutions to problems arising in Partial differential equations.
		1. Ability to define the various bonds between the atoms, origin of properties of various materials.
		2. Ability to describe the basic concepts of Acoustics and acoustic quietinicy
		3. Ability to associate with the latest developments in physics like lasers.
GR14A1006	**Physics for Engineers**	4. Ability to differentiate properties and applications of various materials.
		5. Ability to extend the concept about nanotechnology.
		6. Ability to demonstrate the applications and advancements in physics used for NDT testing.
		7. Ability to analyse the basic concepts of communication through fiber optics.
		1. Ability to improve the English Language proficiency with an emphasis on LSRW skills.

		2. Ability to study the academic subjects with better analyzeing.
GR14A1005	**English**	3. Ability to develop and read a wide range of text and analyze the importance of life-long learning. 4. Ability to express themselves fluently and appropriately in social and professional fields and strengthen their professional etiquettes. 5. Ability to present themselves in various formal social and professional situations. 6. Ability to meet the requirements of corporate communication. 7. Ability to communicate effectively in professional Career
GR14A1011	**Computer Programming and data structures**	1. Ability to extend analytical and logical skills in a language through algorithms and flowcharts. 2. Ability to solve a given problem. 3. Ability to use the programming concepts, c-library and generate code for a given problem. 4. Ability to apply sorting and searching algorithms for real time scenario. 5. Ability to describe the basic operations of stacks and queues. 6. Ability to develop the software system to meet desired needs in realistic constraints. 7. Ability to distinguish and establish as practicing professionals and sustain career in industry.
GR14A1020	**Engineering Mechanics – DYNAMICS**	1. Ability to recollect the basic physical concepts of dynamics. 2. Ability to illustrate the kinematics of particles and rigid bodies of dynamic problems. 3. Ability to explain the kinetics of particles and rigid bodies of dynamic problems. 4. Ability to apply Newton's laws to particles and rigid bodies to solve problems related to dynamic behavior. 5. Ability to apply De Alemberts principle to particles and rigid bodies to solve problems related to dynamic behavior. 6. Ability to apply the concepts of impulse and momentum with dynamic behavior. 7. Ability to assess the concepts of vibrations to the rigid bodies associated with dynamic behaviour.
GR14A1025	**Engineering Workshop**	1. Ability to design and model different prototypes in the carpentry trade such as Cross lap joint, Dove tail joint. 2. Ability to design and model various basic prototypes in the trade of fitting such as Straight fit, V- fit. 3. Ability to construct various basic prototypes in the trade of Tin smithy such as rectangular tray, and open scoop. 4. Ability to inspect various basic house wiring techniques such as connecting one lamp with one switch, connecting two lamps with one switch, connecting a fluorescent tube, Series wiring, Go down wiring. 5. Ability to develop various basic prototypes in the trade of Welding such as Lap joint, Lap Tee joint, Edge joint, Butt joint and Corner joint. 6. Ability to perform a range of machining operations to produce a given project. 7. Ability to identify and use marking out tools , hand tools, measuring equipment and to work to prescribed tolerances.
GR14A1029	**Engineering Physics Lab**	1. Ability to draw the relevance between the theoretical concept and to imply it in a practical manner with respect to analyze various circuits and its components. 2. Ability to analyze the behavior of various materials for its optimum utilization. 3. Ability to assess various communication mechanisms and their usage in a practical manner. 4. Ability to draw the relevance between theoretical concept and behavior of magnetic materials and their applications. 5. Ability describe the characteristics and the behavior of various dielectric materials and their usage in daily life. 6. Ability to provide a solid foundation in physics laboratory required to solve engineering problems. 7. Ability to analyze the characteristics of various materials for their applications in

		7. Ability to analyze the characteristics of various materials for their applications in communication and medical industry.
GR14A1028	**Computer Programming and data structures Lab**	1. Ability to practice algorithms to solve real world problems. 2. Ability to analyze and resolve a given problem. 3. Ability to use the programming concepts, c-library and generate code for a given problem. 4. Ability to apply sorting and searching algorithm for real time scenario. 5. Ability to compute the basic operations of stacks and queues. 6. Ability to identify computer programming environment. 7. Ability to develop programs and documentation in engineering applications.

Correlation between Course Outcomes with Programme Outcomes of II B.Tech Mechanical Engineering

II Year I sem

Code	Subject	Course Outcomes
GR14A2011	Probability and statistics	1. Ability to estimate the chance of occurrence of various uncertain events in different random experiments with Strong basics in Probability. 2. Ability to forecast the models using regression analysis. 3. Ability to estimate system performance measures in different queuing processes. 4. Ability to apply inferential statistics to make predictions or judgments about the Population from which the data is drawn 5. Ability to develop models for Stochastic processes 6. Ability to apply probability of occurrence in real time problems 7. Ability to forecast the models and problems using statistics.
GR14A2019	Kinematics of Machinery	1. Ability to List out the common mechanisms, working principles and its applications which is used in machines. 2. Ability to Interpret mobility for different mechanism and enumerate rigid links, types of links and types of joints in the mechanisms. 3. Ability to Explain Straight line motion mechanisms and its applications generally used in various machines. 4. Ability to Utilize analytical, mathematical and graphical aspects of kinematics of Machines for effective design. 5. Ability to Explain Gear mechanism classification and gear train analysis, gear standardization and law of gearing. 6. Ability to Design and fabrication of gear box design followed by the specification and standards. 7. Ability to Define Cam terminology, classifications of cam and follower, cam profiles, Introduction about cam design and its applications.
GR14A2020	Mechanics of Solids	1. Ability to recognize the importance of properties of materials for deciding the design criteria. 2. Ability to Estimate the stresses and strains in structural members and machine elements subjected to external loads. 3. Ability to Estimate the stresses and strains due to combined normal and shear loads. 4. Ability to Sketch the shear force and bending moment diagrams for the beams carrying transverse loads. 5. Ability to Ascertain physical behaviour of materials subjected to external loads. 6. Ability to Recommend the materials and physical dimensions according to maximum

		6. Ability to Recommend the materials and physical dimensions according to maximum stresses and strains.
		7. Ability to Interpret the results and design data.
GR14A2021	Engineering Thermodynamics	1. Ability to State and Apply basic laws of thermodynamics to various flow and non-flow Processes. 2. Ability to Calculate the change in Entropy, Heat transfer and Work done in Thermodynamic processes. 3. Ability to Differentiate between various energy conversion devices like heat engine, heat pump and Refrigerator. 4. Ability to Deduce the efficiencies of various Power cycles 5. Ability to Obtain the various thermodynamic properties from steam tables and Psychrometric charts 6. Ability to Asses the various Refrigeration cycles based on Coefficient Of Performance(C.O.P) 7. Ability to Convert mass basis analysis to volume basis analysis in gas mixtures and vice versa.
GR14A2022	Material Science and Metallurgy	1. Ability to Relate crystal structures and relationship between different materials. 2. Ability to Relate the equilibrium transformation diagrams for various metals. 3. Ability to Utilize appropriate techniques in treating a metal with proper heat treatment operations. 4. Ability to Have concept on different types of ferrous and nonferrous metals. 5. Ability to Manufacture different products with composite materials. 6. Ability to Recommend a suitable material with its properties for a specified application. 7. Ability to evaluate the behavior of material when it is subjected to heat treatment process.
GR14A2023	Machine Drawing Lab	1. Ability to Apply the concept of machine drawing as a system of Communication in which ideas are expressed clearly and all information fully conveyed. 2. Ability to analyze the design a system, component or process to meet desired needs within, realistic constraints such as manufacturability ,economic ,environmental, safety & sustainability etc.., to represent a part drawing and assembly drawings. 3. Ability to identify, formulates, analyzes and solves Engineering Problems in Optimum time. 4. Ability to Recognize to use modern engineering tools, software and equipment to analyze different drawings for Design & manufacturing. 5. Ability to use the techniques, skills and modern engineering tools necessary for engineering practice with the concept of virtual work. 6. Ability to Justify Assemble and disassemble of various machine components. 7. Ability to Recognition of the need for, and an ability to engage in self education and life-long learning.
GR14A2024	Material Science and Metallurgy Lab	1.Ability to Relate properties to microstructure. 2. Ability to Choose suitable metals and alloys for industrial applications. 3. 3.Ability to Find out the hardness of various treated and untreated metals. 4.Ability to tell the chemical composition of various ferrous and non ferrous metals. 5.Ability to select a suitable heat treatment process for a material. 6.Ability to evaluate the behavior of materials after it is heat treated. 7.Ability to create moulds from various materials and determining all mechanical properties.
		1. Ability to conduct experiments, analyze and interpret experimental data to know the behavior of material. 2. Ability to evaluate the behavior of ferrous and non-ferrous metals subjecting to Transverse loading, axial loading, Torsional and Bending loading by means of experiments. 3. Ability to analyze and to determine the hardness and impact energy for different

GR14A2025	Mechanics of Solids Lab	materials. 4. Ability to determine and to analyze the compressive strength of concrete cubes and blocks 5. Ability to find and analyze the stiffness of open coiled springs. 6. Abilityto analyze and to determine the behavior of deflection of beams through deformation and to evaluate the modulus of elasticity of the given material. 7. Ability to determine and analyze the torsional rigidity of different ferrous materials.
II Year II sem		
GR14A2026	Electrical and Electronics Technology	1. Ability to compare the performance of devices in various applications. 2. Ability to know the working principles of DC & AC machines. 3. Ability to know the operation of Transformer. 4. Ability to get concept on Semiconductor Devices. 5. Ability to analyze the working operation of each device in a circuit. 6. Ability to predict the functioning of basic home appliances 7. Ability to learn basic electrical instruments used in day to day life.
GR14A2027	Production Technology	1. Ability to Interpret contemporary developments in the field of manufacturing processes 2. Ability to Impart concept on role and value of production and identify basic production processes. 3. Ability to introduce methods of joining that shows a comprehensive analyzing of tools, materials, equipment, and processes. 4. Ability to Demonstrate awareness of the competition that surrounds the development of inventions and the control of welding processes 5. Ability to apply critical thinking skills for development and evaluating ideas for manufacturing processes. 6. Ability to identify and use the materials, tools, machines, and techniques used in various forming processes. 7. Ability to demonstrate various ways of producing plastic products and its equipment details.
GR14A2028	Fluid Mechanics and Hydraulic Machinery	1. Ability to apply concept of mathematics, science and engineering. 2. Ability to use the governing equations of fluid flow and applying them to simple flow problems. 3. Ability to explain the mathematical formulation of various flow problems. 4. Ability to analyze the boundary layer concept to the fluid flow problems. 5. Ability to apply the concept of fluid and models of fluids for flow problems. 6. Ability to apply the basic principles to derive the equation for viscous flow, including laminar flow & turbulent flow. 7. Ability to explain the stream function and potential function to fluid flow problems.
GR14A2029	Internal combustion Engines	1. Ability to analyze the concept on working principles and their functions of various components of internal combustion. 2. Ability to improve the analytical skills in finding the engineering solutions and redesign the system to improve the fuel efficiency of the engine in global, environmental and social contexts. 3. Ability to adopt the resources available at optimum level in order to achieve the better efficiency in the performance of different types of Air compressors duly reducing the operational losses. 4. Ability to develop an idea of utilization of resources duly reducing the emission levels for achieving echo-friendly environment. 5. Ability to have concept to redesign the different components of air compressors depending upon the type of applications for global economic and environmental context within realistic constraints like health, safety and sustainability. 6. Ability to impart the concept of many different aspects of engineering, including mechanical engineering, combustion, electrical and electronic systems and fuel technology.

		7. Ability to Evaluate the factors which influence the performance of the compressors in steam power plants, gas turbines and jet propulsions etc. for better engineering practice.
GR14A2030	Advanced mechanics of Solid	1. Ability to calculate the stresses in non -uniform structural beams 2. Ability to estimate the safe pressure that can be carried by thin and thick pressure shells pressure vessels 3. Ability to select suitable column or a struts for particular application 4. Ability to calculate the stresses in non -uniform structural beams 5. Ability to estimate the safe pressure that can be carried by thin and thick pressure shells pressure vessels 6. Ability to calculate the stresses in non -uniform structural beams 7. Ability to estimate the safe pressure that can be carried by thin and thick pressure shells pressure vessels
GR14A2032	Electrical and Electronics Technology Lab	1. Ability to compare the performance of devices in various applications. 2. Ability to know the working principles of DC & AC machines. 3. Ability to know the operation of Transformer. 4. Ability to get concept on Semiconductor Devices. 5. Ability to analyze the working operation of each device in a circuit. 6. Ability to predict the functioning of basic home appliances 7. Ability to learn basic electrical instruments used in day to day life.
GR14A2031	Production Technology Lab	1. Ability to interpret contemporary developments in the field of manufacturing processes 2. Ability to impart concept on role and value of production and identify basic production processes. 3. Ability to interpret contemporary developments in the field of manufacturing processes 4. Ability to impart concept on role and value of production and identify basic production processes.- 5. Ability to interpret contemporary developments in the field of manufacturing processes 6. Ability to impart concept on role and value of production and identify basic production processes. 7. Ability to introduce methods of joining that shows a comprehensive analyzeing of tools, materials, equipment, and processes.
GR14A2033	Fluid Mechanics and Hydraulic Machinery Lab	1. Ability to asses the friction factor using major and minor losses in pipes 2. Ability to prove the Bernoulli's equation. 3. Ability to recommend the type of pump for a particular application 4. Ability to calculate the efficiencies of various turbines 5. Ability to determine the coefficient of impact of various jets using various vanes 6. Ability to determine the overall efficiencies of various pumps 7. Ability to recommend the type of pump for a particular application

Correlation between Course Outcomes with Programme Outcomes of III B.Tech Mechanical Engineering

III Year I sem

Code	Subject	

		Course Outcomes
GR11A2071	Managerial econ. & Financial analysis	1. Ability to discuss on economics, demand and its determinants, exceptions, elasticity and forecasting. 2. Ability to explain the production function, the concept of Economies of Scale, ISOCOSTS, ISOQUANTS. 3. Ability to infer various costs, production and calculating Break Even Point. 4. Ability to discuss on economics, demand and its determinants, exceptions, elasticity and forecasting. 5. Ability to explain the production function, the concept of Economies of Scale, ISOCOSTS, ISOQUANTS. 6. Ability to discuss on economics, demand and its determinants, exceptions, elasticity and forecasting. 7. Ability to explain the production function, the concept of Economies of Scale, ISOCOSTS, ISOQUANTS.
GR11A3045	Dynamics of Machines	1. Ability to analyze complete motion analysis of machines in running condition. 2. Ability to know friction and its effect on mechanical efficiency. 3. Ability to analyze complete motion analysis of machines in running condition. 4. Ability to know friction and its effect on mechanical efficiency. 5. Ability to know how to balance forces and moments produced by rotating or reciprocating masses of machine members. 6. Ability to analyze complete motion analysis of machines in running condition. 7. Ability to know friction and its effect on mechanical efficiency.
GR11A3066	Machine Tools	1. Ability to analyze the importance of tool geometry in manufacturing the component. 2. Ability to operate machine tool equipment commonly found in industry including manual and computer controlled lathes, milling machines, drill presses and cutting machines 3. Ability to perform cutting force analysis of metal cutting machines. 4. Ability to perform chip formation analysis of metal cutting machines 5. Ability to execute the gear cutting and finishing process on various machines 6. Ability to perform economics of machining and tool life estimation 7. Ability to apply safety principles in a work environment to minimize hazards and prevent losses to productivity
GR11A3035	Design of Machine Members -I	1. Ability to outline all the properties of the materials. Estimate the tolerances and fits of shaft-hole basis system. 2. Ability to compute the dimensions of the members subjected to bi-axial loading using theories of failure. 3. Ability to design the machine members subjected to simple fatigue loading and bi-axial fatigue loading. 4. Ability to apply different methods to the design of shafts subject to combined static and variable loads. 5. Ability to solve the dimensions of the riveted, welded and bolted joints subjected different loading. 6. Ability to design keys, cotters and knuckle joints subjected tensile and compressive loading. 7. Ability to compute the dimensions of the shafts and shaft couplings subjected torsional loading or combined torsional and bending loading.
GR11A3003	Applied Thermodynamics - II	1. Ability to illustrate the power generation through Rankine cycle and analyze efficiency enhancement methods of Reheating and regeneration. 2. Ability to classify the different types of boilers and can distinguish mountings and accessories and know the types of draughts and its application in the steam generator. 3. Ability to illustrate the power generation through Rankine cycle and analyze efficiency enhancement methods of Reheating and regeneration. 4. Ability to classify the different types of boilers and can distinguish mountings and accessories and know the types of draughts and its application in the steam generator. 5. Ability to focus on the basic components of a gas turbine power plant and can illustrate

		the power generation using Joule Cycle and methods to increase the specific power output and efficiency of the cycle.
		6. Ability to compare the working of various propulsive devices and can have awareness of using thrust equations in solving problems.
		7. Ability to analyze the design parameters of the components of the plant for better performance duly minimizing the operating losses.
GR11A3067	Machine Tools Lab	1. Ability to apply tool geometry in manufacturing the component.
		2. Ability to operate machine tool equipment commonly found in industry including manual and computer controlled lathes, milling machines, drill presses and cutting machines
		3. Ability to perform cutting force analysis of metal cutting machines.
		4. Ability to apply tool geometry in manufacturing the component.
		5. Ability to operate machine tool equipment commonly found in industry including manual and computer controlled lathes, milling machines, drill presses and cutting machines
		6. Ability to perform cutting force analysis of metal cutting machines.
		7. Ability to perform chip formation analysis of metal cutting machines
GR11A2073	Advanced Eng. Com. Lab	1. Ability to classify the soils and its basic properties.
		2. Ability to analyze soil behavior and its mechanism.
		3. Ability to find role of basic properties of soil in simple and complex applications.
		4. Ability to develop a proficiency in handling experimental data.
		5. Ability to report the results of a laboratory experiment at a professional standard.
		6. Ability to analyze data for real time applications.
		7. Ability to recommend extensive research in geotechnical properties.
GR11A3091	Thermal Engineering Lab	1. Ability to know the complete operation of 2 stroke and 4 stroke I.C engines which can be further confirmed through valve timing diagram and port timing diagram
		2. Ability to find the performance of 2-S and 4-S engines and the variation of various performance parameters with load and speed.
		3. Ability to know the complete operation of 2 stroke and 4 stroke I.C engines which can be further confirmed through valve timing diagram and port timing diagram
		4. Ability to find the performance of 2-S and 4-S engines and the variation of various performance parameters with load and speed.
		5. Ability to draw the heat balance of the engine cylinder after the combustion process.
		6. Ability to know the working and performance evaluation of mechanical power consuming devices like compressors.
		7. Ability to study the variation of performance of the engine with compression ratio in variable compression ration S.I engine
III Year II sem		
GR11A3072	**Metrology & Surface Engineering**	1. Ability to use different linear and angular measuring instruments,
		2. Ability to apply different measuring instruments in real time for quality inspection.
		3. Ability to have solid foundation to train in high quality management system in their professional carrier.
		4. Ability to use different linear and angular measuring instruments,
		5. Ability to apply different measuring instruments in real time for quality inspection.
		6. Ability to have solid foundation to train in high quality management system in their professional carrier.
		7. Ability to select and use the appropriate measuring instruments according to a specific requirement (in terms of accuracy, etc.)
		1. Ability to discuss the various modes and mechanisms of heat transfer
		2. Ability to explain the general heat conduction equation in cartesian, cylindrical and spherical systems.
		3. Ability to discuss the various modes and mechanisms of heat transfer
		4. Ability to explain the general heat conduction equation in cartesian, cylindrical and

GR11A3057	**Heat Transfer**	4. Ability to explain the general heat conduction equation in cartesian, cylindrical and spherical systems. 5. Ability to solve steady state heat conduction problems in slabs, cylinders, spheres 6. Ability to derive the heat transfer equations in fins. 7. Ability to calculate the heat transfer coefficients in free and forced convection heat transfer
GR11A3063	**Industrial Management**	1. Ability to apply theories and course concepts to properly analyze and diagnose management problems. 2. Ability to apply these theories and frameworks to themselves to become better leaders at work in a range of organizations 3. Ability to evaluation of companies' performance including financials, market share, innovation, and employment. 4. Ability to analyze a job and use the information for consulting with organizations for selection purposes. 5. Ability to development of implementation steps for strategic plans for functional areas such as marketing, sales, R&D, human resources, accounting, control, production and finance. 6. Ability to develop specific HR systems for different regions and cultures such as recruitment, selection, compensation, performance management and training. 7. Ability to create an innovative process, creating thinking with nonstop technical problems, solving systems to enhance production.
GR11A3036	**Design of Machine Members - II**	1. Ability to design of Journal bearings subjected to static and dynamic loading. 2. Ability to compute the dimensions of I.C engine reciprocating parts subjected to variable loads. 3. Ability to solve the dimensions of I.C engine rotary parts subjected to variable loads. 4. Ability to apply different methods to the design of different springs subject to shock loading. 5. Ability to design of spur and helical gears subjected to static and dynamic loading. 6. Ability to compute the dimensions of the power screws considering various types of loads. 7. Ability to make proper assumptions and perform correct analysis while designing the various machine elements for industrial applications.
GR11A3008	**Automobile Engineering**	1. Ability to illustrate the function of each and every component of an automobile. As well as able to analyze the reasons for performance parameters. 2. Ability to demonstrate about emission standards, emission control techniques and electrical systems. To identify thrust areas for carrying their dissertation in future. 3. Ability to describe the every component of transmission system of an automobile via clutch, gear box, propeller shaft and differential. 4. Ability to predict the purpose and methods of steering systems and their applications. 5. Ability to analyze the geometry of the steering mechanism and the effect of the same on tyre performance and other components of the automobile. 6. Ability to explain the working principles of the different components of the automobile based on different applications. 7. Ability to list the different types of suspension system and braking system of an automobile and importance of each type based on real time applications.
		1. Ability to define and solve engineering problems. 2. Ability to use the techniques, skills, and modern mechatronics engineering tools necessary for engineering practice. 3. Ability to define and solve engineering problems.

GR11A3051	**Mechatronics**	4. Ability to use the techniques, skills, and modern mechatronics engineering tools necessary for engineering practice.
		5. Ability to define and solve engineering problems.
		6. Ability to use the techniques, skills, and modern mechatronics engineering tools necessary for engineering practice.
		7. Ability to function effectively as members of multidisciplinary teams.
GR11A3024	**Computational Fluid Dynamics**	1. Ability to implement FDM techniques to steady state and unsteady state problems in heat transfer.
		2. Ability to classify the partial differential equations and analyze their physical behaviors in fluid flow problems.
		3. Ability to gain concept about the various convection diffusion discretization schemes
		4. Ability to implement fem. techniques to steady state and unsteady state problems in heat transfer.
		5. Ability to classify the partial differential equations and analyze their physical behaviors in fluid flow problems.
		6. Ability to gain concept about the various convection diffusion discretization schemes
		7. Ability to review the governing equations in fluid flow and heat transfer
GR11A3073	**Metrology Lab**	1. Ability to identify the uncertainties in dimensional metrology and to define the measurement standards
		2. Ability to measure length and angles using line-graduated instruments, i. e. vernier calipers, micrometers, bevel protractor, sine bar and surface plates
		3. Ability to use the appropriate method for determination of accuracy based on product function and manufacturing capability.
		4. Ability to use comparative length-measuring instruments, i.e. dial indicator, to measure variations in the distance between two or more surfaces.
		5. Ability to use effective methods of measuring straightness, flatness, roundness, profile, screw threads and gear teeth.
		6. Ability to measure dimensions of shafts, bearings and linear surfaces in metric and imperial units using calibers, micrometers, and scales.
		7. Ability to use contour projector and coordinate measuring machine to record measurements of complex profiles with high sensitivity
GR11A3059	**Heat Transfer Lab**	1. Ability to discuss the various modes and mechanisms of heat transfer
		2. Ability to Explain the general heat conduction equation in cartesian, cylindrical and spherical systems.
		3. Ability to solve steady state heat conduction problems in slabs, cylinders, spheres
		4. Ability to derive the heat transfer equations in fins.
		5. Ability to evaluate the heat transfer coefficients in free and forced convection heat transfer
		6. Ability to classify the various types of radiation emitting ,receiving and transmitting bodies
		7. Ability to compute the rate of heat transfer in heat exchangers
GR11A3064	**Industrial Oriented Mini Project**	1. Ability to assess theoretical techniques to solve real time problems related to industry.
		2. Ability to relate practical techniques to solve problems related to research
		3. Ability to prepare technical report and present in the seminars/ conferences.
		4. Ability to develop small scale models and present in the workshops and seminars.
		5. Ability to assess theoretical techniques to solve real time problems related to industry.
		6. Ability to relate practical techniques to solve problems related to research
		7. Ability to prepare technical report and present in the seminars/ conferences.

Correlation between Course Outcomes with Programme Outcomes of IV B.Tech Mechanical Engineering

IV Year I sem

Code	Subject	Course Outcomes
GR11A4079	Operations Research	1. Ability to apply the various linear programming techniques for optimal allocation of limited resources such as machine, material and money
		2. Ability to solve transportation problems to minimize cost and analyze the principles of assignment of jobs and recruitment polices.
		3. Ability to apply Game theory to analyze various business competitions.
		4. Ability to distinguish various inventory models and develop proper inventory policies.
		5. Ability to solve sequencing problems.
		6. Ability to develop optimum replacement policy.
		7. Ability to solve Dynamic Programming Techniques.
GR11A4042	Finite Element Methods	1. Ability to obtain an analyzing of the fundamental theory of the FEA method.
		2. Ability to apply the concepts of minimum potential energy principles to solve structural mechanics problems.
		3. Ability to compute Eigen values and eigenvectors of simple dynamic systems
		4. Ability to obtain weak form from strong form and total potential, and recognize similarities between such solutions, and those obtained by variational principles and principal of virtual work.
		5. Ability to develop the ability to generate the governing FE equations for systems governed by partial differential equations
		6. Ability to obtain finite element solution and compare with exact solution of simple one dimensional problem.
		7. Ability to apply the finite element procedure for stress analysis and design of load carrying structures and heat transfer problems
GR11A4012	CAD/ CAM	1. Ability to define tools used for computer aided Design (CAD) and Computer Aided manufacturing.
		2. Ability to explain geometric modeling techniques and recognize importance in modeling real life objects using CAD/CAM tools.
		3. Ability to interpret integration of two streams CAD and CAM.
		4. Ability to use computer graphic techniques, Computer aided process planning techniques (CAPP) and Group Technology concepts.
		5. Ability to define tools used for computer aided Design (CAD) and Computer Aided manufacturing.
		6. Ability to explain geometric modeling techniques and recognize importance in modelling real life objects using CAD/CAM tools.
		7. Ability to interpret integration of two streams CAD and CAM.
GR11A4056	Instrumentation & Control systems	1. Ability to apply concept of mathematics, science, and engineering.
		2. Ability to explain the concepts of measurement of displacement, temperature and pressure using various devices.
		3. Ability to explain different types of measurements.
		4. Ability to use different transducers for displacement measurement.
		5. Ability to use the appropriate sensor to do the measurement including powering the sensor.
		6. Ability to illustrate level, flow, speed, vibration measurements.
		7. Ability to categorize methods of usage of resistance strain gauge for bending compressive and tensile strains.
		1. Ability to illustrate the applications of various processes and also will be able to select an appropriate process for a specific requirement.
		2. Ability to demonstrate different processes and to appreciate the effect of process parameters on surface integrity aspects.

GR11A4123	Unconventional Machining Process	3. Ability to employ importance of different processes and how it effects the performance of a component during its service life. 4. Ability to appreciate the use of EDM as a method for machining complex shapes. 5. Ability to analyze all the machining operations about how they occur, how to interpret and how to select the process. 6. Ability to identify and recommend a particular process for a specific application. 7. Ability to distinguish the difference between various processes in their process characteristics.
GR11A4057	Instrumentation and Control systems Lab	1. Ability to analyze Instrumentation systems and their applications to various industries. 2. Ability to apply the working principles and design of Instruments used in the measurement of Quantities like displacement, temperature and pressure. 3. Ability to review, prepare and present technological developments 4. Ability to analyze errors, integrate and interpret different types of measurements. 5. Ability to illustrate load, flow, speed, vibration measurements. 6. Ability to establish a course of action to solve problems. 7. Ability to apply concept of mathematics, science, and engineering to the measuring Instruments.
GR11A4019	Computer Aided Design Lab	1. Ability to define tools used for computer aided Design (CAD) and Computer Aided manufacturing. 2. Ability to explain geometric modelling techniques and recognize importance in modelling real life objects using CAD/CAM tools. 3. Ability to interpret integration of two streams CAD and CAM. 4. Ability to use computer graphic techniques, Computer aided process planning techniques (CAPP) and Group Technology concepts. 5. Ability to appraise CNC programming using Numerical Control codes (NC) and Automatically programmed tools (APT) compared to conventional machining. 6. Ability to recognize the importance of implementation of automation in phases of design and manufacturing industries. 7. Ability to create or develop product life cycle of any product.
GR11A4094	Production Drawing Practice Lab	1. Ability to perform improved basic sketching techniques 2. Ability to draw Orthographic Projections and sections 3. Ability to design Production Drawing Assemblies required to Industry 4. Ability to estimate various fits, limits and tolerances 5. Ability to study the Existing Assembles 6. Ability to illustrate Different Sections of Geometries 7. Ability to express the views of Drawings
IV Year II sem		
GR11A4095	Production Planning Control	1. Ability to apply the concept of production planning and scheduling to meet the target manufacturing sector 2. Ability to build up and interaction with all resource departments for resource balancing economic manner 3. Ability to perform effectively on inventory management and application of control system for material management 4. Ability to solve problems by Routing Procedure 5. Ability to apply ERP system for customer requirement planning and compare integration 6. Ability to develop the program based quality, cost and delivery requirements through planning, scheduling and control 7. Ability to develop forecasting methods for proper planning

		7. Ability to develop forecasting methods for proper planning.
GR11A4088	Power plant Engineering	1. Ability to find the resources of energies available in India for Power Production by Thermal and Nuclear Processes
		2. Ability to analyze the processes and cycles followed in Thermal Power Plants and nuclear power plants and Components used in the power plants and identify the losses to get better efficiency.
		3. Ability to apply the concept gained by analyzing the steam power plants, steam generators and gasTurbine power plants, to improve the efficiency and reduce the thermal losses.
		4. Ability to apply the concept in calculating the Power Load Calculations and Distribution.
		5. Ability to identify the methods for the Economies of Power Generation and Power plant instrumentation
		6. Ability to analyze the efficiency of nuclear power plant
		7. Ability to apply nuclear power techniques in day to day life for better efficiency
GR11A4084	Plant Layout &Material Handling	1. Ability to Apply the concept of production planning and scheduling to meet the target manufacturing sector
		2. Ability to build up and interaction with all resource departments for resource balancing economic manner
		3. Ability to perform effectively on inventory management
		4. Ability to solve problems by Routing Procedure
		5. Ability to manage and apply the control system for material management
		6. Ability to analyze layout in shop floor
		7. Ability to optimize the material handling in shop floor to the productivity
GR11A4013	CAM & Mfg. sim Lab	1. Ability to illustrate the constructional features of Computer Numerical Control (CNC) Lathe and Milling Machines.
		2. Ability to demonstrate the CNC programming of Lathe and Milling machines (i.e. G and M codes) and Automated Programming Tools (APT) programming.
		3. Ability to develop the CNC programs for turning operations using basic codes and cycles
		4. Ability to develop the CNC programs for milling operations using basic codes and cycles
		5. Ability to create the components by performing the operations on the CNC lathe and Milling machines.
		6. Ability to develop the ATP programs for turning operations using basic codes and cycles
		7. Ability to develop the ATP programs for milling operations using basic codes and cycles
GR11A4110	**Seminar**	1. Ability to work in actual working environment.
		2. Ability to utilize technical resources
		3. Ability to write technical documents and give oral presentations
		4. Ability to impart concept in different aspects of concept domains.
		5. Ability to make them aware of concept in industry perspective and new industry trends
		6. Ability to build confidence and improve communication skills.
		7. Ability to collect ideas through literature survey about new innovations, analyze and present them.
		1. Ability to assess concept in the subject and the project.

GR11A4018	**Comprehensive Viva**	2. Ability to practice technically.
		3. Ability to integrate technical question through all the years of study.
		4. Ability to express and communicate.
		5. Ability to evaluate technical confidence.
		6. Ability to express and communicate.
		7. Ability to evaluate technical confidence.
GR11A4018	**Main Project**	1. Ability to interpret ideas and thoughts into practice in a project.
		2. Ability to analyze the gap between theoretical and practical concept.
		3. Ability to compose technical presentation in the conferences.
		4. Ability to develop organizational skills and team work.
		5. Ability to debate for technical discussions.
		6. Ability to prepare for publishing papers in journals.
		7. Ability to propose for the patent rights for the projects.

2.1.2 State how and where the POs are published and disseminated (3) Institute Marks : 3.00

(Describe in which media (e.g. websites, curricula books) the POs are published and how these are disseminated among stakeholders)

Institute makes every effort to ensure Department POs are communicated effectively to all stakeholders namely students, faculty, parents, industry, alumni and management.

Presently POs are published and disseminated through the following methods:

Print Media: Departmental Brochure / Booklets, Course Registers

Electronic Media: College / Departmental Website, Display Monitors

Display Boards: Notice Boards

Direct Communication: Orientation Programmes to freshers/parents, Induction Programmes to staff members, presentations to visiting academicians, industry personnel, parents etc.

2.1.3 Indicate processes employed for defining of the POs (5) Institute Marks : 5.00

(Describe the process that periodically documents and demonstrates that the POs are defined in alignment with the graduate attributes prescribed by the NBA.)

The POs (a-l) are as defined and developed for each program with the consultation and involvement of various stakeholders from management, industry, alumni, faculty, and students. Their interests, suggestions and contributions in defining and developing the POs are taken into account.

The program assessment committee formulates the program outcomes after considering the views of all stakeholders and the PEOs. This is forwarded to DAB (DDMC) for its recommendations and submission to Academic council. The program outcomes are approved by Academic council. The process is presented in the flow chart given below.

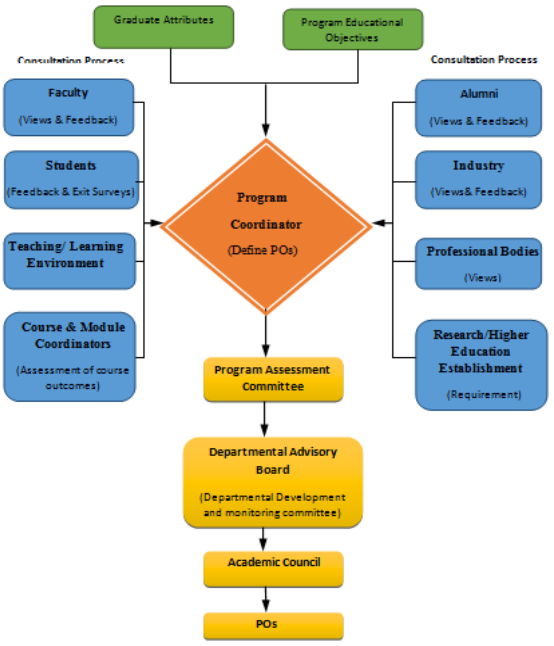


Figure: 4 Process for Defining POs

2.1.4 Indicate how the defined POs are aligned to the Graduate Attributes prescribed by the NBA (10) Institute Marks : 10.00

(Indicate how the POs defined for the programme are aligned with the Graduate Attributes of NBA as articulated in accreditation manual.)

The following are the graduate attributes prescribed by the NBA

- Engineering knowledge
- Problem analysis
- Design/Development of solutions
- Conduct investigation of complex problems
- Modern tool usage
- The engineer and society
- Environment and sustainability
- Ethics
- Individual and team work
- Communication
- Project management and finance
- Life- long learning

Program Outcomes are aligned to the graduate attributes as given below

Graduate Attributes	Programme Outcomes											
	a	b	c	d	e	f	g	h	i	j	k	l
Engineering Knowledge	X											X
Problem Analysis		X										X
Design/Development of Solutions			X									X
Conduct investigations of complex problems				X								X
Modern Tool Usage					X							X
The engineer and society						X						X
Environment and Sustainability							X					X
Ethics								X				X
Individual and Teamwork									X			X
Communication										X		X
Project Management and Finance											X	X
Life Long Learning												X

2.1.5 Establish the correlation between the POs and the PEOs (10) Institute Marks : 10.00

(Explain how the defined POs of the program correlate with the PEOs)

Program Educational Objective(PEO)	Program Outcomes(PO)
	a. Ability to apply knowledge of mathematics, science and fundamentals of Mechanical Engineering.

PEO 1: Graduates of the program will be able to utilize opportunities for successful career in the field of mechanical engineering to meet the demands of industry and also excel in post graduate and research programmes.	b. Ability to analyze problem and interpret the data. f. Ability to understand the impact of engineering solutions in a global, economic and societal context. h. Ability to understand professional and ethical responsibility. i. Ability to work effectively as an individual or in a team and to function on multi-disciplinary context. j. Ability to communicate effectively with engineering community and society. k. Ability to demonstrate the management principles in Mechanical Engineering projects. l.Ability to recognize the need for and an ability to engage in life-long learning.in technological changes
PEO 2: Graduates of the program will have comprehensive knowledge to understand and practice mechanical engineering applications and solutions in societal and global context.	a. Ability to apply knowledge of mathematics, science and fundamentals of Mechanical Engineering. c. Ability to design a system component, or process to meet desired needs in Mechanical Engineering within realistic constraints. d. Ability to identify, formulate, analyse and interpret data to solve Mechanical Engineering problems. e. Ability to use modern engineering tools such as CAD and GIS for the Mechanical Engineering practice. g. Ability to understand the effect of Mechanical Engineering solutions on environment and to demonstrate the need for sustainable development. i. Ability to work effectively as an individual or in a team and to function on multi-disciplinary context. k. Ability to demonstrate the management principles in Mechanical Engineering projects.
PEO 3: Graduates of the program will be able to inculcate good scientific and engineering temperament so as to enable them analyze, design and create novel product innovations and solutions for the real time problems in the industry.	b. Ability to analyze problem and interpret the data. c. Ability to design a system component, or process to meet desired needs in Mechanical Engineering within realistic constraints. d. Ability to identify, formulate, analyse and interpret data to solve Mechanical Engineering problems. e. Ability to use modern engineering tools such as CAD and GIS for the Mechanical Engineering practice. i. Ability to work effectively as an individual or in a team and to function on multi-disciplinary context. j. Ability to communicate effectively with engineering community and society. k. Ability to demonstrate the management principles in Mechanical Engineering projects. l. Ability to recognize the need for and an ability to engage in life-long learning.in technological changes
	a. Ability to apply knowledge of mathematics, science and fundamentals of Mechanical Engineering. e. Ability to use modern engineering tools such as CAD and GIS for the Mechanical Engineering practice. f. Ability to understand the impact of engineering solutions in a global, economic and societal context.

PEO 4: Graduates of the program will be able to practice professional and ethical responsibility, effective communication skills, practice team spirit, multidisciplinary approach and engage in lifelong learning, a prerequisite for a successful professional career.	g. Ability to understand the effect of Mechanical Engineering solutions on environment and to demonstrate the need for sustainable development. h. Ability to understand professional and ethical responsibility. i.Ability to work effectively as an individual or in a team and to function on multi-disciplinary context. j. Ability to communicate effectively with engineering community and society. k. Ability to demonstrate the management principles in Mechanical Engineering projects. l. Ability to recognize the need for and an ability to engage in life-long learning.in technological changes

Mapping of Program Educational Objectives with Program Outcomes

Program Educational Objectives		Program Outcomes											
		a	b	C	d	e	f	g	h	i	j	k	l
PEO1	Graduates of the program will be able to utilize opportunities for successful career in the field of mechanical engineering to meet the demands of industry and also excel in post graduate and research programmes.	H	H	-	-	-	M	-	M	M	M	H	M
PEO2	Graduates of the program will have comprehensive knowledge to understand and practice mechanical engineering applications and solutions in societal and global context.	M	-	H	H	M	-	H	-	M	-	M	-
PEO3	Graduates of the program will be able to inculcate good scientific and engineering temperament so as to enable them analyze, design and create novel product innovations and solutions for the real time problems in the industry.	-	H	M	M	M	M	-	-	M	M	M	H
PEO4	Graduates of the program will be able to practice professional and ethical responsibility, effective communication skills, practice team spirit, multidisciplinary approach and engage in lifelong learning, a prerequisite for a successful professional career.	M	-	-	-	M	M	H	H	H	M	H	H

2.2 Attainment of Programme Outcomes (40)

Total Marks : 40.00

2.2.1 Illustrate how course outcomes contribute to the POs (10)

Institute Marks : 10.00

(Provide the correlation between the course outcomes and the programme outcomes. The strength of the correlation may also be indicated)

Correlation between Course Outcomes with Programme Outcomes of I B.Tech Mechanical Engineering

Code	Subject	Course Outcomes	Programme Outcomes										
			a	b	c	d	e	f	g	h	i	j	k	l
I Year I Semester														
		Ability to identify linearity and linear												

		systems, which lie at the core level of many engineering concepts.	H	M	M	M								M
		Ability to apply the theorems in differential calculus, which form the stepping stones to a broader subject called approximation theory.	H	M	M	M	H	M	-	H	-	M	-	M
GR14A1001	**Linear Algebra and Single Variable Calculus**	Ability to relate commonly occurring natural phenomenon using mathematical symbols and acquire preliminary skills to predict their behavior.	H	M	M	M	-	-	-	-	-	-	-	M
		Ability to apply the concepts of matrix rank to analyze linear algebraic systems.	H	M	M	M	-	H	-	-	-	-		M
		Ability to compute eigen values and vectors for engineering applications.	H	M	M	M	-	-	H	-	M	-	-	M
		Ability to describe linear dynamical systems.	H	M	M	M	-	-	H	-		-	-	M
		Ability to model and solve linear dynamical systems.	H	M	M	M	-	-	-	-	H	-	-	M
		Ability to construct a curve using its geometrical properties.	H	M	M	M	M	-	H	-	-	-	-	M
		Ability to visualize multivariable functions in the context of function optimization.	H	-	M	M	-	-	-	M	H	-	-	-
		Ability to calculate integrals in 2-D and 3-D.	H	M	M	-	-	H	-	-	-	-	-	M
GR14A1002	**Advanced Calculus**	Ability to apply and to estimate characteristics of vector fields.	H	M	M	M	H	M	M	-	-	-	-	M
		Ability to apply the concept of curve tracing and geometry to precisely estimate areas and volumes.	H	M	M	M	M	H	-	-	-	-	-	M
		Ability to find optional values of functions with and without constraints.	H	M	M	M	H	H	H	-	-	-	-	M
		Ability to apply the concept of multiple integrals in solving problems in vector fields.	H	M	M	M	-	-	-	-	-	-	-	M
		Ability to express practical implementation of fundamental theory concepts.	H	M	-	H	-	-	M	-	-	M	-	M
		Ability to interpret the role of engineering materials such as polymers, energy production and study the environmental applications in the field of engineering and technology.	H	-	-	-	-	-	H	-	H	M	-	-
		Ability to describe impurities present in water, boiler troubles, removal of impurities.	-	-	H	M	-	M	-	-	M	M	H	H
GR14A1008		Ability to develop												

	Engineering Chemistry	corrosion technology methods that are useful to know about the protection of metals from corrosion by various technologies.	H	M	M	-	-	M	-	-	-	-	M	-
		Ability to choose electronic materials and their applications in the industry.	M	M	M	H	H	-	-	-	M	-	-	-
		Ability to categorize advanced polymer materials and their industrial applications.	M	H	-	-	-	-	-	M	-	M	M	-
		Ability to interpret role of chemistry in different environments and energy production.		H	M	-	-	-	-	M	-	-	M	M
GR14A1023	**Engineering Graphics**	Ability to describe the conventions and the methods of engineering drawing.	M	-	M	M	-	M	-	-	-	-	-	M
		Ability to demonstrate drafting practices, visualization and projection skills useful for conveying ideas, design and production of components and assemblies in engineering applications.	M	M	H	M	-	M	H	M	-	-	-	-
		Ability to perform basic sketching techniques of engineering components.	M	H	M	M	-	H	-	-	-	-	-	M
		Ability to draw orthographic projections and isometric projections of given engineering components.	-	H	M	H	M	M	-	-	-	-	-	M
		Ability to practice increasingly use of architectural and engineering scales.	-	-	H	H	H	H	M	M	H	-	-	M
		Ability to design Computer Aided Drawing and to form foundation for modern tools in engineering graphics.	-	M	M	M	H	-	-	-	-	-	-	M
		Ability to express machine drawing & Structural drawing		M	H	-	-	-	-	-	-	-	H	M
GR14A1018	**Basic Electrical Engineering**	Ability to analyze basics of Electrical Engineering and practical implementation of Electrical fundamentals.	M	H	-	M	-	-	-	H	-	--	-	M
		Ability to apply various applications of commonly used electric machinery.	M	-	H	M	-	-	-	H	-	-	-	M
		Ability to perform numerical solutions to fundamental electrical engineering.	-	H	M	-	M	-	-	-	M	-	-	--
		Ability to analyze basic principles involved in electrical engineering concepts	H	M	M	-	-	-	-	-	H	-	-	H
		Ability to apply practical methods of basic house wiring.	H	-	-	M	-	M	-	-	-	-	-	-

		Ability to apply electrical concepts in generation and transmission of power.		H		M			M		H			M
		Ability to Apply electrical Fundamentals in development of mechatronics	M		H			M		H		H		M
GR14A1012	**Engineering Mechanics - STATICS**	Ability to recollect the basic physical concepts of statics.	H	-	M	-	-	-	-	M	-	-	H	M
		Ability to discriminate the static behavior of the mechanical components under loading.	-	M	-	H	H	-	M	M	-	H	-	M
		Ability to apply the concepts of centroid, MI and product of Inertia in solving the practical problems under static behavior.	H	-	M	-	-	-	-	M	-	-	H	M
		Ability to apply the concepts of mass moment of Inertia in solving the practical problems under static behavior.	H	-	-	M	-	H	-	M	-	-	H	M
		Ability to analyse the truss applications.	-	H	M	M	-	-	-	M	-	-	-	M
		Ability to analyse the principle of virtual work to static problems.	M	H	M	M	M	-	H	M	H	-	M	M
		Ability to examine the free body diagrams and resultant force.	-	H	M	M	-	-	-	M	-	-	-	M
GR14A1024	**Business Communication and soft skills**	Ability to recognize the role and importance of language and communication skills.	-	M	M	-	H	M	M	-	-	H	-	-
		Ability to find the importance of the formality in communication.	-	-	M	M	-	H	M	-	-	H	-	-
		Ability to equip with critical thinking, writing, listening and acquires the ability to work in teams.	M	M	M	M	-	H	-	-	H	-	M	M
		Ability to indicate the role and importance of various forms of communication skills.	M	M	-	-	-	M	H	M	-	H	-	M
		Ability to present themselves in various formal social and professional situations.	-	-	M	-	-	H	M	-	-	H	M	-
		Ability to meet the requirements of corporate communication.	-	M	-	H	M	-	M	-	-	H	-	M
		Ability to make use of them in their respective professional fields.	-	M	M	-	M	-	M	-	-	H	-	M
		Ability to assemble a computer and its peripherals, forming foundation for applying hardware in engineering solutions.	M	M	H	-	M	-	-	-	M	-	-	-
		Ability to analyze and use the software and internet as productivity tool with professional ethics for all engineering	M	H	-	-	-	H	-	M	-	-	M	-

		application.												
		Ability to install different software.	M	M	H	-	M	-	-	-	M	-	-	-
GR14A1026	**IT Workshop**	Ability to implement hardware and software in troubleshooting software related problems.	M	M	-	H	M	-	-	-	-	-	-	H
		Ability to explore the internet for information extraction and other innovative applications.	M	M	H	-	M	-	-	-	-	H	-	-
		Ability to interpret the Network hardware and network services.	-	M	-	M	H	-	-	-	M	M	M	-
		Ability to discuss database concepts and designing a static web page.	M	M	-	M	H	-	-	-	M	M	M	-
GR14A1030	**Engineering Chemistry Lab**	Ability to explain engineering problems with a solid foundation in Chemistry.	H	M	-	-	-	M	M	-	M	-	-	M
		Ability to express practical implementation of fundamental concepts.	H	M	-	-	-	M	M	-	M	-	-	-
		Ability to estimate the impurities present in water.	H	M	-	-	M	M	M	-	M	-	-	M
		Ability to modify lubricants for various purposes.	-	M	-	M	-	M	M	-	-	-	-	-
		Ability to prepare advanced polymer materials.	H	M	M	-	-	H	-	-	-	M	H	M
		Ability to measure the strength of an acid present in secondary batteries.	-	H	-	-	-	M	-	-	M	M	-	-
		Ability to find the Fe^{+2}, Ca & Cl^{-} present in unknown substances/ores using titrimetric and instrumental methods.	H	M	M	-	-	-	-	-	M	M	-	-
I Year II Semester														
GR14A1003	**Transform Calculus and Fourier Series**	Ability to calculate improper integrals like Beta and Gamma Functions and to apply the idea of domain transformation for easy problem solving.	H	M	M	M	-	H	H	-	H	-	-	M
		Ability to break down the skill of decomposing a periodic and non-periodic function in to fundamental components using Fourier series and Fourier transforms.	H	M	M	M	-	M	-	M	-	-	-	M
		Ability to differentiate between ODE and PDE and acquire the skill of finding analytical solutions of such equations.	H	M	M	M	-	-	-	H	-	-	-	M
		Ability to calculate definite integral values using Beta and Gamma Functions.	H	M	M	-	-	-	-	H	-	-	-	M
		Ability to develop the skill of evaluating												

		Laplace and inverse Laplace transform to solve linear systems under initial and boundary conditions.	H	M	M	M	-	H	H	-	-	-	-	M
		Ability to solve problems on function optimization with and without constraints.	H	M	M	-	M	-	-	-	-	-	-	M
		Ability to apply the concept of multiple integrals in solving problems in vector fields.	H	-	M	M	H	-	-	-	-	-	-	M
GR14A1004	**Numerical Methods**	Ability to explain the distinction between analytical and approximate solutions arising in mathematics.	H	H	M	M	-	H	-	-	-	-	-	M
		Ability to apply skills that equip us to approximate a hidden function using data.	H	H	M	M	-	-	-	-	-	-	-	M
		Ability to apply methods that provide solutions to problems hitherto unsolvable due to their complex nature.	-	H	M	M	-	-	-	-	-	-	-	M
		Ability to develop the skill of determining approximate solutions to problems having no analytical solutions in different contexts.	M	H	M	M	H	-	-	-	-	-	-	M
		Ability to solve problems related to cubic spline fitting and approximation of functions using B-splines and least squares.	H	-	M	M	-	-	-	-	-	-	-	M
		Ability to develop the skill of finding approximate solutions to problems arising in linear differential equations.	H	-	M	M	-	H	-	-	-	-	-	M
		Ability to develop the skill of finding approximate solutions to problems arising in Partial differential equations.	H	M	M	M	-	-	-	-	-	-	-	M
GR14A1006	**Physics for Engineers**	Ability to define the various bonds between the atoms, origin of properties of various materials.	M	M	-	M	-	-	-	-	-	-	-	-
		Ability to describe the basic concepts of Acoustics and acoustic quietinicy	M	H	M	M	-	M	-	-	-	H	-	-
		Ability to associate with the latest developments in physics like lasers.	M	H	H	M	-	-	-	-	-	-	-	M
		Ability to differentiate properties and applications of various materials.	M	-	M	M	H	H	-	-	-	-	-	-
		Ability to extend the concept about nanotechnology.	H	M	M	M	H	-	-	-	-	-	-	-
		Ability to demonstrate the applications and advancements in physics used for NDT testing.	M	H	M	M	-	M	-	-	-	-	-	-
		Ability to analyse the basic concepts of	M	H	M	M	H	-	-	-	-	H	-	M

		communication through fiber optics.												
GR14A1005	**English**	Ability to improve the English Language proficiency with an emphasis on LSRW skills.	-	-	M	-	-	-	M	M	-	H	M	H
		Ability to study the academic subjects with better analyzeing.	-	-	M	M	-	M	-	-	-	H	-	-
		Ability to develop and read a wide range of text and analyze the importance of life-long learning.	-	M	M	-	M	-	M	-	M	H	M	M
		Ability to express themselves fluently and appropriately in social and professional fields and strengthen their professional etiquettes.	-	M	M	H	-	M	M	-	M	H	-	-
		Ability to present themselves in various formal social and professional situations.	-	-	M	-	-	-	M	-	-	H	M	-
		Ability to meet the requirements of corporate communication.	-	M	M	-	M	-	M	-	-	H	-	M
		Ability to communicate effectively in professional Career	M			H		H		H			M	H
GR14A1011	**Computer Programming and data structures**	Ability to extend analytical and logical skills in a language through algorithms and flowcharts.	M	H	-	-	-	M	-	-	-	M	-	M
		Ability to solve a given problem.	H	M	H	-	-	M	-	-	M	M		M
		Ability to use the programming concepts, c-library and generate code for a given problem.	M	M	-	-	-	-	-	-	M	M	-	M
		Ability to apply sorting and searching algorithms for real time scenario.	M	-	H	-	H	-	-	-	-	-	-	M
		Ability to describe the basic operations of stacks and queues.	M	M	H	-	-	-	-	-	-	-	-	M
		Ability to develop the software system to meet desired needs in realistic constraints.	M	H	H	H	H	-	-	-	M	M	-	M
		Ability to distinguish and establish as practicing professionals and sustain career in industry.	M	H	-	-	-	-	-	-	H	M	-	-
GR14A1020	**Engineering Mechanics – DYNAMICS**	Ability to recollect the basic physical concepts of dynamics.	M	M	-	-	-	-	-	M	-	-	-	M
		Ability to illustrate the kinematics of particles and rigid bodies of dynamic problems.	-	M	-	H	-	-	M	M	-	-	-	M
		Ability to explain the kinetics of particles and rigid bodies of dynamic problems.	H	M	-	-	M	-	-	M	-	-	-	M
		Ability to apply Newton’s laws to particles and rigid bodies to solve problems related to	H	M	-	-	H	H	-	M	-	-	-	-

		dynamic behavior.											
		Ability to apply De Alemberts principle to particles and rigid bodies to solve problems related to dynamic behavior.	H	M	-	M	-	-	-	M	-	-	-	M
		Ability to apply the concepts of impulse and momentum with dynamic behavior.	H	M	-	M	H	H	H	M	-	-	-	M
		Ability to assess the concepts of vibrations to the rigid bodies associated with dynamic behaviour.	H	M	H	M	H	-	-	M	-	-	-	-
GR14A1025	**Engineering Workshop**	Ability to design and model different prototypes in the carpentry trade such as Cross lap joint, Dove tail joint.	-	-	H	-	M	-	M	-	-	-	M	-
		Ability to design and model various basic prototypes in the trade of fitting such as Straight fit, V- fit.	-	-	H	-	M	-	M	-	-	-	-	M
		Ability to construct various basic prototypes in the trade of Tin smithy such as rectangular tray, and open scoop.	-	-	H	-	M	-	M	-	-	-	M	-
		Ability to inspect various basic house wiring techniques such as connecting one lamp with one switch, connecting two lamps with one switch, connecting a fluorescent tube, Series wiring, Go down wiring.	-	-	H	-	-	M	H	H	H	-	M	-
		Ability to develop various basic prototypes in the trade of Welding such as Lap joint, Lap Tee joint, Edge joint, Butt joint and Corner joint.	-		H	-	M	H	-	-	-	-	M	-
		Ability to perform a range of machining operations to produce a given project.	-	-	H	-	M	-	M	-	-	-	M	-
		Ability to identify and use marking out tools , hand tools, measuring equipment and to work to prescribed tolerances.	-	-	H	-	M	-	M	-	-	-	M	-
GR14A1029	**Engineering Physics Lab**	Ability to draw the relevance between the theoretical concept and to imply it in a practical manner with respect to analyze various circuits and its components.	H	H	-	-	-	-	H	-	M	H	M	H
		Ability to analyze the behavior of various materials for its optimum utilization.	H	M	M	-	H	-	-	-	-	H	-	-
		Ability to assess various communication mechanisms and their usage in a practical manner.	H	M	M	M	-	-	-	-	-	-	-	-
		Ability to draw the relevance between theoretical concept and behavior of	H	M	M	H	-	-	-	-	M	-	-	-

		magnetic materials and their applications.												
		Ability describe the characteristics and the behavior of various dielectric materials and their usage in daily life.	H	M	M	-	-	-	-	-	-	H	H	H
		Ability to provide a solid foundation in physics laboratory required to solve engineering problems.	H	M	M	M	-	-	-	-	M	-	-	M
		Ability to analyze the characteristics of various materials for their applications in communication and medical industry.	H	M	M	M	-	-	-	-	-	-	H	H
GR14A1028	**Computer Programming and data structures Lab**	Ability to practice algorithms to solve real world problems.	M	H	H	H	H	M	H	H	M	-	-	M
		Ability to analyze and resolve a given problem.	H	M	-	-	-	M	-	H	M	M	-	M
		Ability to use the programming concepts, c-library and generate code for a given problem.	M	H	-	-	-	-	-	-	M	M	-	M
		Ability to apply sorting and searching algorithm for real time scenario.	M	H	-	H	-	-	M	-	-	-	-	M
		Ability to compute the basic operations of stacks and queues.	M	M	-	-	-	M	-	-	H	-	M	M
		Ability to identify computer programming environment.	M	H	-	-	-	M	-	-	-	-	-	M
		Ability to develop programs and documentation in engineering applications.	M	H	-	-	-	M	-	-	M	M	-	M

Correlation between Course Outcomes with Programme Outcomes of II B.Tech Mechanical Engineering

Code	**Subject**	**Course Outcomes**	**Programme Outcomes**											
			a	**b**	**c**	**d**	**e**	**f**	**g**	**h**	**i**	**j**	**k**	**l**
II Year I Semester														
GR14A2011	Probability and statistics	Ability to estimate the chance of occurrence of various uncertain events in different random experiments with Strong basics in Probability.	H	-	-	-	-	-	-	M	-	-	M	-
		Ability to forecast the models using regression analysis.	-	-	M	-	M	-	-	M	-	-	-	M
		Ability to estimate system performance measures in different queuing processes.	-	-	-	H	-	M	-	M	-	-	M	-
		Ability to apply inferential statistics to make predictions or judgments about the Population from which the data is drawn	H	M	-	M	-	-	-	M	-	-	-	-
		Ability to develop models for Stochastic processes	M	-	-	-	H	-	-	-	-	M	-	-

		Ability to apply probability of occurrence in real time problems	-	H	-	M	-	-	-	-	-	-	M
		Ability to forecast the models and problems using statistics.	-	-	-	H	M	M	M	-	-	-	-	-
GR14A2019	Kinematics of Machinery	Ability to List out the common mechanisms, working principles and its applications which is used in machines.	H	M	-	M	-	-	-	-	-	-	-	-
		Ability to Interpret mobility for different mechanism and enumerate rigid links, types of links and types of joints in the mechanisms.	H	M	H	M	-	H	-	-	-	-	-	-
		Ability to Explain Straight line motion mechanisms and its applications generally used in various machines.	H	-	M	-	-	M	-	-	-	-	-	-
		Ability to Utilize analytical, mathematical and graphical aspects of kinematics of Machines for effective design.	M	H	M	M	-	-	-	-	-	-	-	
		Ability to Explain Gear mechanism classification and gear train analysis, gear standardization and law of gearing.												
		Ability to Design and fabrication of gear box design followed by the specification and standards.	H	H	-	M	-	M	M	-	-	M	-	-
		Ability to Define Cam terminology, classifications of cam and follower, cam profiles, Introduction about cam design and its applications.	H	M	-	M	-	-	-	-	-	-	-	M
		Ability to Recognize the importance of properties of materials for deciding the design criteria.	H	M	M	M	-	-	M	-	-	-	-	-
		Ability to Estimate the stresses and strains in structural members and machine elements subjected to external loads.	H	-	M	M	H	-	M	-	-	-	-	-
		Ability to Estimate the stresses and	H			M	H		M					M

		strains due to combined normal and shear loads.	H	-	-	M	H	-	M	-	-	-	-	M
GR14A2020	Mechanics of Solids	Ability to Sketch the shear force and bending moment diagrams for the beams carrying transverse loads.	H	H	-	M	-	-	M	-	-	-	-	M
		Ability to Ascertain physical behaviour of materials subjected to external loads.	H	M	M	M	-	-	M	-	-	-	-	M
		Ability to Recommend the materials and physical dimensions according to maximum stresses and strains.	M	-	M	M	-	-	H	-	-	-	-	M
		Ability to Interpret the results and design data.	H	-	M	M	-	-	M	M	-	M	M	-
GR14A2021	Engineering Thermodynamics	Ability to State and Apply basic laws of thermodynamics to various flow and non-flow Processes.	H	-	-	M	-	-	-	M	-	-	-	M
		Ability to Calculate the change in Entropy, Heat transfer and Work done in Thermodynamic processes.	-	M	-	-	H	-	-	-	M	-	-	-
		Ability to Differentiate between various energy conversion devices like heat engine, heat pump and Refrigerator.	M	H	-	-	-	M	M	-	-	-	H	-
		Ability to Deduce the efficiencies of various Power cycles	-	M	-	-	-	-	-	M	-	-	H	M
		Ability to Obtain the various thermodynamic properties from steam tables and Psychrometric charts	-	-	M	M	-	-	-	M	H	M	-	-
		Ability to Asses the various Refrigeration cycles based on Coefficient Of Performance(C.O.P)	M	-	H	M	-	M	-	-	-	M	M	M
		Ability to Convert mass basis analysis to volume basis analysis in gas mixtures and vice versa.	-	-	M	H	-	M	-	-	-	M	-	-
		Ability to Relate crystal structures and relationship between different materials.	H	M	M	M	-	-	-	-	-	-	H	M
		Ability to Relate the equilibrium transformation diagrams for various metals.	H	M	M	M	-	-	-	-	-	-	-	H
		Ability to Utilize appropriate techniques in treating a metal with proper heat treatment operations.	-	M	M	M	H	H	H	-	-	M	-	-
		Ability to Have concept on different	H	M	M	M					H			

GR14A2022	Material Science and Metallurgy	types of ferrous and nonferrous metals.	H	M	M	M	-	-	-	-	H	-	-	-
		Ability to Manufacture different products with composite materials.	H	M	M	M	M	-	M	-	-	M	M	-
		Ability to Recommend a suitable material with its properties for a specified application.	H	M	M	M	-	-	-	-	-	-	-	-
		Ability to Evaluate the behavior of material when it is subjected to heat treatment process.	H	H	M	-	-	-	-	H	-	-	M	-
GR14A2023	Machine Drawing Lab	Ability to Apply the concept of machine drawing as a system of Communication in which ideas are expressed clearly and all information fully conveyed.	-	H	-	H	-	-	M	-	-	-	H	-
		Ability to analyze the design a system, component or process to meet desired needs within, realistic constraints such as manufacturability ,economic ,environmental, safety & sustainability etc.., to represent a part drawing and assembly drawings.	H	M	-	-	-	M	-	-	M	M	-	-
		Ability to identify, formulates, analyzes and solves Engineering Problems in Optimum time.	M	-	H	-	-	-	M	-	-	M	-	M
		Ability to Recognize to use modern engineering tools, software and equipment to analyze different drawings for Design & manufacturing.	-	-	H	-	M		-	-	-	-	M	H
		Ability to use the techniques, skills and modern engineering tools necessary for engineering practice with the concept of virtual work.	-	-	H	M	M	M	H	H	-	-	-	-
		Ability to Justify Assemble and disassemble of various machine components.	-	-	H	-	M	-	-	-	M	-	-	
		Ability to Recognition of the need for, and an ability to engage in self education and life-long learning.	M	M	-	-	M	-	-	-	-	-	H	-

GR14A2024	Material Science and Metallurgy Lab	Ability to Relate properties to microstructure.	M	M	H	-	-	-	-	M	M	-	-	-
		Ability to Choose suitable metals and alloys for industrial applications.	M	-	H	M	-	-	M	-	-	-	H	-
		Ability to Find out the hardness of various treated and untreated metals.	M	H	H	-	-	-	M	-	-	-	-	-
		Ability to tell the chemical composition of various ferrous and non ferrous metals.	-	M	-	H	-	-	H	-	-	M	-	-
		Ability to select a suitable heat treatment process for a material.	M	H	M	-	-	-	-	-	M	M	H	-
		Ability to evaluate the behavior of materials after it is heat treated.	M	H	-	M	-	M	-	-	M	M	M	-
		Ability to create moulds from various materials and determining all mechanical properties.	-	-	H	-	-	-	H	-	M	M	-	-
GR14A2025	Mechanics of Solids Lab	Ability to conduct experiments, analyze and interpret experimental data to know the behavior of material.	H	M	-	M	-	-	-	-	M	-	-	-
		Ability to evaluate the behavior of ferrous and non-ferrous metals subjecting to Transverse loading, axial loading, Torsional and Bending loading by means of experiments.	H	-	-	-	M	-	M	-	M	-	-	M
		Ability to analyze and to determine the hardness and impact energy for different materials.	H	M	M	-	M	M	-	-	M	-	-	-
		Ability to determine and to analyze the compressive strength of concrete cubes and blocks	H	-	-	M	-	-	M	-	-	-	-	-
		Ability to find and analyze the stiffness of open coiled springs.	H	-	-	-	H	H	H	-	M	-	-	M
		Abilityto analyze and to determine the behavior of deflection of beams through deformation and to evaluate the modulus of elasticity of the given	H	-	-	-	-	-	H	M	M	H	H	H

		material.												
		Ability to determine and analyze the torsional rigidity of different ferrous materials.	H	H	H	M	-	M	-	-	M	-	-	M
II Year II Semester														
GR14A2026	Electrical and Electronics Technology	Ability to compare the performance of devices in various applications.	H	-	-	M	-	-	-	M	-	-	-	M
		Ability to know the working principles of DC & AC machines.	H	-	M	-	-	M	-	-	-	-	-	M
		Ability to know the operation of Transformer.	H	-	-	M	-	-	-	M	-	-	-	M
		Ability to get concept on Semiconductor Devices.	H	-	M	H	-	M	-	-	-	-	-	M
		Ability to analyze the working operation of each device in a circuit.	H	M	-	M	H	-	-	M	-	-	-	M
		Ability to predict the functioning of basic home appliances	H	-	-	M	-	H	-	-	-	-	-	M
		Ability to learn basic electrical instruments used in day to day life.	H	M	-	M	-	-	-	M	-	-	-	M
GR14A2027	Production Technology	Ability to Interpret contemporary developments in the field of manufacturing processes	H	M	-	M		H	-	-		-	-	M
		Ability to Impart concept on role and value of production and identify basic production processes.	H	M	H	M	-	-	-	-	-	M	-	-
		Ability to introduce methods of joining that shows a comprehensive analyzing of tools, materials, equipment, and processes.	H	M	M	-	-	H	M	-	-	-	-	-
		Ability to Demonstrate awareness of the competition that surrounds the development of inventions and the control of welding processes	H	M	M	H	-	-	M	-	-	-	H	M
		Ability to apply critical thinking skills for development and evaluating ideas for manufacturing processes.	H	-	M	-	M	-	-	-	-	-	-	M
		Ability to identify and use the materials, tools, machines, and techniques used in various forming processes.	H	-	M	-	-	M	-	-	M	-	-	-
		Ability to demonstrate various ways of producing plastic products and its equipment details.	H	-	-	H	M	M	M	-	-	-	-	M

		Ability to apply concept of mathematics, science and engineering.	H	M	M	M	-	-	M	-	-	-	M	-
		Ability to use the governing equations of fluid flow and applying them to simple flow problems.	H	M	M	M	-	-	M	-	-	H	H	M
GR14A2028	Fluid Mechanics and Hydraulic Machinery	Ability to explain the mathematical formulation of various flow problems.	H	M	M	M	-	-	-	-	-	-	H	-
		Ability to analyze the boundary layer concept to the fluid flow problems.	H	M	M	-	-	M		-	-	M	H	-
		Ability to apply the concept of fluid and models of fluids for flow problems.	H	M	M	-	-	M	M	-	M	-	H	-
		Ability to apply the basic principles to derive the equation for viscous flow, including laminar flow & turbulent flow.	H	M	M	-	-	M	-	-	-	M	H	-
		Ability to explain the stream function and potential function to fluid flow problems.	H	M	M	-	-	M	-	-	-	M	H	-
GR14A2029	Internal combustion Engines	Ability to analyze the concept on working principles and their functions of various components of internal combustion.	M	H	-	-	-	M	-	M	M	-	M	-
		Ability to improve the analytical skills in finding the engineering solutions and redesign the system to improve the fuel efficiency of the engine in global, environmental and social contexts.	M	M	-	-	-	M	-	M	M	-	M	-
		Ability to adopt the resources available at optimum level in order to achieve the better efficiency in the performance of different types of Air compressors duly reducing the operational losses.	M	M	-	-	-	M	-	M	M	H	H	-
		Ability to develop an idea of utilization of resources duly reducing the emission levels for achieving echo-friendly environment.	M	M	-	-	-	M	-	M	M	-	H	-
		Ability to have concept to redesign the different components of air compressors depending upon the type of applications for global economic and environmental context within realistic constraints	M	M	-	-	-	M	-	M	M	-	H	-

		like health, safety and sustainability.													
		Ability to impart the concept of many different aspects of engineering, including mechanical engineering, combustion, electrical and electronic systems and fuel technology.	M	-	-	-	-	M	-	M	M	-	H	-
		Ability to Evaluate the factors which influence the performance of the compressors in steam power plants, gas turbines and jet propulsions etc. for better engineering practice.	M	M	-	-	-	M	-	-	-	M	H	-
GR14A2030	Advanced mechanics of Solid	Ability to calculate the stresses in non - uniform structural beams	H	M	M	-	-	M	-	-	-	-	H	M
		Ability to estimate the safe pressure that can be carried by thin and thick pressure shells pressure vessels	H	M	M	-	M	-	-	-	-	-	-	-
		Ability to select suitable column or a struts for particular application	H	M	M	-	H	M	M	M	-	-	-	-
		Ability to calculate the stresses in non - uniform structural beams	H	M	M	-	M	-	-	-	-	-	-	-
		Ability to estimate the safe pressure that can be carried by thin and thick pressure shells pressure vessels	H	M	-	-	M	-	-	-	-	-	-	-
		Ability to calculate the stresses in non - uniform structural beams	H	M	-	H	M	-	-	-	-	-	-	-
		Ability to estimate the safe pressure that can be carried by thin and thick pressure shells pressure vessels	H	M	-	-	M	-	-	-	-	-	-	-
GR14A2032	Electrical and Electronics Technology Lab	Ability to compare the performance of devices in various applications.	H	-	M	-	-	-	M	-	-	M	-	M
		Ability to know the working principles of DC & AC machines.	H	-	M	-	-	-	M	-	-	M	M	-
		Ability to know the operation of Transformer.	H	-	-	M	-	-	M	-	-	-	M	-
		Ability to get concept on Semiconductor Devices.	M	-	H	M	-	-	M	-	-	M	M	-
		Ability to analyze the working operation of each device in a circuit.	H	-	M	-	-	-	M	-	-	-	M	-
		Ability to predict the												

		functioning of basic home appliances	M	-	H	M	-	-	-	-	-	-	M	H-
		Ability to learn basic electrical instruments used in day to day life.	H	-	M	M	-	-	M	-	-	-	M	-
GR14A2031	Production Technology Lab	Ability to interpret contemporary developments in the field of manufacturing processes	M	-	H	-	M	-	-		M	-	-	-
		Ability to impart concept on role and value of production and identify basic production processes.	-	H	-	H	M	-	-	-	-	M	-	-
		Ability to interpret contemporary developments in the field of manufacturing processes	-	H	-	-	-	M	-	-	-	-	-	M
		Ability to impart concept on role and value of production and identify basic production processes.-	M	H	H	H	H	-	-	-	-	-	-	M
		Ability to interpret contemporary developments in the field of manufacturing processes	M	-	H	-	-	-	M	-	-	M	-	M
		Ability to impart concept on role and value of production and identify basic production processes.	M	H	-	-	-	H	H	M	-	-	M	-
		Ability to introduce methods of joining that shows a comprehensive analyzeing of tools, materials, equipment, and processes.	M	-	-	-	M	-	M	-	-	M	-	-
GR14A2033	Fluid Mechanics and Hydraulic Machinery Lab	Ability to asses the friction factor using major and minor losses in pipes	H	M	M	M	-	-	-	-	-	-	-	M
		Ability to prove the Bernoulli’s equation.	H	M	-	-	M	-	-	-	-	-	M	-
		Ability to recommend the type of pump for a particular application	H	M	-	-	M	M	-	-	-	-	M	-
		Ability to calculate the efficiencies of various turbines	H	M	M	-	M	M	-	M	-	M	-	-
		Ability to determine the coefficient of impact of various jets using various vanes	H	M	-	M	M	-	-	M	-	M	-	-
		Ability to determine the overall efficiencies of various pumps	H	M	M	-	M	-	-	-	-	H	-	-
		Ability to recommend the type of pump for a	H	M	M	-	M	-	-	M	-	M	M	-

		particular application												

Correlation between Course Outcomes with Programme Outcomes of III B.Tech Mechanical Engineering

Code	Subject	Course Outcomes	Programme Outcomes											
			a	b	c	d	e	f	G	h	i	j	k	l
III Year I Semester														
GR11A2071	Managerial econ. & Financial analysis	Ability to discuss on economics, demand and its determinants, exceptions, elasticity and forecasting.	H	M	-	-	M	M	-	M	-	-	-	-
		Ability to explain the production function, the concept of Economies of Scale, ISOCOSTS, ISOQUANTS.	-	H	-	-	M	M	-	M	-	-	-	-
		Ability to infer various costs, production and calculating Break Even Point.	-	H	M	-	H	-	M	M	-	-	-	-
		Ability to discuss on economics, demand and its determinants, exceptions, elasticity and forecasting.	H	M	-	-	M	M	-	-	-	-	-	-
		Ability to explain the production function, the concept of Economies of Scale, ISOCOSTS, ISOQUANTS.	M	M	H	-	-	-	-	-	H	M	M	M
		Ability to discuss on economics, demand and its determinants, exceptions, elasticity and forecasting.	-	H	M	-	M	-	-	M	-	-	-	M
		Ability to explain the production function, the concept of Economies of Scale, ISOCOSTS, ISOQUANTS.	M	H	M	-	M	M	-	-	-	-	-	M
GR11A3045	Dynamics of Machines	Ability to analyze complete motion analysis of machines in running condition.	H	-	M	M	-	M	-	M	-	-	-	M
		Ability to know friction and its effect on mechanical efficiency.	M	H	M	-	-	-	-	H	-	-	-	M
		Ability to analyze complete motion analysis of machines in running condition.	H	M	M	M	H	M	H	-	-	-	-	M
		Ability to know friction and its effect on mechanical efficiency.	M	M	H	-	-	-	M	M	-	-	-	M
		Ability to know how to balance forces and moments produced by rotating or reciprocating masses of machine members.	M	M	H	-	-	-	M	M	-	-	-	M
		Ability to analyze complete motion analysis of machines in running condition.	-	M	H	-	-	-	M	M	-	-	-	M
		Ability to know friction and its effect on mechanical efficiency.	-	M	H	-	-	-	M	M	-	-	-	M
		Ability to analyze the importance of tool geometry in manufacturing the component.	H	M	M	-	-	-	-	-	-	M	H	M
		Ability to operate machine tool equipment commonly found in industry including manual and computer controlled lathes,	M	H	-	-	-	-	M	-	-	-	-	M

		milling machines, drill presses and cutting machines													
GR11A3066	Machine Tools	Ability to perform cutting force analysis of metal cutting machines.	M	H	-	H	-	-	-	-	-	-	-	-
		Ability to perform chip formation analysis of metal cutting machines	-	H	M	-	-	-	M	-	-	-	H	-
		Ability to execute the gear cutting and finishing process on various machines	-	M	H	-	-	-	M	-	-	-	-	M
		Ability to perform economics of machining and tool life estimation	M	-	-	M	-	M	-	-	-	-	M	H
		Ability to apply safety principles in a work environment to minimize hazards and prevent losses to productivity	-	-	H	M	-	M	M	-	-	M	-	-
GR11A3035	Design of Machine Members -I	Ability to outline all the properties of the materials. Estimate the tolerances and fits of shaft-hole basis system.	M	M	H	-	-	-	H	-	H	-	-	-
		Ability to compute the dimensions of the members subjected to bi-axial loading using theories of failure.	M	-	H	M	M	M	-	-	-	-	-	-
		Ability to design the machine members subjected to simple fatigue loading and bi-axial fatigue loading.	M	-	H	M	H	H	H	-	-	-	-	-
		Ability to apply different methods to the design of shafts subject to combined static and variable loads.	-	M	M	-	-	H	-	-	-	-	-	-
		Ability to solve the dimensions of the riveted, welded and bolted joints subjected different loading.	-	M	M	-	M	H	-	H	H	H	H	M
		Ability to design keys, cotters and knuckle joints subjected tensile and compressive loading.	M	M	H	M	-	-	-	-	-	-	-	
		Ability to compute the dimensions of the shafts and shaft couplings subjected torsional loading or combined torsional and bending loading.	M	M	H	M	-	-	-	-	-	-	-	-
		Ability to illustrate the power generation through Rankine cycle and analyze efficiency enhancement methods of Reheating and regeneration.	M	H	-	M	M	H	-	-	-	-	-	-
		Ability to classify the different types of boilers and can distinguish mountings and accessories and know the types of draughts and its application in the steam generator.	M	H	-	M	M	-	-	-	-	-	-	M
		Ability to illustrate the power generation through Rankine cycle and analyze efficiency enhancement methods of Reheating and regeneration.	M	H	-	M	M	-	-	-	H	M	-	-
		Ability to classify the different types of boilers and can distinguish mountings and	M	H	-	M	M	-	-	-	-	M	-	-

GR11A3003	Applied Thermodynamics - II	accessories and know the types of draughts and its application in the steam generator.												
		Ability to focus on the basic components of a gas turbine power plant and can illustrate the power generation using Joule Cycle and methods to increase the specific power output and efficiency of the cycle.	M	H	H	M	-	-	-	-	-	-	-	M
		Ability to compare the working of various propulsive devices and can have awareness of using thrust equations in solving problems.	M	H	-	M	-	-	-	-	H	-	-	M
		Ability to analyze the design parameters of the components of the plant for better performance duly minimizing the operating losses.	M	H	-	M	-	-	-	-	-	-	-	M
GR11A3067	Machine Tools Lab	Ability to apply tool geometry in manufacturing the component.	-	-	H	M	M	M	M	M	H	-	-	-
		Ability to operate machine tool equipment commonly found in industry including manual and computer controlled lathes, milling machines, drill presses and cutting machines	-	M	-	-	H	M	H	H	H	-	-	-
		Ability to perform cutting force analysis of metal cutting machines.	-	-	-	-	H	M	H	M	M	M	M	-
		Ability to apply tool geometry in manufacturing the component.	M	H	-	-	-	-	H	H	M	M	H	M
		Ability to operate machine tool equipment commonly found in industry including manual and computer controlled lathes, milling machines, drill presses and cutting machines	H	-	M	H	-	-	-	-	-	-	M	-
		Ability to perform cutting force analysis of metal cutting machines.	-	-	M	H	-	-	M	-	-	-	M	-
		Ability to perform chip formation analysis of metal cutting machines	-	M	M	H	-	M	M	-	-	-	-	-
GR11A2073	Advanced Eng. Com. Lab	Ability to classify the soils and its basic properties.	M	H	-	M	-	-	-	-	-	M	-	-
		Ability to analyze soil behavior and its mechanism.	M	H	-	M	-	-	-	-	-	-	-	M
		Ability to find role of basic properties of soil in simple and complex applications.	M	H	-	M	M	M	-	M	-	-	-	-
		Ability to develop a proficiency in handling experimental data.	H	M	-	-	-	-	-	-	M	M	-	-
		Ability to report the results of a laboratory experiment at a professional standard.	H	M	-	-	-	-	-	-	M	M	-	M
		Ability to analyze data for real time applications.	M	H	-	M	-	-	-	M	-	-	-	-
		Ability to recommend extensive research in	M	H	-	M	-	-	-	M	M	M	-	-

		geotechnical properties.													
GR11A3091	Thermal Engineering Lab	Ability to know the complete operation of 2 stroke and 4 stroke I.C engines which can be further confirmed through valve timing diagram and port timing diagram	-	M	M	M	-	H	-	H	-	M		M
		Ability to find the performance of 2-S and 4-S engines and the variation of various performance parameters with load and speed.	-	-	-	M	-	M	-	-	M	H	-	M
		Ability to know the complete operation of 2 stroke and 4 stroke I.C engines which can be further confirmed through valve timing diagram and port timing diagram	H	M	M	M	M	H	H	M	-	H	-	-
		Ability to find the performance of 2-S and 4-S engines and the variation of various performance parameters with load and speed.	-	M	-	M	M	-	-	-	-	H	-	-
		Ability to draw the heat balance of the engine cylinder after the combustion process.	-	M	M	M	-	M	-	-	-	H	-	-
		Ability to know the working and performance evaluation of mechanical power consuming devices like compressors.	-		-	-	-	-	-	H	H	-	-	-
		Ability to study the variation of performance of the engine with compression ratio in variable compression ration S.I engine	-	M	-	M	-	-	-	M	-	H	-	-
III Year II Semester															
GR11A3072	Metrology & Surface Engineering	Ability to use different linear and angular measuring instruments,	H	-	M	M	-	-	-	M	-	-	-	M
		Ability to apply different measuring instruments in real time for quality inspection.	H	-	M	M	-	-	-	M	-	-	-	M
		Ability to have solid foundation to train in high quality management system in their professional carrier.	M	M	H	-	-	M	M	-	-	-	M	M
		Ability to use different linear and angular measuring instruments,	M	M	H	H	-	M	M	-	-	-	M	M
		Ability to apply different measuring instruments in real time for quality inspection.	M	-	H	H	-	M	M	-	-	-	M	M
		Ability to have solid foundation to train in high quality management system in their professional carrier.	H	-	-	M	-	-	-	-	-	-	-	M
		Ability to select and use the appropriate measuring instruments according to a specific requirement (in terms of accuracy, etc.)	H	-	M	M	-	-	-	-	-	-	-	M
		Ability to discuss the various modes and mechanisms of heat transfer	M	-	H	-	-	M	-	-	-	-	M	-
		Ability to explain the												

		general heat conduction equation in cartesian, cylindrical and spherical systems.	-	H	-	-	-	M	-	M	-	-	H	-
		Ability to discuss the various modes and mechanisms of heat transfer	H	-	M	M	M	-	-	-	-	-	-	-
GR11A3057	Heat Transfer	Ability to explain the general heat conduction equation in cartesian, cylindrical and spherical systems.	M	M	H	M	-	M	-	-	-	-	-	-
		Ability to solve steady state heat conduction problems in slabs, cylinders, spheres	-	-	H	-	M	M	M	-	-	-	-	-
		Ability to derive the heat transfer equations in fins.	-	H	M	-	M	-	-	-	-	-	M	-
		Ability to calculate the heat transfer coefficients in free and forced convection heat transfer	-	M	-	H	M	-	-	-	-	-	-	M
		Ability to apply theories and course concepts to properly analyze and diagnose management problems.	M	-	H	-	-	-	M	-	M	-	-	-
		Ability to apply these theories and frameworks to themselves to become better leaders at work in a range of organizations	M	M	H	-	-	-	-	-	M	-	-	-
		Ability to evaluation of companies' performance including financials, market share, innovation, and employment.	M	M	H	-	-	-	-	-	H	-	-	M
		Ability to analyze a job and use the information for consulting with organizations for selection purposes.	M	H	M	-	M	-	-	-	-	-	-	-
GR11A3063	Industrial Management	Ability to development of implementation steps for strategic plans for functional areas such as marketing, sales, R&D, human resources, accounting, control, production and finance.	M	M	H	-	M	-	-	-	-	-	-	-
		Ability to develop specific HR systems for different regions and cultures such as recruitment, selection, compensation, performance management and training.	-	M	H	-	-	-	-	H	H	M	-	-
		Ability to create an innovative process, creating thinking with nonstop technical problems, solving systems to enhance production.	-	M	H	M	M	-	-	-	-	M	M	-
		Ability to design of Journal bearings subjected to static and dynamic loading.	H	M	-	-	-	M	-	-	-	-	-	M
		Ability to compute the dimensions of I.C engine reciprocating	H	M	M	M	-	M	-	-	-	M	-	M

		parts subjected to variable loads.													
		Ability to solve the dimensions of I.C engine rotary parts subjected to variable loads.	H	M	M	M	-	M	-	-	-	-	M	M
GR11A3036	Design of Machine Members - II	Ability to apply different methods to the design of different springs subject to shock loading.	H	M	M	M	-	M	-	-	-	M	-	M
		Ability to design of spur and helical gears subjected to static and dynamic loading.	H	-	-	M	-	-	-	M	-	H	-	-
		Ability to compute the dimensions of the power screws considering various types of loads.	H			M		M	M					M
		Ability to make proper assumptions and perform correct analysis while designing the various machine elements for industrial applications.	H			M		M			M			M
		Ability to illustrate the function of each and every component of an automobile. As well as able to analyze the reasons for performance parameters.	H			M								H
		Ability to demonstrate about emission standards, emission control techniques and electrical systems. To identify thrust areas for carrying their dissertation in future.			M				M				H	
		Ability to describe the every component of transmission system of an automobile via clutch, gear box, propeller shaft and differential.	M	-	M	-	-	-	M	-	-	H	-	-
GR11A3008	Automobile Engineering	Ability to predict the purpose and methods of steering systems and their applications.	-	-	H	-	M	M	-	-	-	-	-	-
		Ability to analyze the geometry of the steering mechanism and the effect of the same on tyre performance and other components of the automobile.	-	H	-	-	M	-	-	-	-	H	-	-
		Ability to explain the working principles of the different components of the automobile based on different applications.	M	-	-	H	M	-	-	-	-	-	-	M
		Ability to list the different types of suspension system and braking system of an automobile and importance of each type based on real time applications.	-	M	-	H	-	M	-	-	-	-	-	-

GR11A3051	Mechatronics	Ability to define and solve engineering problems.	H	M	M	-	-	M	-	-	M	-	-	-
		Ability to use the techniques, skills, and modern mechatronics engineering tools necessary for engineering practice.	-	M	M	-	-	H	M	-	-	-	-	-
		Ability to define and solve engineering problems.	-	-	M	H	-	M	M	-	-	-	M	-
		Ability to use the techniques, skills, and modern mechatronics engineering tools necessary for engineering practice.	H	M	-	M	-	M	-	-	-	-	-	-
		Ability to define and solve engineering problems.	-	-	-	-	-	H	M	M	-	M	-	M
		Ability to use the techniques, skills, and modern mechatronics engineering tools necessary for engineering practice.	-	-	-	M	H	M	-	-	-	-	M	-
		Ability to function effectively as members of multidisciplinary teams.	M	-	-	M	-	H	M	-	-	-	-	-
GR11A3024	Computational Fluid Dynamics	Ability to implement FDM techniques to steady state and unsteady state problems in heat transfer.	M	-	H	-	-	-	-	-	-	-	-	-
		Ability to classify the partial differential equations and analyze their physical behaviors in fluid flow problems.	-	H	-	-	-	M	-	-	-	-	-	-
		Ability to gain concept about the various convection diffusion discretization schemes	-	H	M	-	-	-	-	-	-	-	-	-
		Ability to implement fem. techniques to steady state and unsteady state problems in heat transfer.	-	-	M	H	-	-	-	-	-	-	M	-
		Ability to classify the partial differential equations and analyze their physical behaviors in fluid flow problems.	H	-	-	M	-	-	-	-	-	-	M	M
		Ability to gain concept about the various convection diffusion discretization schemes	H	-	-	M	-	-	-	-	M	-	-	-
		Ability to review the governing equations in fluid flow and heat transfer	-	H	-	M	-	-	H	-	-	-	-	M
		Ability to identify the uncertainties in dimensional metrology and to define the measurement standards	-	M	M	H	-	-	M	-	-	M	-	M
		Ability to measure length and angles using line-graduated instruments, i. e. vernier calipers, micrometers, bevel protractor, sine bar and surface plates	-	H	M	-	-	-	M	-	-	M	-	-
		Ability to use the appropriate method for determination of accuracy based on	-	M	H	-	-	M	-	-	-	-	-	-

		product function and manufacturing capability.													
GR11A3073	Metrology Lab	Ability to use comparative length-measuring instruments, i.e. dial indicator, to measure variations in the distance between two or more surfaces.	-	M	H	-	-	M	H	-	-	-	-	-
		Ability to use effective methods of measuring straightness, flatness, roundness, profile, screw threads and gear teeth.	-	H	M	-	M	M	-	-	-	-	-	-
		Ability to measure dimensions of shafts, bearings and linear surfaces in metric and imperial units using calibers, micrometers, and scales.	-	H	M	-	M	-	-	M	-	M	-	-
		Ability to use contour projector and coordinate measuring machine to record measurements of complex profiles with high sensitivity	-	H	-	M	M	-	-	-	-	M	-	-
GR11A3059	Heat Transfer Lab	Ability to discuss the various modes and mechanisms of heat transfer	H	M	-	M	-	-	-	-	M	-	-	M
		Ability to Explain the general heat conduction equation in cartesian, cylindrical and spherical systems.	H	M	-	M	-	-	-	-	M	-	-	M
		Ability to solve steady state heat conduction problems in slabs, cylinders, spheres	H	-	-	M	-	-	-	-	-	-	M	-
		Ability to derive the heat transfer equations in fins.	H	M	-	M	-	-	-	-	M	-	-	M
		Ability to evaluate the heat transfer coefficients in free and forced convection heat transfer	H	M	-	-	-	-	-	-	H	-	-	M
		Ability to classify the various types of radiation emitting ,receiving and transmitting bodies	-	H	-		-	M	-	M	-	-	-	-
		Ability to compute the rate of heat transfer in heat exchangers	-	-	M	-	-	H	-	-	-	M	-	M
GR11A3064	**Industrial Oriented Mini Project**	Ability to assess theoretical techniques to solve real time problems related to industry.	H	M	-	-	-	-	-	M	M	M	-	-
		Ability to relate practical techniques to solve problems related to research	H	-	-	M	-	-	-	-	M	M	-	-
		Ability to prepare technical report and present in the seminars/ conferences.	-	M	-	-	M	-	-	-	-	H	-	-
		Ability to develop small scale models and present in the workshops and seminars.	-	M	H	M	-	M	-	-	M	-	-	-
		Ability to assess theoretical techniques to solve real time problems	-	H	M	M	-	-	M	-	-	-	-	

		related to industry.													
		Ability to relate practical techniques to solve problems related to research	H	-	-	-	-	M	M	-	-	-	-		
		Ability to prepare technical report and present in the seminars/ conferences.	-	M	-	H	-	-	-	M	-	-	-	M	

Correlation between Course Outcomes with Programme Outcomes of IV B.Tech Mechanical Engineering

Code	Subject	Course Outcomes	Programme Outcomes											
			a	b	c	d	e	f	g	h	i	j	k	l
IV Year I Semester														
GR11A4079	Operations Research	Ability to apply the various linear programming techniques for optimal allocation of limited resources such as machine, material and money	M	H	-	M	-	-	-	-	M	-	-	-
		Ability to solve transportation problems to minimize cost and analyze the principles of assignment of jobs and recruitment polices.	M	H	-	M	-	M	-	-	-	-	-	-
		Ability to apply Game theory to analyze various business competitions.	H	M	-	M	-	-	-	M	-	M	-	-
		Ability to distinguish various inventory models and develop proper inventory policies.	-	M	-	H	-	-	-	-	-	H	-	M
		Ability to solve sequencing problems.	M	H	-	M	-	M	-	-	-	-	-	-
		Ability to develop optimum replacement policy.	H	M	-	M	-	-	-	-	-	H	-	M
		Ability to solve Dynamic Programming Techniques.	M	-	H	-	-	M	-	-	-	-	-	M
GR11A4042	Finite Element Methods	Ability to obtain an analyzing of the fundamental theory of the FEA method.	H	M	M	-	-	-	-	M	-	-	-	-
		Ability to apply the concepts of minimum potential energy principles to solve structural mechanics problems.	M	M	M	H	-	-	-	-	-	-	-	-
		Ability to compute Eigen values and eigenvectors of simple dynamic systems	M	M	M	H	-	-	-	M	-	-	-	-
		Ability to obtain weak form from strong form and total potential, and recognize similarities between such solutions, and those obtained by variational principles and principal of virtual work.	M	M	M	H	-	-	-	M	-		-	-
		Ability to develop												

		the ability to generate the governing FE equations for systems governed by partial differential equations	M	M	M	H	-	-	-	M	-	-	-	-
		Ability to obtain finite element solution and compare with exact solution of simple one dimensional problem.	M	M	M	H	-	-	-	M	-	-	-	-
		Ability to apply the finite element procedure for stress analysis and design of load carrying structures and heat transfer problems	M	M	M	H	-	-	-	M	-	-	-	-
GR11A4012	CAD/ CAM	Ability to define tools used for computer aided Design (CAD) and Computer Aided manufacturing.	-	H	M	M	-	-	H	-	-	-	M	-
		Ability to explain geometric modeling techniques and recognize importance in modeling real life objects using CAD/CAM tools.	-	H	M	-	M	-	-	-	M	-	-	-
		Ability to interpret integration of two streams CAD and CAM.	-	M	H	-	M	-	-	M	-	-	-	M
		Ability to use computer graphic techniques, Computer aided process planning techniques (CAPP) and Group Technology concepts.	-	M	H	-	-	-	M	-	M	-	-	M
		Ability to define tools used for computer aided Design (CAD) and Computer Aided manufacturing.	-	H	M	-	-	-	M	M	M	-	-	-
		Ability to explain geometric modeling techniques and recognize importance in modelling real life objects using CAD/CAM tools.	-	-	M	-	H	M	-	M	-	-	-	-
		Ability to interpret integration of two streams CAD and CAM.	-	M	-	H	M	-	-	M	-	M	-	-
GR11A4056	Instrumentation & Control systems	Ability to apply concept of mathematics, science, and engineering.	M		H		H		H		H		H	H
		Ability to explain the concepts of measurement of displacement, temperature and pressure using various devices.	M		M	M		M		H	H	H	M	M
		Ability to explain different types of measurements.	H		H		M		H		M		M	H
		Ability to use different transducers for displacement measurement.		M		M		M	H	H			M	M
		Ability to use the appropriate sensor to	M		M		H		H	H		H	M	M

		do the measurement including powering the sensor.												
		Ability to illustrate level, flow, speed, vibration measurements.	H	H			M		M		M		M	H
		Ability to categorize methods of usage of resistance strain gauge for bending compressive and tensile strains.	H		M			M		M		M	H	H
GR11A4123	Unconventional Machining Process	Ability to illustrate the applications of various processes and also will be able to select an appropriate process for a specific requirement.	M		H		H		M	M		H		H
		Ability to demonstrate different processes and to appreciate the effect of process parameters on surface integrity aspects.	M		H		M			M		H		M
		Ability to employ importance of different processes and how it effects the performance of a component during its service life.	M			H		H			H		H	H
		Ability to appreciate the use of EDM as a method for machining complex shapes.	M		M	M				H		H		
		Ability to analyze all the machining operations about how they occur, how to interpret and how to select the process.		H			H			M			M	
		Ability to identify and recommend a particular process for a specific application.	M		H			H		H		M		M
		Ability to distinguish the difference between various processes in their process characteristics.	H		M		M			M		H		
GR11A4057	Instrumentation and Control systems Lab	Ability to analyze Instrumentation systems and their applications to various industries.	H			M		H		M		H		H
		Ability to apply the working principles and design of Instruments used in the measurement of Quantities like displacement, temperature and pressure.	M		M				H	H	H			
		Ability to review, prepare and present technological developments	H		M		M		M		H			M
		Ability to analyze errors, integrate and interpret different types of measurements.	H		M		H			H			H	
		Ability to illustrate load, flow, speed, vibration measurements.	H			H		M				M		
		Ability to establish a												

		course of action to solve problems.	M						H		H			H	
		Ability to apply concept of mathematics, science, and engineering to the measuring Instruments.	H		H		H				M				
GR11A4019	Computer Aided Design Lab	Ability to define tools used for computer aided Design (CAD) and Computer Aided manufacturing.	H	M	M	M	-	-	-	-	-	-	-	-	
		Ability to explain geometric modelling techniques and recognize importance in modelling real life objects using CAD/CAM tools.	M	-	-	H	-	M	-	-	-	-	-	-	
		Ability to interpret integration of two streams CAD and CAM.	H	M	-	M	-	-	-	-	-	-	M	-	
		Ability to use computer graphic techniques, Computer aided process planning techniques (CAPP) and Group Technology concepts.	H	-	M	-	-	M	M	-	-	-	-	-	
		Ability to appraise CNC programming using Numerical Control codes (NC) and Automatically programmed tools (APT) compared to conventional machining.	M	M	-	H	-	-	M		-	-		-	
		Ability to recognize the importance of implementation of automation in phases of design and manufacturing industries.	H	M	-	M	-	-	M	-	-	-	-	-	
		Ability to create or develop product life cycle of any product.	M	-	-	M	H	M	-	-	-	-	M	-	
GR11A4094	Production Drawing Practice Lab	Ability to perform improved basic sketching techniques	-	-	H	M	-	H	M	-	-	-	-	-	
		Ability to draw Orthographic Projections and sections	M	-	H	M	-	-	-	-	M	-	-	-	
		Ability to design Production Drawing Assemblies required to Industry	M	M	H	-	-	-	-	-	-	-	-	-	
		Ability to estimate various fits, limits and tolerances	M	M	H	-	M	-	-	-	-	H	-	-	
		Ability to study the Existing Assembles	-	M	H	-	-	-	-	-	-	-	-	-	
		Ability to illustrate Different Sections of Geometries	M	-	M	-	H	-	-	M	-	-	-	-	

		Ability to express the views of Drawings	-	M	M	-	H	-	-	M	-	-	-	M
IV Year II Semester														
GR11A4095	Production Planning Control	Ability to apply the concept of production planning and scheduling to meet the target manufacturing sector	H	-	-	M		-	-	-	M	-	-	-
		Ability to build up and interaction with all resource departments for resource balancing economic manner	M		M	H					M			
		Ability to perform effectively on inventory management and application of control system for material management		M		H			M					
		Ability to solve problems by Routing Procedure	H	M				M						
		Ability to apply ERP system for customer requirement planning and compare integration	M	H	-	-	-	-	-	-	M	-	-	M
		Ability to develop the program based quality, cost and delivery requirements through planning, scheduling and control	M	H	-	M	M	-	-	-	-	-	-	-
		Ability to develop forecasting methods for proper planning.	H	-	-	M	-	-	-	-	M	-	-	-
GR11A4088	Power plant Engineering	Ability to find the resources of energies available in India for Power Production by Thermal and Nuclear Processes	H	-	M	-	-	-	-	-	-	-	-	M
		Ability to analyze the processes and cycles followed in Thermal Power Plants and nuclear power plants and Components used in the power plants and identify the losses to get better efficiency.	M	H	-	M	-	-	-	-	-	-	-	M
		Ability to apply the concept gained by analyzing the steam power plants, steam generators and gasTurbine power plants, to improve the efficiency and reduce the thermal losses.	M	H	-	M	-	-	-	-	-	-	-	M
		Ability to apply the concept in												

		calculating the Power Load Calculations and Distribution.	M	H	M	M	-	-	-	-	-	-	-	M
		Ability to identify the methods for the Economies of Power Generation and Power plant instrumentation	M	H	-	M	-	M	M		-	-	-	-
		Ability to analyze the efficiency of nuclear power plant	M	H	-	M	-	M	M	-	-	-	-	M
		Ability to apply nuclear power techniques in day to day life for better efficiency	M	-	H	M	-		-	-	-	M	-	M
GR11A4084	Plant Layout &Material Handling	Ability to Apply the concept of production planning and scheduling to meet the target manufacturing sector	M	M	H	M	-	-	-	-	-	-	M	-
		Ability to build up and interaction with all resource departments for resource balancing economic manner	-	M	H	-	-	-	H	H	M	-	M	-
		Ability to perform effectively on inventory management	-	-	-	H	H	H	H	-	M	-	-	-
		Ability to solve problems by Routing Procedure	H	M	M	-	-	-	-	-	-	-	M	-
		Ability to manage and apply the control system for material management	-	-	M	M	-	-	-	-	-	M	M	M
		Ability to analyze layout in shop floor	-	-	M	H	-	-	M	-	-	-	M	-
		Ability to optimize the material handling in shop floor to the productivity												
GR11A4013	CAM & Mfg. sim Lab	Ability to illustrate the constructional features of Computer Numerical Control (CNC) Lathe and Milling Machines.	-	M	H	-	-	M	-	-	-	-	-	-
		Ability to demonstrate the CNC programming of Lathe and Milling machines (i.e. G and M codes) and Automated Programming Tools (APT) programming.	-	-	H	-	-	-	M	-	M	-	-	-
		Ability to develop the CNC programs for turning operations using basic codes and cycles	M	-	-	H	-	-	-	-	-	-	M	H
		Ability to develop the CNC programs for milling operations using	H	M	H	H	M	-	-	-	-	-	-	-

		basic codes and cycles												
		Ability to create the components by performing the operations on the CNC lathe and Milling machines.	H	-	M	M	-	-	-	-	-	-	-	-
		Ability to develop the ATP programs for turning operations using basic codes and cycles	M	M	-	-	-	-	M	-	H	-	-	-
		Ability to develop the ATP programs for milling operations using basic codes and cycles	H	-	M	-	-	-	-	-	-	-	M	-
GR11A4110	**Seminar**	Ability to work in actual working environment.	H	H	H	H	H	H	H	H	H	H	H	H
		Ability to utilize technical resources	H	H	H	H	H	H	H	H	H	H	H	H
		Ability to write technical documents and give oral presentations	H	H	H	H	H	H	H	H	H	H	H	H
		Ability to impart concept in different aspects of concept domains.	H	H	H	H	H	H	H	H	H	H	H	H
		Ability to make them aware of concept in industry perspective and new industry trends	H	H	H	H	H	H	H	H	H	H	H	
		Ability to build confidence and improve communication skills.	H	H	H	H	H	H	H	H	H	H	H	
		Ability to collect ideas through literature survey about new innovations, analyze and present them.	H	H	H	H	H	H	H	H	H	H	H	
GR11A4018	**Comprehensive Viva**	Ability to assess concept in the subject and the project.	H	H	H	H	H	H	H	H	H	H	H	H
		Ability to practice technically.	H	H	H	H	H	H	H	H	H	H	H	H
		Ability to integrate technical question through all the years of study.	H	H	H	H	H	H	H	H	H	H	H	H
		Ability to express and communicate.	H	H	H	H	H	H	H	H	H	H	H	H
		Ability to evaluate technical confidence.	H	H	H	H	H	H	H	H	H	H	H	H
		Ability to express and communicate.	H	H	H	H	H	H	H	H	H	H	H	H
		Ability to evaluate technical confidence.	H	H	H	H	H	H	H	H	H	H	H	H
		Ability to interpret ideas and thoughts into practice in a project.	H	H	H	H	H	H	H	H	H	H	H	H
		Ability to analyze the gap between theoretical and practical concept.	H	H	H	H	H	H	H	H	H	H	H	H

GR11A4018	**Main Project**	Ability to compose technical presentation in the conferences.	H	H	H	H	H	H	H	H	H	H	H
		Ability to develop organizational skills and team work.	H	H	H	H	H	H	H	H	H	H	H
		Ability to debate for technical discussions.	H	H	H	H	H	H	H	H	H	H	H
		Ability to prepare for publishing papers in journals.	H	H	H	H	H	H	H	H	H	H	H
		Ability to propose for the patent rights for the projects.	H	H	H	H	H	H	H	H	H	H	H

2.2.2 Explain how modes of delivery of courses help in attainment of the POs (10) Institute Marks : 10.00

(Describe the different course delivery methods/modes (e.g. lecture interspersed with discussion, asynchronous mode of interaction, group discussion, project etc.) used to deliver the courses and justify the effectiveness of these methods for the attainment of the POs. This may be further justified using the indirect assessment methods such as course-end surveys.)

Different delivery methods are employed with individuals and groups. Some implementation techniques, however, are common to most programs. They include the following:

Lectures / Presentation: These are the effective ways of achieving educational objectives and outcomes synchronously. The course objectives and outcomes could not be better achieved without these. Lectures are the best ways to get facts, make students think and get better in their attitudes. These make sure that the basic concept of the course is covered which improves the ability to design, formulate and solve the problems. Modes of delivery of lectures are PPT presentations and OHP presentations.

Guest Lectures / Expert Lectures: The invitation of guest speakers from various eminent institutes and industries helps the students and faculty to understand the current trends in various courses which leads to attainment of PO's. External resource persons also add value to the program, and help students to realize the link between education and the world outside along with professional responsibilities.

Seminars / Workshops: Department organizes seminars and workshops in topics of current relevance and interest to both students and faculty. These serve as a platform for sharing knowledge / expertise in advanced areas which results in collaborative attempt for further enhancement of the skills, techniques and modern engineering tools necessary for their engineering practice.

Project Work: Mini and Main Project works in the curriculum gives practical and analytical exposures to students. They can learn and apply subject knowledge while implementing project. This will empower them to work in teams, learn how to gather data and systematically arrange it in an understandable form.

Road shows: Road shows are organized for display of project works for peers / expert's evaluation and source of inspiration and information for others.

Mentoring and Counseling: Mentoring concepts are integral part of the curriculum. All faculty members play an important role in counseling and motivating the students which helps in augmenting the program. It prepares students adequately for contemporary issues.

Educational / Industrial Tours: Another delivery strategy includes visits and educational/ Industrial tours. Resource centers, work places and others place of interest, help to explore all opportunities that have an impact on students. It allows students to think and make realistic decisions. This has proved successful in career exploration, decision making and molding them as life- long learners.

Certification Courses: With technology advancing at a rapid pace, opportunities for advanced applications of software are limitless. Certification courses will update the student skills and broaden their knowledge in the course which enhances their employability.

Research projects: Encourage students to carry out small research projects on their own empowering them to know how to gather data and systematically arrange it in an understandable form. Involving students in research and consultancy projects handled by faculty members help the students in getting exposure to real time field problems.

E-Resources: Faculty provides course information and peripheral knowledge on the web so that students can asynchronously accept the same. Students are motivated to access the online video lectures and course material of reputed institutes.

Attainment of POs using different delivery methods

Delivery Methods	Program Outcomes											
	a	b	c	d	e	f	g	h	i	j	k	l
Lectures/Presentation	X	X	X	X								
Guest Lecturers/Expert Lecturers					X	X	X					
Seminars/Workshops					X					X		X
Project Work			X	X				X	X		X	
Road Shows								X		X	X	
Mentoring and Counseling						X		X				X
Educational/Industrial												

Tours			X			X					X	
Certification Courses					X					X		X
Research Projects					X					X		
e-Resources		X	X	X							X	X

2.2.3 Indicate how assessment tools used to assess the impact of delivery of course/course content contribute towards the attainment of course outcomes/programme outcomes (10)

Institute Marks : 10.00

(Describe different types of course assessment and evaluation methods (both direct and indirect) in practice and their relevance towards the attainment of POs.)

Assessment Tools

S.No	Method	Assessment Tool	Description	Contribution towards attainment of COs (%)	Contribution towards attainment of POs(%)
1	Direct	Mid Exams	Objective, Subjective exams	85	90
2		End Exams	Subjective written exams	90	85
3		Assignments	Course wise assignments	60	90
4		Viva	Course / Lab wise viva, Comprehensive viva	75	95
5		Seminars	Individual Seminars, Group seminars	70	80
6		Lab Exams	Internal and External Lab exams	85	90
7		Projects	Mini & Major projects evaluation	95	90
8	Indirect	Student Exit Survey	Passing out students	45	85
9		Parent Survey	Parent of exit students	60	85
10		faculty Survey	Suggestions on academic improvement	85	90
11		Alumni Survey	Old batches of the students	58	90
12		Employer Survey	Industries which recruits	85	88
13		Industry Survey	Leading industry in the domain of particular programme	80	89

Assessment of Programme Outcomes by both direct and indirect methods

Direct Assessment			
PO	**Contributing Courses**	**Attainment %**	**Average attainment**
a	GR14A1001 Linear Algebra and Single Variable Calculus	68.3	83.2
	GR14A1002 Advanced Calculus	62.5	
	GR14A1003 Transform Calculus and Fourier Series	88.3	
	GR14A1004 Numerical Methods	83.3	
	GR14A1008 Engineering Chemistry	83.1	
	GR14A2011 Probability and statistics	82.8	
	GR14A1006 Physics for Engineers	83.3	
	GR14A1011 Computer Programming and data structures	77.5	
	GR14A1012 Engineering Mechanics - STATICS	76.5	
	GR14A1020 Engineering Mechanics – DYNAMICS	76.7	
	GR14A2021 Engineering Thermodynamics	85.8	
	GR14A2027 Production Technology	87.4	
	GR14A2020 Mechanics of Solids	77.6	
	GR14A1030 Engineering Chemistry Lab	100	

	GR14A1028 Computer Programming and data structures Lab	91.6	
	GR14A1029 Engineering Physics Lab	96.6	
	GR14A2030 Advanced mechanics of Solid	86.7	

Direct Assessment			
PO	**Contributing Courses**	**Attainment %**	**Average attainment**
b	GR11A3091 Thermal Engineering Lab	99.2	94.5
	GR14A2025 Mechanics of Solids Lab	98.5	
	GR11A3066 Machine Tools	92.4	
	GR14A2033 Fluid Mechanics and Hydraulic Machinery Lab	97.9	
	GR14A2022 Material Science and Metallurgy	79.1	
	GR14A2024 Material Science and Metallurgy Lab	99.2	
	GR11A3059 Heat Transfer Lab	90	
	GR11A4057- Instrumentation and control system lab	97	
	GR11A3057 Heat Transfer	96.9	

Direct Assessment			
PO	**Contributing Courses**	**Attainment %**	**Average attainment**
c	GR14A1023 Engineering Graphics	96.6	94
	GR14A2023 Machine Drawing Lab	90.3	
	GR14A2019 Kinematics of Machinery	91	
	GR11A3045 Dynamics of Machines	92.4	
	GR114056- Instrumentation and Control Systems.	97.5	
	GR11A3035 Design of Machine Members -I	90.1	
	GR11A3036 Design of Machine Members - II	93.1	
	GR11A4079 Operations Research	95.4	
	GR11A4095 Production Planning Control	99.2	
	GR11A4094 Production Drawing Practice Lab	97	
	GR11A4084 Plant Layout &Material Handling	99.2	

Direct Assessment			
PO	**Contributing Courses**	**Attainment %**	**Average attainment**
d	GR14A1024 Business Communication and soft skills	100	97.9
	GR11A2073 Advanced Eng. Com. Lab	100	
	GR14A1025 Engineering Workshop	97.5	
	GR14A2001-Environmental Science	91.6	
	GR11A3064 Industrial Oriented Mini Project	100	

Direct Assessment			
PO	**Contributing Courses**	**Attainment %**	**Average attainmentattainment**
	GR14A2021 Engineering Thermodynamics	86	
	GR14A2028 Fluid Mechanics and Hydraulic Machinery	92.3	
	GR11A3035 Design of Machine Members		

e	-I	90.1	91.6
	GR11A3003 Applied Thermodynamics - II	92.4	
	GR11A4042 Finite Element Methods	89.3	
	GR11A4098 Plant layout and Material Handling	88.5	
	GR11A4088 Power plant Engineering	98.5	
	GR11A4123- Unconventional Machining Process.	96.2	

Direct Assessment			
PO	**Contributing Courses**	**Attainment %**	**Average attainment**
f	GR11A4056-Instrumentation&Control System	90.8	93.6
	GR11A4084-Plant Layout & Material Handling	98.4	
	GR14A2001- Environmental Science	91.6	

Direct Assessment			
PO	**Contributing Courses**	**Attainment %**	**Average attainment**
g	GR14A1005 English	95.8	98.5
	GR14A1024 Business Communication and soft skills	100	
	GR11A2073 Advanced Eng. Com. Lab	100	
	GR11A4110 Seminar	98.4	

Direct Assessment			
PO	**Contributing Courses**	**Attainment %**	**Average attainment**
h	GR11A3064 Industrial Oriented Mini Project	100	97.9
	GR14A2001- Environmental Science.	91.6	
	GR11A4018 Main Project	100	
	GR11A4018 Comprehensive Viva	100	

Direct Assessment			
PO	**Contributing Courses**	**Attainment %**	**Average attainment**
i	GR14A2027 Production Technology	87.4	91.7
	GR11A4012 CAD/ CAM	98.5	
	GR11A4042 Finite Element Methods	89.3	
	GR11A4019 Computer Aided Design Lab	97.5	
	GR14A2021 Engineering Thermodynamics	86	

Direct Assessment			
PO	**Contributing Courses**	**Attainment % %**	**Average attainment**
j	GR11A2071 Managerial econ. & Financial analysis	94.7	94
	GR14A2026 Electrical and Electronics Technology	83.2	
	GR11A3063 Industrial Management	98.4	
	GR14A2032 Electrical and Electronics Technology Lab	100	

Direct Assessment			
PO	**Contributing Courses**	**Attainment %**	**Average attainment**
k	GR14A1011 Computer Programming and data structures	77.5	93.8
	GR11A3072 Metrology & Surface Engineering	96.2	
	GR14A1025 Engineering Workshop	97.5	
	GR11A3067 Machine Tools Lab	98.5	
	GR11A3091 Thermal Engineering Lab	99.2	
	GR11A3008 Automobile Engineering	92.4	
	GR14A1026 IT Workshop	100	
	GR14A2022 Material Science and Metallurgy	79.1	
	GR14A2031 Production Technology Lab	99.3	
	GR11A3073 Metrology Lab	98.5	

Direct Assessment			
PO	**Contributing Courses**	**Attainment %**	**Average attainment**
l	All the core Engineering Laboratories	97.5	90.15
	All the core Engineering Courses	82.8	

2.2.4 Indicate the extent to which the laboratory and project course work are contributing towards attainment of the POs (10) Institute Marks : 10.00

(Justify the balance between theory and practical for the attainment of the POs . Justify how the various project works (a sample of 20% best and average projects from total projects) carried as part of the programme curriculum contribute towards the attainment of the POs.)

Association between courses and laboratories

Course	Associated Laboratory
GR14A1011-Computer Programming and Data Structures	GR14A1028:Computer Programming &Data Structures Lab
GR14A1006- Physics for Engineers	GR14A1029:Engineering Physics Lab
Basic Engineering Subjects	GR14A1025:Engineering Workshop
	GR14A1026:IT Workshop
GR14A1008-Engineering Chemistry	GR14A1030: Engineering Chemistry Lab
GR14A1005-English	GR14A1024: Business Communication and soft skills
	GR11A2073: Advance English Communication skills
GR14A2028:Fluid Mechanics & Hydraulic Machinery	GR14A2033: Fluid Mechanics & Hydraulic Machinery Lab
GR14A2022 : Material Science and Metallurgy	GR14A2024: Material Science and Metallurgy lab
GR14A2020: Mechanics of Solids	GR14A2025 : Mechanics of Solids Lab
GR11A3026: Electrical and Electronics Technology	GR14A2032: Electrical and Electronics Technology Lab
GR14A3066: Machine Tool	GR11A3067: Machine Tools Lab
GR11A3057: Heat Transfer	GR11A3059: Heat Transfer Lab
GR11A3072 : Metrology & Surface Engineering	GR11A3073: Metrology Lab
GR11A4012: CAD/ CAM	GR11A4019: Computer Aided Design Lab
GR14A2027: Production Technology	GR14A2031: Production Technology Lab
GR11A4056: Instrumentation & Control System	GR11A4057: Instrumentation & Control System Lab
GR11A3003: Applied Thermodynamics - II	GR11A3091: Thermal Engineering Lab

Laboratory tasks towards the attainment of Program Outcomes

Laboratory tasks	Type	Program Outcomes
Computer Programming &Data Structures Lab		
1. Write a C program to find the sum of individual digits of a positive integer.	Problem Analysis	a,b,c,e,k,l
2. Fibonacci Sequence	Problem Analysis	a,b,c,e,k,l
3. Write a C program to generate all the prime numbers between 1 and n, where n is a value supplied by the user.	Problem Analysis	a,b,c,e,k,l
4. Write a C program to calculate the following Sum: Sum=1-x2/2!+x4/4!-x6/6!+x8/8!-x10/10!	Problem Analysis	a,b,c,e,k,l
5. Write a C program to find the roots of a quadratic equation using if-else.	Problem Analysis	a,b,c,e,k,l
6. Write a C programs that use both recursive and non-recursive functions	Problem Analysis	a,b,c,e,k,l
7. To find the factorial of a given integer.	Problem Analysis	a,b,c,e,k,l
8. To find the GCD (greatest common divisor) of two given integers.	Problem Analysis	a,b,c,e,k,l
9. Write a C program to read in two numbers, x and n, and then compute the sum of this geometric progression: 1+x+x2+x3+……+xn	Problem Analysis	a,b,c,e,k,l
10. Write a C Program merging of two files in a single file	Problem Analysis	a,b,c,e,k,l
11. Write a C program to reverse the first n characters in a file.	Problem Analysis	a,b,c,e,k,l
12. Write a C Program to Sort a given list of integers using Bubble Sort Technique.	Problem Analysis	a,b,c,e,k,l
13. Write a C Program to Sort a given list of integers using Merge Sort Technique	Problem Analysis	a,b,c,e,k,l
14. Write a C Program to Sort a given list of integers using Quick Sort Technique	Problem Analysis	a,b,c,e,k,l
Engineering Physics Lab		
1. Measurements using Multimeter.	Demonstration	b,d,k,l
2. Measurement of voltage and Frequency using CRO.	Demonstration	a,c,d,k
3. B-H curve.	Problem Analysis	b,c,d,l
4. Determination of Dielectric constant.	Problem Analysis	a,d,k,l
5. Energy gap of a semi conductor	Problem Analysis	a,c,l
6. Study of magnetic field along the axis of a circular coil.	Problem Analysis	b,c,l
7. Study of Hall Voltage	Problem Analysis	b,k,l
8. Determination of carrier concentration and carrier mobility of a semiconductor.	Problem Analysis	a,c,e,k
9. Numerical Aperture of optical fiber.	Problem Analysis	b,c,e,l
10. Bending losses in optical fiber.	Problem Analysis	a,k,l
11. Air gap losses in optical fiber	Problem Analysis	a,c,l
12. Characteristics of LASER diode	Problem Analysis	a,b,l
Engineering Workshop		
1. Introduction to various types of wood such as Teak, Mango, Sheesham, etc. (Demonstration and their identification).	Engineering Practice	h,k,l
2. Introduction to fitting shop tools, common materials used in fitting shop.	Engineering Practice	h,k,l
3. Study, demonstration and identification of common electrical materials such as wires, cables, switches, fuses, PVC Conduits.	Engineering Practice	h,k,l
4. Introduction to tin -smithy shop, use of hand tools and accessories e.g. different types of hammers, hard and soft mallet, sheet and wire gauge, necessary allowance required during job fabrication, selection of material and specifications.	Engineering Practice	h,k,l

5. Introduction and demonstration of hand tools used in tin -smithy shop.	Engineering Practice	h,k,l
6. Introduction and demonstration of various raw materials used in sheet metal shop e.g. M.S. sheet, galvanized-iron plain sheet, galvanized corrugated sheet, aluminium sheets etc.	Engineering Practice	h,k,l
7. Preparation of a rectangle tray and open scoop/ funnel.	Engineering Practice	h,k,l
IT Workshop		
1. PC Hardware	Demonstration	a,c,l
2. Internet & World Wide Web	Demonstration	a,c,k
3. Productivity tools	Demonstration	b,c,k
4. Hardware Troubleshooting	Demonstration	a,c,l
5. Software Troubleshooting	Demonstration	a,c,k
6. Orientation & Connectivity Boot Camp	Demonstration	a,c,k
7. Web Browsers, Surfing the Web	Demonstration	a,c,l
8. Search Engines & Netiquette	Demonstration	b,k,l
9. Cyber Hygiene.	Demonstration	a,c,k
10. Productivity Tools	Demonstration	b,c,l
Engineering Chemistry Lab		
1. Conductometry: i. Conduct metric titration of strong acid vs strong base. ii. Conduct metric titration of mixture of acids vs strong base.	Demonstration	a,c,l
2. Potentiometry: i. Titration of strong acids strong base by potentiometry. ii. Titration of weak acid vs strong base by potentiometry.	Demonstration	b,k,l
3.Lubricants: i. Determination of viscosity of sample oil by redwood / Oswald's Viscometer ii. Determination of Surface tension of lubricants	Demonstration	a,b,k
1. Organic preparations.:i. Preparation of Aspirin ii. Preparation of Thiokol rubber	Demonstration	a,c,k
2. Complexometry.	Demonstration	a,c,k
3. Permanganometry	Demonstration	a,c,l
English Language Communication Skills Lab		
1. Introduction to the sounds of English –Vowels, Diphthongs & Consonants.	Demonstration	d,g,h
2. Situational Dialogues/Role-play.	Demonstration	d,g,h
3. 'Just A Minute' Sessions (JAM).	Demonstration	d,g,h
4. Describing Objects/Situations/People.	Demonstration	d,g,h
5. Information Transfer.	Demonstration	d,g,h
6. Debate.	Demonstration	d,g,h
7. Telephone Skills	Demonstration	d,g,h
8. Giving Directions	Demonstration	d,g,h
Mechanics Of Solids Lab		
1. To determine the resistance of a material to indentation using Brinnel's Hardness Test	Material testing	b,e,h,k,l
2. To determine the resistance of a material to indentation using Rockwell's Hardness Test	Material testing	b,e,h,k,l
3. To determine the resistance of a material to indentation using Vicker's Hardness Test	Material testing	b,e,h,k,l
4. To determine the rigidity modulus of a spring using Compression Test	Material testing	b,e,h,k,l
5. To determine the strength of material in tension using Tension Test	Material testing	b,e,h,k,l
6. To determine the strength of material under compression using		

Compression Test	Material testing	b,e,h,k,l
7. To determine the young's modulus of the given structural material using Cantilever Beam	Material testing	b,e,h,k,l
8. To determine the young's modulus of the given structural material using Simply Supported Beam	Material testing	b,e,h,k,l
9. To determine the young's modulus of the given structural material using Maxwell's Reciprocal Theorem	Material testing	b,e,h,k,l
10. To determine the young's modulus of the given structural material using Continuous Beam	Material testing	b,e,h,k,l
11. To determine the rigidity modulus of a given shaft material using Torsion Test	Material testing	b,e,h,k,l
12. To determine the ultimate shear strength of the given structural material using Direct Shear Test.	Material testing	b,e,h,k,l
Metallurgy Lab		
1. Preparation and study of the micro structure of Mild steel and Low carbon steel. 2. Preparation and study of the micro structure of High carbon steel and Stainless steel. 3. Preparation and study of the micro structure of Grey cast iron and White cast Iron. 4. Preparation and study of the micro structure of Malleable cast iron and Spheroidal cast iron. 5. Preparation and study of the micro structure of Alluminium. 6. Preparation and study of the micro structure of copper. 7. Preparation and study of the micro structure of Titanium (Ti6Al4V). 8. Preparation and study of the micro structure of Inconel 718 –Super alloy. 9. Study of the microstructure of Heat treated steels. 10. Hardenability of steels by Jominy End Quench test. 11. Find out the hardness of various treated and untreated steels.	Metallurgical Analysis	e,h,i,k
Production Technology Lab		
I. CASTING: 1. Pattern Design and making-for one casting drawing. 2. Sand properties testing-Exercise-for strengths and permeability–1 3. Moulding, Melting and Casting-1Exercise	Manufacturing	h,k,l
II. WELDING: 1. ARC Welding Lap & Butt Joint-2Exercises 2. Spot Welding-1Exercise 3. TIG Welding-1Exercise 4. Plasma welding and Brazing - 2 Exercises (Water Plasma Device)	Manufacturing	h,k,l
III. MECHANICAL PRESS WORKING: 1. Blanking & Piercing operation and study of simple, compound and progressive press tool. 2. Hydraulic Press: Deep drawing and extrusion operation. 3. Bending and other operations	Manufacturing	h,k,l
IV. PROCESSING OF PLASTICS: 1. Injection Moulding 2. Blow Moulding	Manufacturing	h,k,l
Fluid Mechanics and Hydraulic Machines Lab		
1. Verification of Bernoulli's theorem and draw the HGL, TEL	Analysis	b,c,e,h,i,k,l
2. Determine the Coefficient discharge of Venturi meter and Orifice meter	Design and Analysis	b,c,e,h,i,k,l
3. Determine the Darcy's Friction factor in various diameters of pipes	Design and Analysis	b,c,e,h,i,k,l
4. Determine the Minor Losses (Different Valve connections, Sudden Expansion, Sudden Contraction, Bends, joints) in various pipe fittings	Design and Analysis	b,c,e,h,i,k,l
5. Determine the coefficient of impact of Jet on given Vanes	Design and Analysis	b,c,e,h,i,k,l
6. Determine the overall efficiency of Pelton wheel Turbine at Constant Speed and Constant Head	Design and Analysis	b,c,e,h,i,k,l
7. Determine the overall efficiency of Francis Turbine at Constant Speed	Design and	

and Constant Head	Analysis	b,c,e,h,i,k,l
8. Determine the overall efficiency of Kaplan Turbine at Constant Speed and Constant Head	Design and Analysis	b,c,e,h,i,k,l
9. Determine the overall efficiency of Single Stage Centrifugal pump at Constant Speed and Constant Head	Design and Analysis	b,c,e,h,i,k,l
10. Determine the overall efficiency of Multistage Centrifugal pump at Constant Speed and Constant Head	Design and Analysis	b,c,e,h,i,k,l
11. Determine the overall efficiency of Reciprocating pump at Constant Speed and Constant Head	Design and Analysis	b,c,e,h,i,k,l
Thermal Engineering Lab		
1. I.C. Engines Valve/Port Timing Diagrams	Demonstration	b,c,l
2. I.C.Engines Performance Test(4-StrokeDieselEngines)	Demonstration	b,c,l
3. I.C. Engines Performance Test on 2-Stroke Petrol	Demonstration	b,c,l
4. EvaluationofEnginefrictionbyconductingMorseteston4-StrokeMulti cylinderPetrolEngineandretardationandmotoringteston4-stroke diesel engine	Demonstration	b,c,l
5. I.C.Engines Heat Balance	Demonstration	b,c,l
6. I.C. Engines Air/Fuel Ratio and Volumetric Efficiency	Demonstration	b,c,l
7. Performance Test on Variable Compression Ratio Engines, economical speed test.	Design and Analysis	b,c,l
8. Performance Test on Reciprocating Air–Compressor Unit	Design and Analysis	b,c,l
9. Study of Boilers	Design and Analysis	b,c,l
Machine Tools Lab		
1. Preparation of Work specimen for lathe, drilling, shaping, slotting and milling	Design and Manufacturing	h,k,l
2. Plane &Step Turning operation on lathe Machine	Design and Manufacturing	h,k,l
3. Taper Turning on Lathe Machine	Design and Manufacturing	h,k,l
4. Thread cutting operation on-lathe machine.	Design and Manufacturing	h,k,l
5. Knurling operation on-lathe machine.	Design and Manufacturing	h,k,l
6. Drilling operation and boring operation on lathe machine	Design and Manufacturing	h,k,l
7. Drilling and counter boring operation on lathe machine	Design and Manufacturing	h,k,l
8. Drilling and internal thread cutting using Tapping	Design and Manufacturing	h,k,l
9. Edge preparation using Shaping machine	Design and Manufacturing	h,k,l
10. Key way cutting operation in Slotting machine	Design and Manufacturing	h,k,l
11. Face milling operation using Milling machine	Design and Manufacturing	h,k,l
12. Cylindrical Surface Grinding	Design and Manufacturing	h,k,l
Metrology Lab		
1. Measurement of lengths, heights, diameters by vernier calipers micrometers etc.	Dimension and accuracy checking	b,e,h,k
2. Measurement of bores by internal micrometers and dial bore indicators.	Dimension and accuracy checking	b,e,h,k
3. Use of gear teeth, Vernier calipers and checking the chordal addendum and chordal height of spur gear.	Dimension and accuracy checking	b,e,h,k
4. Machine tool “alignment of test on the lathe.	Dimension and accuracy checking	b,e,h,k
5. Machine tool alignment test on milling machine.	Dimension and accuracy checking	b,e,h,k
6. Tool maker’s microscope and its application	Dimension and accuracy checking	b,e,h,k
7. Angle and taper measurements by Bevel protractor, Sine bars,	Dimension and accuracy checking	b,e,h,k
8. Use of spirit level in finding the flatness of surface plate.	Dimension and accuracy checking	b,e,h,k
Heat Transfer Lab		

1. Composite Slab Apparatus – Overall heat transfer co-efficient.	Analysis	b,c,l
2. Heat transfer through lagged pipe.	Analysis	b,c,l
3. Heat Transfer through a Concentric Sphere	Analysis	b,c,l
4. Thermal Conductivity of given metal rod.	Analysis	b,c,l
5. Heat transfer in forced convection apparatus.	Analysis	b,c,l
6. Heat transfer in natural convection	Analysis	b,c,l
7. Parallel and counter flow heat exchanger.	Analysis	b,c,l
8. Emissivity apparatus.	Analysis	b,c,l
9. Stefan Boltzman Apparatus.	Analysis	b,c,l
10. Heat transfer in drop and film wise condensation.	Analysis	b,c,l
11. Critical Heat flux apparatus.	Analysis	b,c,l
12. Study of heat pipe and its demonstration.	Analysis	b,c,l
Instrumentation and Control Systems Lab		
1. Calibration of Strain gauge, Load cell, Speed, LVDT, Thermocouples, Pressure gauge	Measurement Skills	e,k,l
2. Calibration of transducer for temperature measurement.	Measurement Skills	e,k,l
3. Study and calibration of LVDT transducer for displacement measurement.	Measurement Skills	e,k,l
4. Calibration of strain gauge for temperature measurement.	Measurement Skills	e,k,l
5. Calibration of thermocouple for temperature measurement.	Measurement Skills	e,k,l
6. Calibration of capacitive transducer for angular displacement.	Measurement Skills	e,k,l
7. Study and calibration of photo and magnetic speed pickups for the measurement of speed.	Measurement Skills	e,k,l
8. Calibration of resistance temperature detector for temperature measurement.	Measurement Skills	e,k,l
9. Study and Calibration of a rotameter for flow measurement.	Measurement Skills	e,k,l
10. StudyanduseofaSeismicpickupforthemeasurementofvibrationamplitude of an engine bed at various loads	Measurement Skills	e,k,l
11. Study and calibration of McLeodgauge for low pressure.	Measurement Skills	e,k,l
CAD/CAM Lab		
1. Modeling of Screw Jack, Eccentric, Shock quick acting hold down clamp, Butterfly valve, Gear puller, Kant-twist clamp	Design	c,e,h,l
2. Assembly of Screw Jack, Eccentric, Shock quick acting hold down clamp, Butterfly valve, Gear puller, Kant-twist clamp	Design	c,e,h,l
3. Analysis of stresses in beams	Analysis	c,e,h,l
4. Demonstrate the CNC programming of Lathe and Milling machines (i.e. G and M codes) and Automated Programming Tools (APT) programming.	Automation in manufacturing	c,e,h,l
5. Develop the CNC programs for turning operations using basic codes and cycles	Automation in manufacturing	c,e,h,l
6. Develop the CNC programs for milling operations using basic codes and cycles	Automation in manufacturing	c,e,h,l

Description of Laboratories

Engineering physics lab is exclusively used, with an area of 120 Sq.mt, and it accommodates 36 students and sufficient exercises are conducted. It is equipped with computers, equipments, meters and required software. Qualified faculty, staff with good condition of lab equipment has created an ambience for learning. In this lab student learn how to measure values with multi meter, measure voltage, current and frequency using CRO, experiment on B-H curve, dielectric constant, energy gap in semiconductors, about magnetic field, Hall voltage, carrier concentration and carrier mobilation in semiconductors, optical fibers and laser diodes. In this lab student learns design, mathematical modeling and complex analysis of various physical components.

Engineering workshop is exclusively used, with an area of 200 Sq.mt, and it accommodates 65 students and sufficient exercises are conducted. It is equipped with equipment's and tools. Qualified faculty, staff with good condition of lab equipment has created an ambience for learning. In this workshop student learns carpentry, fitting, tin-smithy, electrical wiring, foundry, welding, plumbing and about power tools. In this workshop students learn how to use various tools for engineering applications.

IT workshop is exclusively used, with an area of 66 Sq.mt, and it accommodates 36 students and sufficient exercises are conducted. It is equipped with computer components, peripherals, equipments and tools. Qualified faculty, staff with good condition of lab equipment has created an ambience for learning. In this workshop student learns pc hardware, hardware trouble shooting and software trouble shooting, world wide web surfing, booting, search engines, latex, word, excel and conversions. In this workshop students learn how to use computer for various applications in engineering course.

Engineering chemistry lab is exclusively used, with an area of 226 Sq.mt, and it accommodates 36 students and sufficient exercises are conducted. It is equipped with Computers, equipments, meters and required software. Qualified faculty, staff with good condition of lab equipment has created an ambience for learning. In this lab student learn how to measure values with volumetric analysis, mineral analysis, colorimetry, instrumental analysis and organic preparations. In this lab student learns design, mathematical modeling and complex analysis of various chemical components.

English language and communication lab is exclusively used, with an area of 67 Sq.mt, and it accommodates 36 students and sufficient exercises are conducted. It is equipped with Computers, audio, video aids, required software. Qualified faculty, staff with good condition of lab equipment has created an ambience for learning. In this lab student leans about communication, interpersonal, soft personnel skills, Interview skills, body language, etiquettes, oral, written skills and phonetics.

Mechanics of Solids Lab, Material properties such as, tensile strength, hardness, impact strength, shear strength etc are experimentally measured using torsion, impact, Brinell and Rockwell Hardness testing machines. A 40- tonne capacity universal testing machine with necessary software for interfacing computer has been installed to study the details for checking mechanical properties of the materials. The experiments will be very useful for material characterization which is essential for design and manufacture of industrial equipment. The students gain knowledge for determination of mechanical properties of materials, failure analysis and new equipment design.

Metallurgy and Material Science Lab, various Ferrous and Non-ferrous materials are studied with help of micro scopes for their microstructure, hardness, toughness and tensile strengths. Computer software with camera for analyzing and strong microstructure data is available. The lab is equipped with latest equipment in tune with the technological advancement in the relevant field. Experiments will be useful for metallurgical investigation required in manufacturing industries to analyze the micro-structural features of various metal and alloys, also will be helpful in failure analysis.

Production Technology Lab consists of various production processes like foundry, forging, Welding and plastic moulding. The laboratories are provided with excellent equipment in frontier areas of technology. The techniques practiced in the Production Technology Lab will be useful in various manufacturing industries for batch and mass production requirements. The students gain knowledge in various techniques and skills used in different sectors.

Fluid Mechanics and Hydraulic Machinery Lab, Pelton turbine and Francis turbine/ Kaplan turbine are installed for studying the various operational characteristics like efficiency, run away speeds. Reciprocating and centrifugal pumps are installed to study their performance and characteristics. Equipment like jet apparatus, Bernoulli's equipment, pipe flow analysis apparatus have been installed for studying flow velocities. Power plant equipments require understanding of various hydraulic systems and machinery. The exercises will be very useful for performance analysis of critical equipments like hydel power plants, turbines and pumps.

Thermal Engineering Lab, Petrol and Diesel engines are studied for their characteristics, like thermal efficiency fuel combustions, power output, economic speed etc. The latest rigs have been provided to take care of exhaustive study leading to research. A test rig has been provided the characteristic of refrigerator and air conditioning. The expertise for design and modeling of IC engines, Refrigeration, Air-Conditioners and Compressors. The exercises are designed to give capability of interpretation of experimental results for engineering design and analysis.

Machine Tools Lab, students will get hands on experience on Lathes, Milling, Drilling, Shaping, Slotting and Grinding Machines. The practice given on various machine tools will help students to understand various techniques in manufacturing industries. Students gain expertise to manage workshops in various industries and will be able to effectively manage the labor in industries.

Heat Transfer Lab, Thermal conductivity, Heat transfer coefficient, Stefan - Boltzmann constant for various materials are evaluated using various apparatus. These test rigs have been standardized for conducting experiments so that the students will have hand on experience in the field of heat transfer. The exercises are designed for gaining knowledge in design and modeling of heat exchangers, piping required for various power plants and equipments. The experiments are useful for improving the knowledge of engineering analysis as well as interpretation of results, to enable design and analysis of various heat transfer equipment.

CAD / CAM Lab, CAD software and hardware in the solution of mechanical engineering problems. Computer graphics, computer aided geometry (space curves, splines, patches) design, solid modeling, optimization and an introduction to finite element method. Structural analysis and heat treatment analysis, development of NC code and providing suitable code and machinery have facilitated machining of simple components on CNC machines. CAD/CAM lab is having the excellent and latest versions of software which include Iron CADv-14, Pro-Engineering-Wild Fire, ANSYS, and CatiaV5, Solidworks & Auto CAD. The knowledge of engineering software will be useful for design, modeling of engineering structures, the pressure vessels and piping. The knowledge gained by using various types of software will enable the students to give best engineering solutions for any problem-solving situation.

Instrumentation and Controls Lab, Pressure, Temperature, Strain acceleration and vibration are measured using mechanical pneumatic and electro mechanic devices. The latest equipment in this field has been installed and facilities provided for testing and analysis in order that the students have hands on experience. The measurement skills are essential for mechanical engineers in tool rooms, various industries for quality control. The knowledge is essential for various industrial sectors like automobiles, power plants, machine tools and manufacturing industries.

Metrology Lab, the experiments are designed to gain expertise in measurements required for various machine tool manufacture and also the knowledge is essential for various industries and tool room requirements

Metal Forming Lab is developed for advanced research in the frontier areas of flow forming for strategic materials. The unique facilities like special purpose press, data acquisition systems, high temperature forming and testing facilities provide opportunities for advanced research. Latest softwares such as dynaform, LS-dyna are made available. The students acquire knowledge required for manufacture of various components by using different forming techniques. The experimental work will give in-depth knowledge to solve engineering problems during manufacture.

Mapping of Laboratories with Program Outcomes

Lab	Program Outcomes											
	a	b	c	d	e	f	g	h	i	j	k	l
Business Communication and soft skills						x			x	x		
IT Workshop		x	x		x							x
Engineering Chemistry Lab	x	x				x						
Engineering Workshop						x		x			x	
Engineering Physics Lab	x		x		x							
Computer Programming and data structures Lab		x	x		x							
Machine Drawing Lab		x	x	x								
Material Science and Metallurgy Lab		x	x	x					x			
Mechanics of Solids Lab		x		x	x						x	

Machine Tools Lab			x	x						X		
Hydraulics and Hydraulic Machinery Lab		x	x	x								
Production Technology Lab		x			x			x				
Electrical and Electronics Technology Lab		x	x				x					
Advanced Eng. Com. Lab	x	x		x					x			
Thermal Engineering Lab						x		x	x			
Computational Fluid Lab				x	x	x	x					
Metrology Lab			x	x			x					x
Heat Transfer Lab			x		x	x	x					
Instrumentation & Control System Lab			x	x								x
Computer Aided Design Lab				x	x	x					x	
Production Drawing Practice Lab				x	x							x
CAM & Mfg. sim Lab				x	x							x

Project work towards the attainment of Program Outcomes

Project Title	Type	PO
1. Development and characterization of particle board produced by various Bio-based adhesives.	Modeling and Analysis	b, c, e, k, l
2. Design and fabrication of 3D printer.	Proto type	a, h, k, l
3. Design and manufacturing of Nose Rib of an Aircraft using CNC machine.	Proto type	c, h
4. Experimental and computational analysis of a sintered copper wick heat pipe.	Manufacturing and Inspection	a, b
5. Fabrication of pneumatic sheet metal cutting machine.	Design and Prototype	c, h
6. An experimental investigation of dry sliding wear behavior of AA 6082 alloy	Design and Prototype	c, h
7. Development of Johnson cook model for aluminium 5052 for flow stress prediction	Design and Prototype	c, h
8. Wear behavior analysis on 316 LN stainless steel by liquid nitriding process	Design, Experimentation and Analysis	b, c, e, k, l
9. Machinability of AL alloy by turning operation – AN experimental investigation	Design, Experimentation and Analysis	b, c, e, k, l
10. Performance evolution of turning INCONEL coated carbide.	Experimentation and Analysis	b, c, e, k, l
11. Texture study of Zicronium alloy grade 4	Experimentation and Analysis	b, c, e, k, l
12. Design and analysis of composite marine propeller using ANSYS work bench	Modeling and Analysis	a, h, k, l
13. Advanced mechanical lift.	Manufacturing and	

	Inspection	a, b
14. Experimental and numerical analysis of thermo syphon heat pipe	Experimentation and Analysis	b, c, e, k, l
15. Thermo electric power generation by water heat energy.	Experimentation and Analysis	b, c, e, k, l
16. Fabrication of portable crop cutter and rotary filter.	Manufacturing and Inspection	a, b
17. Material characterization of Al 6061 at various temperatures.	Experimentation and Analysis	b, c, e, k, l
18. Increasing the performance of radiator using nano fluids	Experimentation and Analysis	b, c, e, k, l
19. Modeling and analysis aero plane wing using CATIA v5 & anasys	Modeling and Analysis	b, c, e, k, l

2.3 Assessment of the attainment of the Programme Outcomes (125) **Total Marks : 125.00**

2.3.1 Describe assessment tools and processes used for assessing the attainment of each PO (25) Institute Marks : 25.00

Describe the assessment process that periodically documents and demonstrates the degree to which the Programme Outcomes are attained. Also include information on:
a) A listing and description of the assessment processes used to gather the data upon which the evaluation of each the programme educational objective is based. Examples of data collection processes may include, but are not limited to, specific exam questions, student portfolios, internally developed assessment exams, senior project presentations, nationally-normed exams, oral exams, focus groups, industrial advisory committee;
b) The frequency with which these assessment processes are carried out.

1. Undergraduate program is for duration of four years. The courses are distributed taking care that some courses form prerequisite for the advanced courses and also adequate exposure is given before activities like mini project and main project are attempted.
2. Each semester has a planned assessment mechanism which includes continuous assessment and end semester examinations held. Mid examinations are conducted as part of summative assessments. Surveys are used as indirect methods periodically during the course and also at the end of the course and beyond the course duration when the graduate becomes an alumnus and an employee or an entrepreneur.
3. Assessment of achievement of PO involves both direct and indirect methods depending on type of outcome. The details of the assessment tools and periodicity of evaluation are listed below.

S.NO	Method	Assessment Tool	Description
1	Direct	Mid examination	Objective &Subjective written exams
2		End examination	Objective &Subjective written exams
3		Assignment / tutorials	Unit wise assignments / tutorials
4		Viva	Course / Lab wise viva, Comprehensive viva
5		Seminars	Individual Seminars, Group seminars, rubrics
6		Lab Exams	Internal and External Lab exams
7		Projects	Mini & Major projects evaluation
8	Indirect	Student Survey	End of each academic year
9		Student Exit Survey	Passing out students
10		Alumni Survey	Old batches of the students
11		Employer Survey	Industries which recruits

1. **Exams and assignments:** The results and the subsequent grade of pass in that course is based on end semester exam results and continuous assessments. Individual breakup is as follows.

As per GR14 regulations:

S. No	Component of assessment	Marks allotted	Type of assessment	Scheme of examination
1	Theory	30	Internal exams and continuous evaluation	Two mid semester examinations shall be conducted for 20 marks each for duration of 2 hrs. Average of two mid exams shall be considered Subjective – 15marks Objective – 5 marks Tutorials/Assignments – 5 marks

				Attendance – 5 marks
		70	Semester end examination	The semester end examination is for a duration of 3 hours.
2	Practical	25	Internal exams and continuous evaluation	Lab internal – 10 marks Record – 5 marks Continuous assessment – 5 marks Attendance – 5 marks
		50	Semester end examination	The semester end examination is for a duration of 3 hours.
3	Industry oriented mini project	25	Internal exams and continuous evaluation	Continuous assessment – 5 Marks Report – 5 marks Attendance – 5 marks Road show, evaluation by committee – 10 marks
		50	Semester end examination	Project presentation before committee consisting external examiner – 50 marks
4	Major project	50	Internal exams and continuous evaluation	Continuous assessment – 15 Marks Report – 5 marks Attendance – 5 marks Road show, evaluation by committee – 25 marks
		150	Semester end examination	Project presentation before committee consisting external examiner – 150 marks
5	Comprehensive viva	100	Evaluation committee	Overall understanding of all subjects by committee -100
6	Seminar	50	Evaluation committee	Efforts in collecting data and way of presentation in the form of report and oral is assessed by the committee – 50

As per GR11 regulations

S. No	Component of assessment	Marks allotted	Type of assessment	Scheme of examination
1	Theory	25	Internal exams and continuous evaluation	Two mid semester examinations shall be conducted for 25 marks each for duration of 110 minutes. Best of two mid exams shall be considered Subjective – 15marks Objective – 10 marks
		75	Semester end examination	The semester end examination is for a duration of 3 hours.
2	Practical	25	Internal exams and continuous evaluation	Lab internal – 10 marks Continuous assessment – 15 marks
		50	Semester end examination	The semester end examination is for a duration of 3 hours.
3	Industry oriented mini project	25	Internal exams and continuous evaluation	Continuous assessment – 15 Marks Road show, evaluation by committee – 10 marks
		50	Semester end examination	Project presentation before committee consisting external examiner – 50 marks
4	Major project	50	Internal exams and continuous evaluation	Continuous assessment – 25 Marks Road show, evaluation by committee – 25 marks
		150	Semester end examination	Project presentation before committee consisting external examiner – 150 marks
5	Comprehensive viva	100	Evaluation committee	Overall understanding of all subjects assessed by committee -100
6	Seminar	50	Evaluation committee	Efforts in collecting data and way of presentation in the form of report and oral is assessed by committee – 50

a. Listing and description of the assessment processes used to gather the data upon which the evaluation of each the program outcome is based. Examples of data collection processes may include, but are not limited to, specific exam questions, student portfolios, internally developed assessment exams, project presentations, nationally-normed exams, oral exams, focus groups, industrial advisory committee;

Assessment of Program Outcomes by both direct and indirect methods

1. Indicators are assigned for each PO for the degree of attainment of PO depending on type of assessment method.
2. Documentation is maintained at department or institution level depending on assessment method.
3. The above data is evaluated by program assessment committee to assess the degree of attainment of the POs and suggest suitable remedial measures if needed.
4. The following assessment processes are used for achievement of the Program Outcomes

Indirect assessment of attainment of POs is done through surveys. Opinions of the stake holders are collected through these surveys. Opinions of Alumni, employers, parents and students are collected at regular intervals. The questionnaire of the surveys are designed to address the attainment of POs. Student surveys are conducted at the end of each academic year. End of course survey is conducted with outgoing students at the end of their course. Alumni, employer and parent surveys are conducted once every year.

Mapping of POs to questions of the mid examinations is also taken into account in assessing the attainment of POs.

ME Program Outcome	Assessment Evidence Source or Tool
a: Ability to apply knowledge of mathematics, science and fundamentals of Mechanical Engineering.	Results of Mathematics, Physics and Basics of Engineering, course outcome data, alumni and other surveys are analyzed.
b: Ability to analyse problem and interpret the data.	Student survey data and results are analyzed.
c: Ability to design a system component, or process to meet desired needs in Mechanical Engineering within realistic constraints.	Results and outcomes of courses manufacturing methods, measuring techniques, applications output and gain of knowledge.
d: Ability to identify, formulate, analyse and interpret data to solve Mechanical Engineering problems.	Results and outcomes of courses Mechanics of solids, design of machine members, Finite Element Methods, etc. are analyzed.
e: Ability to use modern engineering tools such as CAD and GIS for the Mechanical Engineering practice.	Results of usage of modern tools and subject outcomes, surveys data are analyzed.
f: Ability to understand the impact of engineering solutions in a global, economic and societal context.	Alumni survey data and student survey data results are analyzed.
g: Ability to understand the effect of Mechanical Engineering solutions on environment and to demonstrate the need for sustainable development.	Results and outcomes of courses like Environmental Science, Water Resources System planning and Management, Environmental Impact Assessment etc. are analyzed.
h: Ability to understand professional and ethical responsibility.	Data collected and analyzed from alumni survey and employer survey.
i: Ability to work effectively as an individual or in a team and to function on multi-disciplinary context.	Mini project, Project Work, Lab work and its outcomes and results are analyzed.
j: Ability to communicate effectively with engineering community and society.	Results of the outcomes of courses like English, English Lab and Seminars are analyzed.
k: Ability to demonstrate the management principles in Mechanical Engineering projects.	Results of the outcomes of courses like Management Science, and Project Management, Project Work, etc. Are analyzed.
l: Ability to recognize the need for and an ability to engage in life-long learning.	Data collected and analyzed from alumni survey and employer survey.

b) The frequency with which these assessment processes are carried out.

Frequency of the Assessment Processes

Assessment Tool	Description	Assessment Cycle	Evaluation Cycle	Documentation and Maintenance
Mid Exams	Internal Evaluation	Twice in a semester	Twice in a semester	Marks are recorded in department and examination cell.
End Exams	External	Once in a semester	Once in a semester	Result Recorded, at examination cell

	Evaluation			and department
Assignments	Before Every Mid Exam	Twice in a semester	Twice in a semester	Course Register
Lab Exams	Internal and External experimental evaluation, Viva	Once in a semester	Once in a semester	Lab record, Examination Cell
Seminars	General and Technical	Once in a semester	Once in a semester	Course Register
Projects	Mini and Major project evaluation	Once in four years	Once in four years	Examination Cell
Comprehensive viva	Internal / External evaluation	Once in four years	Once in four years	Examination Cell
Surveys	All Stake Holders	Once in a year	Once in a year	Recorded in department

2.3.2 Indicate results of Evaluation of each PO (100) Institute Marks : 100.00

c) The expected level of attainment for each of the program outcomes;
d) Summaries of the results of the evaluation processes and an analysis illustrating the extent to which each of the programme outcomes are attained; and
e) How the results are documented and maintained.

File Name
DIRECT ASSESSMENT OF PO'S
The expected level of attainment for each of the program outcomes
III year result analysis
IV Year result analysis
Course file
II Year result analysis

Step-by-step process for assessing Program Outcomes

Step 1: The Program coordinator along with the BoS and course coordinators analyses each outcome into elements (different abilities specified in the outcome) along with the set of graduate attributes for each element and the designed surveys to assess the outcome.

Step 2: For each outcome define performance indicators (Assessment criteria) and their targets.

Step 3: Identify/select courses that address the outcome (each course contributes to at least one of the outcomes). Hence, each outcome is assessed in several courses to ensure that students acquire an appropriate level in terms of knowledge/skills/attitude.

Step 4: The course coordinators use the qualitative and quantitative data while assessing the outcomes on a continuous basis.

Step 5: The Head of the Department analyze the collected data. If the assessed data meets the performance targets which are specified in step 2, the outcome is attained. Otherwise, consider step6.

Step 6: The Head of the Department reviews along with the Program Coordinator and the BoS to recommend content delivery methods/course outcomes/ curriculum improvements as needed.

The expected level of attainment for each program outcomes

a: Ability to apply knowledge of mathematics, science and fundamentals of Mechanical Engineering.

Courses	Method of Assessment	Sources for data collection	Target for the performance	Length of Assessment Cycle/when the data is collected
GR14A1001 Linear Algebra and Single Variable Calculus GR14A1002 Advanced Calculus GR14A1002 Advanced Calculus GR14A1003 Transform Calculus and Fourier Series GR14A1004 Numerical Methods GR14A1008 Engineering Chemistry GR14A2011 Probability and sstatistics GR14A1006 Physics for Engineers	Internal/external Evaluation/ Assignments/	Course outcomes/ Rubrics	70%	3 years/ End of the semester

GR14A1011 Computer Programming and data structures GR14A1012 Engineering Mechanics - STATICS GR14A1020 Engineering Mechanics – DYNAMICS GR14A2021 Engineering Thermodynamics GR14A2027 Production Technology GR14A2020 Mechanics of Solids GR14A1030 Engineering Chemistry Lab	/Lab activities			
GR14A1028 Computer Programming and data structures Lab GR14A1029 Engineering Physics Lab GR14A2030 Advanced mechanics of Solid	Course end survey/ Graduate Survey/ Alumni Survey	Survey reports	70 %	3 years/ End of the semester End of the programme

b: Ability to analyse problem and interpret the data.

Courses	Method of Assessment	Sources for data collection	Target for the performance	Length of Assessment Cycle/when the data is collected
GR11A3091 Thermal Engineering Lab GR14A2025 Mechanics of Solids La GR11A3066 Machine Tools GR14A2033 Fluid Mechanics and Hydraulic Machinery Lab	Internal/external Evaluation/ Assignments/ /Lab activities	Lab activity data/ Rubrics/ Course outcome	70%	3 years/ End of the semester

GR14A2022 Material Science and Metallurgy				
GR14A2024 Material Science and Metallurgy Lab GR11A3059 Heat Transfer Lab GR11A4057- Instrumentation and control system lab GR11A3057 Heat Transfer	Course end survey/ Graduate Survey/ Alumni survey	Survey data	70%	3 years/ End of the semester End of the programme

c: Ability to design a system component, or process to meet desired needs in Mechanical Engineering within realistic constraints.

Courses	Method of Assessment	Sources for data collection	Target for the performance	Length of Assessment Cycle/when the data is collected
GR14A1023 Engineering Graphics GR14A2023 Machine Drawing Lab GR14A2019 Kinematics of Machinery GR11A3045 Dynamics of Machines GR114056- Instrumentation and Control Systems.	Internal/external Evaluation/ Assignments/ /Lab activities	Lab activity data/ Rubrics/ Course outcome	65%	3 years/ End of the semester
GR11A3035 Design of Machine Members -I GR11A3036 Design of Machine Members - II GR11A4079 Operations Research	Course end			3 years/

GR11A4095 Production Planning Control GR11A4094 Production Drawing Practice Lab GR11A4084 Plant Layout &Material Handling	survey/ Graduate Survey/ Alumni survey		70%	End of the semester End of the programme

d: Ability to identify, formulate, analyse and interpret data to solve Mechanical Engineering problems.

Courses	Method of Assessment	Sources for data collection	Target for the performance	Length of Assessment Cycle/when the data is collected
GR14A2019 Kinematics of Machinery GR11A3045 Dynamics of Machines GR114056- Instrumentation and Control Systems. GR11A3035 Design of Machine Members -I GR11A3036 Design of Machine Members - II GR11A4079 Operations Research GR14A1024 Business Communication and soft skills	Internal/external Evaluation/ Assignments/ /Lab activities	Lab activity data/ Rubrics/ Course outcome	60%	3 years/ End of the semester
GR11A2073 Advanced Eng. Com. Lab GR14A1025 Engineering Workshop GR14A2001-Environmental Science	Course end survey/ Graduate Survey/ Alumni survey	Survey reports	80%	3 years/ End of the semester End of the programme

GR11A3064 Industrial Oriented Mini Project				

e: Ability to use modern engineering tools such as CAD and GIS for the Mechanical Engineering practice.

Courses	Method of Assessment	Sources for data collection	Target for the performance	Length of Assessment Cycle/when the data is collected
GR11A4012 CAD/ CAM GR11A4042 Finite Element Methods GR11A4019 Computer Aided Design Lab GR14A2028 Fluid Mechanics and Hydraulic Machinery GR11A3035 Design of Machine Members -I	Internal/external Evaluation/ Assignments/ /Lab activities	Lab activity data/ Rubrics/ Course outcome	85%	3 years/ End of the semester
GR11A3003 Applied Thermodynamics - II GR11A4042 Finite Element Methods GR11A4098 Plant layout and Material Handling GR11A4088 Power plant Engineering GR11A4123- Unconventional Machining Process.	Course end survey/ Graduate Survey/ Alumni survey	Survey reports	70%	3 years/ End of the semester End of the programme

f: Ability to understand the impact of engineering solutions in a global, economic and societal context.

Courses	Method of Assessment	Sources for data collection	Target for the performance	Length of Assessment Cycle/when the data is collected
GR11A4056-Instrumentation&Control System GR11A4084-Plant Layout & Material Handling GR14A2001-Environmental Science GR11A2071 Managerial econ. & Financial analysis	Internal/external Evaluation/ Assignments/ /Lab activities	Lab activity data/ Rubrics/ Course outcome	60%	3 years/ End of the semester
	Course end survey/ Graduate Survey/ Alumni survey	Survey reports	70%	3 years/ End of the semester End of the programme

g: Ability to understand the effect of Mechanical Engineering solutions on environment and to demonstrate the need for sustainable development.

Courses	Method of Assessment	Sources for data collection	Target for the performance	Length of Assessment Cycle/when the data is collected
GR14A1005 English GR14A1024 Business Communication and soft skills	Internal/external Evaluation/ Assignments/ /Lab activities	Lab activity data/ Rubrics/ Course outcome	70%	3 years/ End of the semester
GR11A2073Advanced Eng. Com. Lab GR11A4110 Seminar GR14A2001-Environmental Science.	Course end survey/ Graduate Survey/ Alumni Survey	Survey reports	70%	3 years/ End of the semester End of the programme

h: understanding of professional and ethical responsibility.

Courses	Method of Assessment	Sources for data collection	Target for the performance	Length of Assessment Cycle/when the data is collected
GR11A3064-Industrial Oriented Mini Project	Internal/external Evaluation/ Assignments/ /Lab activities	Lab activity data/ Rubrics/ Course outcome	75%	3 years/ End of the semester
GR14A2001-Environmental Science. GR11A4018 Main Project	Course end survey/ Graduate Survey/ Alumni		70%	3 years/ End of the semester

GR11A4018-Comprehensive Viva	survey	Survey reports		End of the programme

i: Ability to work effectively as an individual or in a team and to function on multi-disciplinary context.

Courses	Method of Assessment	Sources for data collection	Target for the performance	Length of Assessment Cycle/when the data is collected
GR14A2027 Production Technology GR11A4012 CAD/ CAM GR11A4042 Finite Element Methods GR11A4019 Computer Aided Design Lab	Internal/external Evaluation/ Assignments/ /Lab activities	Lab activity data/ Rubrics/ Course outcome	80%	3 years/ End of the semester
GR11A4018 Main Project GR11A4018-Comprehensive Viva	Course end survey/ Graduate Survey/ Alumni survey	Survey reports	80%	3 years/ End of the semester End of the programme

j: Ability to communicate effectively with engineering community and society.

Courses	Method of Assessment	Sources for data collection	Target for the performance	Length of Assessment Cycle/when the data is collected
GR11A2071 Managerial econ. & Financial analysis GR14A2026 Electrical and Electronics Technology GR11A3063 Industrial Management GR14A2032 Electrical and Electronics Technology Lab	Internal/external Evaluation/ Assignments/ /Lab activities	Lab activity data/ Rubrics/ Course outcome	90%	3 years/ End of the semester
	Course end survey/ Graduate Survey/ Alumni survey	Survey reports	70%	3 years/ End of the semester End of the programme

k: Ability to demonstrate the management principles in Mechanical Engineering projects.

Courses	Method of Assessment	Sources for data collection	Target for the performance	Length of Assessment Cycle/when the data is collected
				3 years/ End of the semester

GR14A1011 Computer Programming and data structures GR11A3072 Metrology & Surface Engineering GR14A1025 Engineering Workshop GR11A3067 Machine Tools Lab GR11A3091 Thermal Engineering Lab GR11A3008 Automobile Engineering GR14A1026 IT Workshop GR14A2022 Material Science and Metallurgy GR14A2031 Production Technology Lab GR11A3073 Metrology Lab	Internal/external Evaluation/ Assignments/ /Lab activities	Lab activity data/ Rubrics/ Course outcome	75%	
	Course end survey/ Graduate Survey/ Alumni survey	Survey reports	70%	3 years/ End of the semester End of the programme

l: Ability to recognize the need for and an ability to engage in life-long learning.

Courses	Method of Assessment	Sources for data collection	Target for the performance	Length of Assessment Cycle/when the data is collected
All the core Engineering Laboratories All the core Engineering Courses	Internal/external Evaluation/ Assignments/ /Lab activities	Lab activity data/ Rubrics/ Course outcome	90%	3 years/ End of the semester
	Course end survey/ Graduate Survey/ Alumni survey	Survey reports	70%	3 years/ End of the semester End of the programme

2.4 Use of Evaluation results towards improvement of the programme (30) — Total Marks : 30.00

2.4.1 Indicate how results of assessment used for curricular improvements (5) — Institute Marks : 5.00

(Articulate with rationale the curricular improvements brought in after the review of the attainment of the POs)

We have introduced the outcome based education system in GRIET recently. Students, having experienced the learning environment as per new defined PEOs and POs, get the graduate from the Institute. We have defined POs based on the NBA graduate attributes mapping to curriculum and used the feedback received from the stakeholders through surveys.The continuous process of assignments dircet and indirect assessments and evaluation will lead to the revision and refinement of the POs. We have a system to review the results of the evaluation of our outcome based education system at the end of each academic year.

Based on the attainment of POs, PAC prepares the action plan to improve the courses of the program thus influencing the attainment of Program Outcomes.

2.4.2 Indicate how results of assessment used for improvement of course delivery and assessment (10) — Institute Marks : 10.00

(Articulate with rationale the curricular delivery and assessment improvements brought in after the review of the attainment of the POs)

After receiving results of each semester, faculty analyses the percentage of pass in his subjects and finds out the average of marks obtained in his course, in order to recommend necessary actions to improve the courses. The improvement of PO attainment can be expected by bringing appropriate changes in course outcomes, curriculum, delivery methods, and assessment and evaluation methods. After receiving inputs from the internal committees Program Assessment Committee (PAC), BOS and Academic Council will give the final approval for the necessary improvements.

Once the action plan is defined, data for the performance indication is to be collected and analyzed and evaluated by the course coordinator to see the performance.

This process continues till the performance improves to the target value.

2.4.3 State the process used for revising/redefining the POs (15) Institute Marks : 15.00

(Articulate with rationale how the results of the evaluation of the POs have been used to review/redefine the POs in line with the Graduate Attributes of the NBA.)

This process considers exit students survey, professional society survey, alumni survey, employer survey, feedback and rubrics.

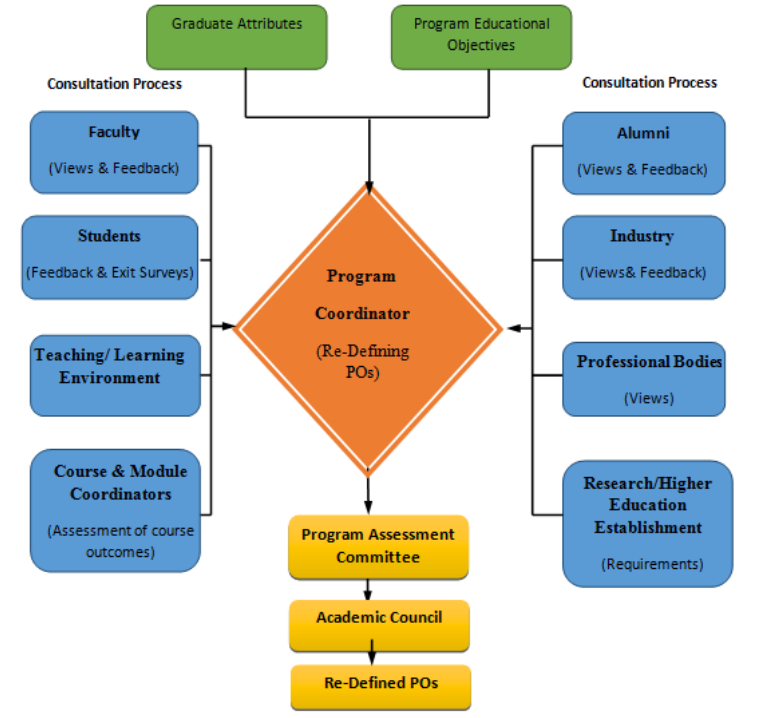


Figure 5: Process for Redefining POs

3 Programme Curriculum (125) **Total Marks : 125.00**

3.1 Curriculum (20) Total Marks : 20.00

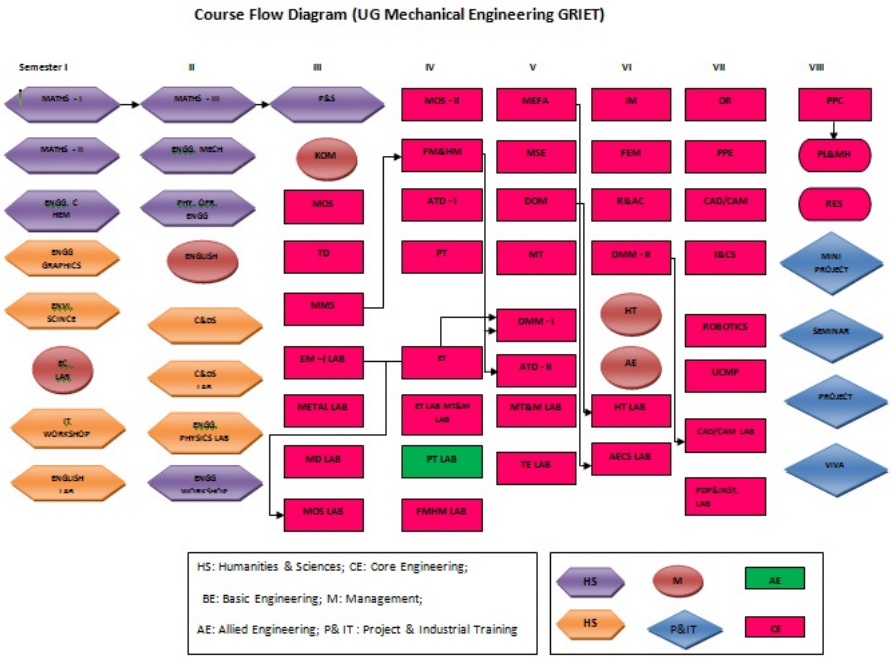
3.1.1 Describe the Structure of the Curriculum (5) Institute Marks : 5.00

Course Code	Course Title	Total Number of contact hours				Credits
		Lecture (L)	Tutorial (T)	Practical (P)	Total Hours	
GR14A1001	Linear Algebra and Single Variable Calculus	2.00	2.00	0.00	4.00	3.00
GR14A1002	Advanced Calculus	2.00	2.00	0.00	4.00	3.00
GR14A1008	Engineering Chemistry	2.00	2.00	0.00	4.00	3.00
GR14A1023	Engineering Graphics	1.00	0.00	4.00	5.00	3.00
GR14A1018	Basic Electrical Engineering	2.00	2.00	0.00	4.00	4.00
GR14A1012	Engineering Mechanics – STATICS	3.00	2.00	0.00	5.00	3.00
GR14A1024	Business Communication and soft skills	0.00	0.00	4.00	4.00	2.00
GR14A1026	IT Workshop	0.00	0.00	4.00	4.00	2.00
GR14A1030	Engineering Chemistry Lab	0.00	0.00	4.00	4.00	2.00
GR14A1003	Fourier Series and Transform Calculus	2.00	2.00	0.00	4.00	3.00
GR14A1004	Numerical Methods	2.00	2.00	0.00	4.00	3.00
GR14A1006	Physics for Engineers	2.00	2.00	0.00	4.00	3.00
GR14A1005	English	2.00	2.00	0.00	4.00	3.00
GR14A1011	Computer Programming and data structures	2.00	2.00	0.00	4.00	3.00
GR14A1020	Engineering Mechanics – DYNAMICS	3.00	2.00	0.00	5.00	4.00
GR14A1025	Engineering Workshop	0.00	0.00	4.00	4.00	2.00
GR14A1029	Engineering Physics Lab	0.00	0.00	4.00	4.00	2.00
GR14A1028	Computer Programming and data structures Lab	0.00	0.00	4.00	4.00	2.00
GR14A2011	Probability and statistics	2.00	1.00	0.00	3.00	3.00
GR14A2019	Kinematics of Machinery	3.00	1.00	0.00	4.00	4.00
GR14A2020GR14A2020	Mechanics of Solids	3.00	1.00	0.00	4.00	4.00
GR14A2021	Engineering Thermodynamics	3.00	2.00	0.00	5.00	4.00
GR14A2022	Material Science and Metallurgy	3.00	2.00	0.00	5.00	4.00

GR14A2023	Machine Drawing Lab	0.00	0.00	2.00	2.00	2.00
GR14A2024	Material Science and Metallurgy Lab	0.00	0.00	2.00	2.00	2.00
GR14A2025	Mechanics of Solids Lab	0.00	0.00	2.00	2.00	2.00
GR14A2026	Electrical and Electronics Technology	2.00	1.00	0.00	3.00	3.00
GR14A2027	Production Technology	3.00	1.00	0.00	4.00	4.00
GR14A2028	Fluid Mechanics and Hydraulic Machinery	3.00	1.00	0.00	4.00	4.00
GR14A2029	Internal combustion Engines	3.00	1.00	0.00	4.00	4.00
GR14A2030	Advanced Mechanics of Solids	3.00	1.00	0.00	4.00	4.00
GR14A2031	Production Technology Lab	0.00	0.00	2.00	2.00	2.00
GR14A2032	Electrical and Electronics Technology Lab	0.00	0.00	2.00	2.00	2.00
GR14A2033	Fluid Mechanics and Hydraulic Machinery Lab	0.00	0.00	2.00	2.00	2.00
GR11A3071	Managerial econ. & Fin. Accounting	4.00	1.00	0.00	5.00	4.00
GR11A3045	Dynamics of Machines	4.00	1.00	0.00	5.00	4.00
GR11A3066	Machine Tools	3.00	1.00	0.00	4.00	4.00
GR11A3035	Design of Machine Members -I	4.00	1.00	0.00	5.00	4.00
GR11A3003	Applied Thermodynamics - II	4.00	1.00	0.00	5.00	4.00
GR11A3067	Machine Tools Lab	0.00	0.00	3.00	3.00	2.00
GR11A3073	Advanced Eng. Com. Lab	0.00	0.00	3.00	3.00	2.00
GR11A3091	Thermal Engineering Lab	0.00	0.00	3.00	3.00	2.00
GR11A3072	Metrology & Surface Engineering	4.00	1.00	0.00	5.00	4.00
GR11A3057	Heat Transfer	4.00	1.00	0.00	5.00	3.00
GR11A3063	Industrial Management	3.00	1.00	0.00	4.00	4.00
GR11A3036	Design of Machine Members - II	4.00	1.00	0.00	5.00	4.00
GR11A3008	Automobile Engineering	3.00	1.00	0.00	4.00	3.00
GR11A3051	Mechatronics	3.00	1.00	0.00	4.00	0.00
GR11A3024	Computational Fluid Dynamics	3.00	1.00	0.00	4.00	0.00
GR11A3073	Metrology Lab	0.00	0.00	3.00	3.00	2.00
GR11A3059	Heat Transfer Lab	0.00	0.00	3.00	3.00	2.00
GR11A3064	Ind. Mini Projects	0.00	0.00	3.00	3.00	2.00
GR11A4079	Operations Research	4.00	1.00	0.00	5.00	4.00
GR11A4142	Finite Element Methods	4.00	1.00	0.00	5.00	4.00
GR11A4012	CAD/ CAM	3.00	1.00	0.00	4.00	4.00
GR11A4104	Robotics	4.00	1.00	0.00	5.00	0.00
GR11A4056	Instrumentation & Control System	4.00	1.00	0.00	5.00	4.00
GR11A4124	Mechanical Vibrations	4.00	1.00	0.00	5.00	0.00
GR11A4123	Unconventional Machining Process	4.00	1.00	0.00	5.00	3.00
GR11A4122	Tribology	4.00	1.00	0.00	5.00	0.00
GR11A4005	Automation in Manufacturing	4.00	1.00	0.00	5.00	0.00
GR11A4057	Instrumentation & Control System Lab	0.00	0.00	3.00	3.00	2.00
GR11A4019	Computer Aided Design Lab	0.00	0.00	3.00	3.00	2.00
GR11A4094	Production Drawing Practice Lab	0.00	0.00	3.00	3.00	2.00
GR11A4095	Production Planning Control	3.00	1.00	0.00	4.00	3.00
GR11A4076	Database Management	3.00	1.00	0.00	4.00	0.00
GR11A4088	Power plant Engineering	3.00	1.00	0.00	4.00	3.00
GR11A4099	Reliability Engineering	3.00	1.00	0.00	4.00	0.00
GR11A4102	Renewable Energy Resources	3.00	1.00	0.00	4.00	0.00
GR11A4084	Plant Layout & Material Handling	3.00	1.00	0.00	4.00	3.00
GR11A4013	CAM & Mfg. sim Lab	0.00	0.00	3.00	3.00	2.00
GR11A4110	Seminar	0.00	0.00	3.00	3.00	2.00
GR11A4018	Comprehensive Viva	0.00	0.00	3.00	3.00	2.00
GR11A4097	Project Work	0.00	0.00	0.00	0.00	10.00
Total		149.00	61.00	76.00	286.00	200.00

3.1.2 Give the Prerequisite flow chart of courses (5) Institute Marks : 5.00

(Draw the schematic of the prerequisites of the courses in the curriculum)



3.1.3 Justify how the programme curriculum satisfies the program specific criteria (10) Institute Marks : 10.00

(Justify how the programme curriculum satisfies the program specific criteria specified by the American professional societies relevant to the programme under accreditation)

Program Criteria for Mechanical Engineering

Lead Society: American Society of Mechanical Engineers

Applicability

This program criterion applies to engineering technology programs that include mechanical and similar modifiers in their titles.

An accreditable program in Mechanical Engineering Technology will prepare graduates with knowledge, problem solving ability, and hands-on skills to enter careers in the design, installation, manufacturing, testing, evaluation, technical sales, or maintenance of mechanical systems. Level and scope of career preparation will depend on the degree level and specific program orientation. Graduates of associate degree programs typically have strengths in specifying, installing, fabricating, testing, documenting, operating, selling, or maintaining basic mechanical systems, whereas Bachelor degree graduates typically have strengths in the analysis, applied design, development, implementation, or oversight of more advanced mechanical systems and processes.

Knowledge: Mathematics, chemistry, Physics, Design, thermal and Manufacturing Technology related subjects

Problem solving ability: Engineering Mechanics, Thermodynamics, Mechanics of Solids, Kinematics of Machines, Design of machine elements.

Hands on Experience/Manufacturing: Engineering Workshop, CAD, Machine Tools

Installation: House wiring, Thermal Engineering Lab

Testing: Thermal Engineering Lab, Fluid Mechanics and Hydraulic machinery, Heat Transfer

Evaluation: Engineering Drawing

Technical sales/maintenance: Industrial Management, Managerial Economics and Financial Analysis.

Outcomes

The mechanical engineering technology discipline encompasses the areas (and principles) of materials, applied mechanics, computer-aided drafting/design, manufacturing, experimental techniques/procedure, analysis of engineering data, machine/mechanical design/analysis, conventional or alternative energy system design/analysis, power generation, fluid power, thermal/fluid system design/analysis, plant operation, maintenance, technical sales, instrumentation/control systems, and heating, ventilation, and air conditioning (HVAC), among others. As such, programs outcomes, based on specific program objectives, may have a narrower focus with greater depth, selecting fewer areas, or a broader spectrum approach with less depth, drawing from multiple areas. However, all programs must demonstrate an applied basis in engineering mechanics/sciences.

Associate degree programs must demonstrate that graduates can apply specific program principles to the specification, installation, fabrication, test, operation, maintenance, sales, or documentation of basic mechanical systems depending on program orientation and the needs of their constituents.

Bachelor degree programs must demonstrate that graduates can apply specific program principles to the analysis, design, development, implementation, or oversight of more advanced mechanical systems or processes depending on program orientation and the needs of their constituents.

The following are the components of the curriculum

- Mathematics
- Science
- Computing
- Humanities
- Professional core

Courses in Mathematics Stream:

Course Code	Course Code
Linear Algebra and Single Variable Calculus	GR14A1001
Advanced Calculus	GR14A1002
Transform Calculus and Fourier Series	GR14A1003
Numerical Methods	GR14A1004
Probability and Statistics	GR14A2011

Probability and Statistics	GR14A2011

Courses in Science Stream:

Course Code	Course Code
Engineering Physics	GR14A1007
Engineering Physics lab	GR14A1029
Engineering Chemistry	GR14A1008
Engineering Chemistry lab	GR14A1030

Courses in Computing Stream:

Course Code	Course Code
IT Workshop	GR14A1026
Computer Programing and data Structures	GR14A1011
Computer Programing and data Structures Lab	GR14A1028
Electrical and Electronics Technology	GR14A2026
Electrical and Electronics Technology Lab	GR14A2032

Courses in Humanities Stream:

Course Code	Course Code
English	GR14A1005
Business Communication and Soft Skills	GR14A1024
Environmental Science	GR14A2001
Managerial Economics and Financial Analysis	GR14A2104
Value Education and Ethics	GR14A2002
Advanced English Communication Skills Lab	GR14A3100
Management Science	GR14A3102

Courses in Professional core Stream:

Subject	Code
Engineering Graphics	GR14A1023
Engineering Mechanics – STATICS	GR14A1012
Engineering Mechanics – DYNAMICS	GR14A1020
Kinematics of Machinery	GR14A2019
Mechanics of Solids	GR14A2020
Engineering Thermodynamics	GR14A2021
Material Science and Metallurgy	GR14A2022
Machine Drawing Lab	GR14A2023
Material Science and Metallurgy Lab	GR14A2024
Mechanics of Solids Lab	GR14A2025
Production Technology	GR14A2027
Fluid Mechanics and Hydraulic Machinery	GR14A2028
Internal combustion Engines	GR14A2029
Advanced mechanics of Solid	GR!4A2030
Production Technology Lab	GR14A2031
Fluid Mechanics and Hydraulic Machinery Lab	GR14A2033
Dynamics of Machines	GR11A3045
Machine Tools	GR11A3066
Design of Machine Members -I	GR11A3035
Applied Thermodynamics - II	GR11A3003
Machine Tools Lab	GR11A3067
Advanced Eng. Com. Lab	GR11A2073
Thermal Engineering Lab	GR11A3091
Metrology & Surface Engineering	GR11A3072
Heat Transfer	GR11A3057
Industrial Management	GR11A3063
Design of Machine Members - II	GR11A3036
Automobile Engineering	GR11A3008
Mechatronics	GR11A3051
Computational Fluid Dynamics	GR11A3024
Metrology Lab	GR11A3073
Heat Transfer Lab	GR11A3059
Industrial Oriented Mini Project	GR11A3064
Operations Research	GR11A4079
Finite Element Methods	GR11A4042
CAD/ CAM	GR11A4012
Robotics	GR11A4104
Tribology	GR11A4122
Computer Aided Design Lab	GR11A4019
Production Drawing Practice Lab	GR11A4094
Production Planning Control	GR11A4095
Power plant Engineering	GR11A4088
Renewable Energy Resources	GR11A4102
Plant Layout &Material Handling	GR11A4084
Refrigeration & Air conditioning	GR11A4098
CAM & Mfg. sim Lab	GR11A4013
Seminar	GR11A4110
Comprehensive Viva	GR11A4018
Main Project Work	GR11A4018

3.2 State the components of the curriculum and their relevance to the POs and the PEOs (15)

Total Marks : 15.00

Institute Marks : 15.00

Programme curriculum grouping based on different components

Course Component	Curriculum Content (% of total number of credits of the programme)	Total number of contact hours	Total Number of credits	POs	PEOs
Mathematics	15	41.00	30.00	a,c,h,i	1,2,3
Science	11.5	30.00	23.00	a,b,e,f,i	1,2,3,4
Computing	3.5	14.00	14.00	a,d,f,h,i	2,3
Humanities	6.5	21.00	15.00	d,g,j,k	2,4
Professional core	49.5	133.00	99.00	a,b,c,d,e,f,g,h,i,j,k,l	1,2,3,4
Program electives	7	16.00	14.00	f,g,k	2,3
Project	6	3.00	2.00	i,j,k,l	1,2,3,4
Internship/Seminar	1	3.00	3.00	g.h.i	3,4

3.3 State core engineering subjects and their relevance to Programme Outcomes including design experience (60)

Total Marks : 60.00

Institute Marks : 60.00

Mechanics, Modeling, Experimentation, and Computation (MMEC)

Mechanical engineering lays the ability to measure, describe, and model the physical world of materials and mechanisms. The MMEC area focuses on teaching the fundamental principles, essential skills, and scientific tools to be able to predict and understand thermo-mechanical phenomena and use such knowledge in rational engineering design. We provide students with the foundations in experimental, modeling, and computational skills needed to understand, exploit, and enhance the thermo-physical behavior of advanced engineering Mechanical Equipment and systems, and to make lifelong creative contributions at the forefront of the mechanical sciences and beyond. Research in the MMEC area focuses on four key thrusts:

- Computational mechanics
- Thermal science
- Mechanics of solids
- Metal Forming

The fundamental engineering principles embodied in these topics can be applied over a vast range of force, time, and length scales, and applications of interest.

Design, Manufacturing, and Product Development

Design, manufacturing, and product development is the complete set of activities needed to bring new devices and technologies to the marketplace. These activities span the entire product life-cycle, from the identification of a market opportunity or need, through design, testing, manufacture and distribution, and end of useful life. Our work includes everything from understanding the voice of the customer to finding new ways of processing materials to improve product performance and tracking product flow through a distribution network. A central component of this area is the design and construction of novel equipment, either for consumer products or for industrial uses. Many ME students apply design, manufacturing, and product development skills and techniques to extracurricular design work for organizations and student activities such as Design that Matters, Formula SAE, Satellite Engineering Team, and the Solar Electric Vehicle Team.

Controls, Instrumentation, and Robotics

The mission in this area is to promote research and education for automating, monitoring, and manipulating systems. The focus is on system-level behavior that emerges primarily from interactions and cannot be explained from individual component behavior alone. We seek to identify fundamental principles and methodologies that enable systems to exhibit intelligent, goal-oriented behavior, and develop innovative instruments to monitor, manipulate, and control systems. The core competencies in which we seek to excel are:

- Methodologies for understanding system behavior through physical modeling, identification, and estimation
- Technologies for sensors and sensor networks; actuators and energy transducers; and systems for monitoring, processing, and communicating information
- Fundamental theories and methodologies for analyzing, synthesizing, and controlling systems; learning and adapting to unknown environments; and effectively achieving task goals

We seek to apply our core competencies to diverse areas of social, national, and global needs. These include health care, security, education, space and ocean exploration, and autonomous systems in air, land, and underwater. We also offer a Course 2-A track in this area.

Energy Science and Engineering

Energy is one of the most significant challenges facing humanity and is a central focus of mechanical engineering contribution to society. Research focuses on efficient and environmentally friendly energy conversion and utilization from fossil and renewable resources. Programs in the department cover many of the disciplinary and technological aspects of energy, with applications to high performance combustion engines, Heat Pipes, fuel cells, wind turbines, and efficient buildings. Efforts in high-temperature thermodynamics and its coupling with transport and chemistry include internal combustion engine analysis, design, and technology; control of combustion dynamics and emissions; thermoelectric energy conversion; low- and high-temperature fuel cells; and novel materials for rechargeable batteries. Work in heat and mass transport covers thermal control of electronics from manufacturing to end use; microscale and nanoscale transport phenomena; desalination and water purification; high heat flux engineering; and energy-efficient building technology. Work in renewable energy encompasses the design of offshore and floating wind turbines and tidal wave machines; and analysis and manufacturing of photovoltaic and thermo photovoltaic devices. Energy storage, hybrid systems, fuel synthesis, and integration of energy systems are active research areas in the department.

Core Courses-Program Outcomes (POs) Relationship Matrix

Core Courses	Program Outcomes	Design Experience

	a	b	c	d	e	f	g	h	i	j	k	l	
Engineering Mechanics	X		X	X	X			X		X			Trusses, beams
Fluid Mechanics & Hydraulic Machinery	X	X	X					X	X		X	x	Turbine & Pumps
Production Technology	X	X	X	X	X	X	X	X			X	X	Expertise on casting
Kinematics of Machinery	X			X			X					X	Automobile Engine Components
Mechanics of Solids	X	X	X	X	X		X	X	X	X	X	X	Pressure vessels, Beams
Applied thermodynamics - I	X				X						X		IC engine parts & Compressors
Applied thermodynamics - II	X	X	X		X			X			X	X	Steam Nozzles & Condensers
Machine Tools	X		X		X						X		Lathe, Drilling & Milling machines
Metallurgy & Material science	X											X	Metals & Alloy testing
Design of Machine Members - I	X		X		X			X			X		Automobile Engine Components
Design of machine members - II	X		X		X			X			X		Automobile Engine Components
Refrigeration & Air conditioning	X	X										X	Refrigeration & Air conditioners
Finite element method	X	X	X		X			X			X	X	Structural & Thermal analysis
Automobile Engineering	X	X	X	X								X	Petrol & Design Engines
Dynamics of machinery	X				X						X	X	Automobile Engine Components
CAD/CAM	X	X		X	X					X		X	Design and manufacturing of components using softwares
Instrumentation & Control System	X	X	X	X	X					X	X		Pressure and temperature measuring techniques
Robotics	X	X	X		X					X		X	Automation in manufacturing
Power plant Engineering	X	X	X	X							X		Power plant economics
Production planning & Control	X			X					X			X	Forecasting, JIT manufacturing & control
Unconventional Machining process	X	X	X	X		X	X				X		Micro machining of metals

3.4 Industry interaction/internship (10)

Total Marks : 10.00

Institute Marks : 10.00

(Give the details of industry involvement in the programme such as industry-attached laboratories and partial delivery of courses and internship opportunities for students)

Student are encouraged to take internship in the leading industries to get overall expertise on the engineering education in academically relevant work during semester break or vacation time.

Industrial visits are organized to the students along with the faculty members to bridge the gap between theoretical and practical aspects of the curriculum. Experts from industry are invited to interact with the students in every semester so that the students get the latest technical developments in the industry. Department are having collaborations with the reputed industries and professional bodies so that to bridge the gap between learning and people who are actually practicing technologies

- An expert from industry is considered to be a member of Board of studies who takes active role in curriculum design.
- The institute has MOU's with Intergraph, Measure India Corporation, Futuretek, Thermo pads Pvt.Ltd, VEM Technologies Pvt Ltd, Global Scientific Instruments.
- Students are to prepare to get internship with noted and related industry for their Industry Oriented projects to gain hands on experience of a live industry which carries credit scores.
- Faculty participates in faculty development programmes conducted by various organizations like BHEL, WRI etc.
- Students are provided and given internship facility with industry and research organization such as BHEL, Intergraph, Thermal System Pvt. Limited etc.,
- The department conducts several workshops on material Processing, Experimental techniques in Mechanical Engineering, welding and fabrication etc., for B.Tech students and invites experts from Industry to share knowledge and experience.
- Entering into agreement with consultancies for providing resources and inputs to UG students for industry orientation programs, for faculty and joint development of innovative products. Example: Hydraulic systems, Air craft, Refrigeration systems.
- Department organizes several workshops with industry experts for the benefit of the students. Example: NDT, AutoCAD etc.,

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TEHCNOLOGY
DEPARTMENT OF MECHANICAL ENGINEERING

Memorandum of Understanding bteween Companies & Gokaraju Rangaraju Institute of Engineering and Technology

S.No.	Name of the company	Industrial/Institutional	Date of MoU

1	Cyber technologies pvt ltd hyderabad	Industrial	15-12-04
2	Thermopads pvt ltd hyderabad	Industrial	02-06-05
3	Vem technologies pvt ltd hyderabad	Industrial	10-06-05
4	Nalanda telematics & informatics ltd. hyderabad	Industrial	15-06-05
5	Futuretech instruments pvt ltd. Hyderabad	Industrial	15-06-05
6	Hi-q electronics systems. Hyderabad	Industrial	22-06-05
7	Control systems. hyderabad	Industrial	15-10-05
8	Micro zone	IT	18-10-06
9	Centronix	Industrial	09-02-08
10	medi sun medical products	Pharma	04-01-08
11	care medi systems	Pharma	18-10-07
12	Medieqip services	Pharma	06-07-07
13	Pentagram reseaarch centre pvt ltd	Research	06-07-07
14	vector	IT institute	15-06-05
15	HCL infosystems ltd	IT institute	23-07-09
16	TRI techno solutions	IT institute	26-08-08
17	Innovation communication systems ltd	IT institute	01-12-08

Industrial Visits

S.No.	Name of the industry	No. Of Students Visited	Year
1	Bharat Heavy Electricals Ltd, R.C.Puram, Hyderabad	62	2013
2	Sandvik Inc.,Hyderabad	61	2013
3	CITD, MSME, Hyderabad	34	2014
4	PSMNI-NDT, Hyderabad	28	2014
5	NFC, Hyderabad	120	2015
6	Ganapathy Sugar Industries, Medak.	40	2016

Industry Interaction

S.No.	Name of the Faculty	Industry	Activity	Date
1	K Pashanth Reddy	ISRO-Kerala	23rd National and 1st International ISHMT-ASTFE Heat and Mass Transfer Conference	17-19th Dec , 2015
2	B.Ch Nookaraju	Confedration of Indian Industry	Two day Faculty Training Program at Usha International Ltd	08-09th Jan ,2015

Internship/Projectwork/Training Details

S.No	Name of the Student	Year	Industry	Purpose
1	A Nikhil Goud	2013	BHEL India	Internship/Training

2	Vamsi Sai Santosh	2015	BHEL India	Internship/Training
3	D manoj	2014	Hundi	Internship/Training
4	V Prashanth reddy	2014	Hundi	Internship/Training
5	K V S Saishravan	2014	BHEL India	Internship/Training
6	K Sandeep	2014	BHEL India	Internship/Training
7	B B Venkatram	2014	Vizag steel plant	Internship/Training
8	K Sravana Sumanth	2015	South Central Railway, Kazipet	Project work
9	G M V Sudharshan Sai	2015	South Central Railway, Kazipet	Project work
10	P Srinivas	2015	South Central Railway, Kazipet	Project work
11	Md. Shahid Shek	2015	South Central Railway, Kazipet	Project work
12	P Vamshi	2015	NTPC Ltd. Ramagundam	Project work
13	P Srinivas	2015	NTPC Ltd. Ramagundam	Project work
14	P Subhash	2015	NTPC Ltd. Ramagundam	Project work
15	V Bhanuteja	2015	NTPC Ltd. Ramagundam	Project work
16	M RaviTeja	2016	NTPC Ltd. Ramagundam	Project work
17	K Naga Chethan	2015	NTPC Ltd. Ramagundam	Project work
18	K Sravana Sumanth	2015	NTPC Ltd. Ramagundam	Project work
19	Vijaykumar	2015	Turbo Engineers & Consultants Pvt Ltd	Internship/Training
20	Chennu Deepak	2016	Vizag steel plant	Project/Training
21	D Jayanth	2016	Vizag steel plant	Project/Training
22	G M V Sudharshan Sai	2016	Vizag steel plant	Project/Training
23	K Saikumar Rao	2016	Vizag steel plant	Project/Training
24	M Raghu Vamsi	2016	Vizag steel plant	Project/Training
25	Velluri VSS Gowtham	2016	Vizag steel plant	Project/Training
26	N Sathish Reddy	2016	Vizag steel plant	Project/Training

3.5 Curriculum Development (15)

Total Marks : 15.00

3.5.1 State the process for designing the programme curriculum (5)

Institute Marks : 5.00

(Describe the process that periodically documents and demonstrates how the programme curriculum is evolved considering the PEOs and the POs)

Board of Studies takes responsibility of preparing curriculum of the programme. The curriculum for the programme is developed by considering PEOs and POs, taking the feedback from industry people regarding their expectations and latest developments in technology. The process of defining the curriculum is given below.

Step 1: PEOs and POs are taken as guide lines.

Step 2: A bench mark curriculum of JNTUH (affiliating University), premier institutes like IIT and also from abroad is considered.

Step 3: Relevant credit distribution is done between Mathematics, Science, Humanities, Core and Projects.

Step 4: courses are chosen as per contemporary technology and also industry and higher education requirements.

Step 5: The extent of coverage of depth and breadth are decided to suit the POs through COs

The curriculum gaps are continuously monitored but revision is limited to three years.

3.5.2 Illustrate the measures and processes used to improve courses and curriculum (10)

Institute Marks : 10.00

(Articulate the process involved in identifying the requirements for improvements in courses and curriculum and provide the evidence of continuous improvement of courses and curriculum)

To identify the curricular gaps for attainment of COs/POs we have followed these methods:-

1. Course feedback collected from the students is analyzed to measure the gap for attainment of COs and POs.
2. Faculty surveys are considered to identify curriculum gaps for attainment of CO's and PO's. Faculty inputs are valuable because they understand student comprehension and learning abilities better.
3. Based on the COs and POs and using result analysis and surveys, the curricular gaps are ascertained.
4. 'Student Exit surveys' are collected to identify curriculum gaps and the requisite skills for their future endeavors in their career paths.
5. Surveys are conducted with industry and the employers of our students, regarding their expectations from our graduates, which are then matched with our COs and POs.
6. Panel discussions are organized with focus groups such as IE, IWWA, CREDAI, Institution of Valuers, and other professional bodies to identify the curricular gaps.
7. Feedback is collected from the alumni who have joined in the professional careers or pursuing higher studies or has become entrepreneurs.
8. The required achievement level of Graduates Attributes are observed to identify gaps in attainment of COs and POs.

The feedback and surveys being utilized in the process are aimed at analyzing and discerning the extent to which the outcomes are addressed. This includes analysis for missing out on outcomes, by students in case of change in electives; the extent of support by pedagogy and assessments in the development of the students; the attainment of required skills and qualities by students for professional growth. Inputs and suggestions on improvements in courses after result analysis from course coordinators, Guest lecture, web content, video lectures and additional power point presentations of the course are shared with the students for further strengthening the course outcomes.

3.6 Course Syllabi (5)

Total Marks : 5.00

Institute Marks : 5.00

(Include, in appendix, a syllabus for each course used. Syllabi format should be consistent and shouldn't exceed two pages.)
The syllabi format may include:

- Department, course number, and title of course
- Designation as a required or elective course
- Pre-requisites
- Contact hours and type of course (lecture, tutorial, seminar, project etc.,.)
- Course Assessment methods(both continuous and semester-end assessment)
- Course outcomes
- Topics covered
- Text books, and/or reference material

File Name
GR 14 MECH_Syllabus I & II BTech
GR 11 MECH-Syllabus III & IV BTech

The Course Syllabi of Mechanical Engineering programmes consists of general guidelines, academic requirements, attendance requirements, credit requirements and details about curriculum. Each semester modules are given in which courses and laboratory required content is provided. Details about elective subjects and requirement about seminar, comprehensive viva, mini and major project is provided. Finally a requirement for the award of the degree is given.

The syllabi format may include:

- Department, course number, and title of course
- Designation as a required or elective course
- Pre-requisites
- Contact hours and type of course (lecture, tutorial, seminar, project etc.,.)
- Course Assessment methods(both continuous and semester-end assessment)
- Course outcomes
- Topics covered
- Text books, and/or reference material

4 Students' Performance (75)

Total Marks : 67.60

Admission intake in the programme

Item	2015-2016	2014-2015	2013-2014	2012-2013	2011-2012	2010-2011	2009-2010
Sanctioned intake strength in the programme	120	180	180	120	120	120	120
Total number of admitted students in first year minus number of students migrated to other programmes at the end of 1st year (N1)	120	174	176	119	120	120	120
Number of admitted students in 2nd year in the same batch via lateral entry (N2)	0	33	33	24	24	23	10
Total number of admitted students in the programme N = (N1 + N2)	120	207	209	143	144	143	130

4.1 Success Rate (20)

Total Marks : 18.00

Institute Marks : 18.00

Provide data for the past seven batches of students

Year of entry (in reverse chronological order)	Number of Students admitted in 1st year + admitted via lateral entry in 2nd year (N1 + N2)	Number of students who have successfully completed			
		1st year	2nd year	3rd year	4th year

2015-2016	120	0	0	0	0
2014-2015	207	106		0	0	0
2013-2014	209	132	134		0	0
2012-2013	143	77	90	105		0
2011-2012 (LYG)	144	86	110	110	132	
2010-2011 (LYGm1)	143	70	86	101	119	
2009-2010 (LYGm2)	130	64	87	105	124	

Success rate = 20 × mean of success index (SI) for past three batches
SI = (Number of students who graduated from the programme in the stipulated period of

course duration)/(Number of students admitted in the first year of that batch

and admitted in 2nd year via lateral entry)

Item	LYG (2011-2012)	LYGm1 (2010-2011)	LYGm2 (2009-2010)
Number of students admitted in the corresponding First Year + admitted via lateral entry in 2nd year	144.00	143.00	130.00
Number of students who have graduated in the stipulated period	132.00	119.00	124.00
Success index (SI)	0.92	0.83	0.95

Average SI 0.90
Success rate 18.00

4.2 Academic Performance (20)

Total Marks : 14.81

Institute Marks : 14.81

Academic Performance = 2 * API
Where API = Academic Performance Index
= Mean of Cumulative Grade Point Average of all successful
Students on a 10 point CGPA System
OR
= Mean of the percentage of marks of all successful students / 10

Item Approximating the API by the following mid-point analysis	2011-2012	2010-2011	2009-2010
9 < Number of students with CGPA < 10	2.00	3.00	0.00
8 < Number of students with CGPA < 9	25.00	46.00	9.00
7 <= 8	68.00	60.00	54.00
6 <= 7	31.00	8.00	50.00
5 <= 6	6.00	2.00	11.00
Total	132.00	119.00	124.00
Approximating API By Mid-CGPA	0.00	0.00	0.00
Mean of CGPA/Percentage of all the students API	7.39	7.84	6.99
Assessment	14.78	15.68	13.98

Average assessment points 14.81

4.3 Placement and Higher Studies (20)

Total Marks : 19.79

Institute Marks : 19.79

Item	LYG 2011-2012	LYGm1 2010-2011	LYGm2 2009-2010
Number of admitted students corresponding to LYG including lateral entry (N)	144.00	143.00	130.00
Number of students who obtained jobs as per the record of placement office (x1)	58.00	40.00	67.00
Number of students who found employment otherwise at the end of the final year (x2)	2.00	1.00	1.00
Number of students who opted for higher studies with valid qualifying scores/ranks (y)	72.00	78.00	56.00
x=x1+x2	60.00	41.00	68.00
Assessment points	20.00	19.37	20.00

Average assessment points 19.79

4.4 Professional Activities (15)

Total Marks : 15.00

4.4.1 Professional societies / chapters and organising engineering events (3)

Institute Marks : 3.00

(Instruction: The institution may provide data for past three years).

GRIET lays stress not only on the academic excellence but also on the beyond academic excellence to make the Program a holistic experience. This is managed by providing time and resources to allow the students to take part in Co and Extracurricular activities which are integrated and spread over the entire academic year. This we believe has a profound impact in shaping the overall persona of a student.

- The activities are pre-planned and included in the College diary.
- The activities are planned and executed by the student bodies of the college with supervision from faculty.

To give fillip to beyond-curricular activity, the institution has encouraged registration of its student groups as members in professional societies, chapters such as: **Society of Automobile Engineering in INDIA (SAE) and Society of Mechanical Engineers (SME).**

The event was all about to spread awareness among the students about the latest technology in Manufacturing. This was an attempt done by SME-GRIET to spread the importance of manufacturing field. In India this field is depleting its dominance year by year due to many factors like ignorance towards it, underestimating the benefits of manufacturing field .Now it is the day of realization for many, about Manufacturing. The technology introduced was on CNC namely Computer Numerically Controlled Machines.

Society of Automobile Engineering in INDIA is India's leading resource for mobility technology. **SAE INDIA** is an affiliate society of SAE International registered in India as an Indian nonprofit engineering and scientific society dedicated to the advancement of mobility industry in India, which includes the participation of Engineers, Executives from Industry, Government Officials, Academics and Students.

The student chapters of professional societies such as SAE and SME have been intensely involved in Co-curricular activities giving full benefit and encouragement to the students.

Events organized by the professional societies/chapters during the last three years:

S no.	Event	Society	Date	Achievement / Benefit
1	Workshop on ABS	SAE	March-2015	Workshop conducted for academic improvement
2	Seminar on SAE BAJA	SAE	March-2016	Exposure to latest developments
3	Workshop on "Sixth sence Ibotz, Android Botix	SME	Feb-2014	Detailed knowledge of upcoming project
4	Workshop on "AutoCAD Training	SME	Aug- 2014	Exposure to Drafting techniques.
5	"Automobiles "Robotryst"	SAE	Sep- 2014	Aspects of Automobile technology.
6	Udyata- "A product developed workshop, Animax	SME	March-2016	Concepts of product development
7	Workshop on "3D printing Machine (under SME	SME	Jan-2016	Techniques in Rapid prototyping

ANNUAL REPORT 2014-2015 OF SME STUDENT CHAPTER

Auto-CAD Training Program:

The Auto-CAD Training program is conducted on 11 August, 2014 under **SME** student chapter for 2nd and 3rd year students with team of 5 (4th year students) and two faculty advisors. The total duration of the program was 20 days. The total numbers of students are attended for this training program is 42(28 from 2nd year & 14 from 3rd year).

The topics which are discussed on this program are: Introduction to AutoCAD, Co-ordinate systems, Fundamentals of 2D drafting, Fundamentals of 2D drafting, Construction of 2D models (Covering all commands), Dimensioning & Annotation, Views (Orthographic, Isometric, Oblique, Perspective), Explanation of Isometric views and Fundamentals of 3D drafting.

The faculty advisors are Dr. K.Satyanarayana and A.Anitha Laxmi.

The certificates for participated students are given based on assessment test. And the certification is divided into three levels Excellent, good and satisfactory based on their performance. The closing ceremony was conducted on 11 October, 2014.

Udyata:

Udyata is the technical event conducted by SME student chapter under the Department of Mechanical Engineering on 2 and 3 of March, 2015.

This event is mainly organized by students of **SME** student chapter. By this event students get a chance to participate in different workshops. Its main emphasis is to improve the knowledge of the students in various fields of technology. On inauguration day, there was a talk by Principal, HOD and Convener of SME.

WORKSHOP DETAILS:

Workshop 1: *CNC(prototyping/product development)*

Workshop 2: *Animax-Animation & 3D Designing.*

1. **CNC (PROTOTYPING/PRODUCTDEVELOPMENT) WORKSHOP**

This workshop is useful for all product designers and developers that are looking forward for ways to prototype their dreams. This workshop will guide to students how to provide professional touch to their product, Additive and subtractive manufacturing.

This workshop will be conducted for two days, in consecutive sessions. It has both theory and hands-on experience. It is conducted in collaboration with **SVP Laser Technologies Pvt.Ltd**. It is a design and manufacturing company providing high end services to diverse engineering Industries using advanced Laser, Plasma, Router and CNC profile cutting technologies.

Carrom Bot Pen plotter

This workshop was success with 62 students attending from our college and all the neighborhood colleges.

2. ANIMAX (ANIMATION & 3D DESIGNING) WORKSHOP

Animax is a workshop based on **Animation & 3D Designing** .This workshop is an overview of the 3D computer animation industry, Basic modelling techniques, Creation of materials & Texture maps, Basic lighting techniques, Basic camera manipulation, Hierarchy linking, Basic key framing techniques, Rendering and Basic designing echniques of animation. After this workshop participants will come up with a short 3D movie designed by them. And it is more useful for the students who like to work in the animation industry. This workshop will be conducted in collaboration with **Innovians Technologies.** It is an India's fastest growing company in the field of Practical Educational Training, Professional Training, Corporate Training, Web & IT Services, with most advanced technologies & experience in hand.

This workshop was success with 33 students attending from our college and neighborhood colleges

3. Power Point Presentations

The power point presentations are given by students on their own topic which is related to advance in today's technology. The number of students participated in this event are around 150 teams (2 per team) out of which 45 teams are selected for presentation.

Ruedo – General report

The much awaited environment fest of GRIET was successfully held on the 19th of February, 2015. Over two month's hard work was put in by the NSS wing and Street Cause to organize this one-of-a-kind fest.

It was a beautiful day to celebrate nature and its beauty.

The fest was inaugurated by the Head of Department of Biotechnology, Dr. Sunil Kumar. Since it is an environment fest, we thought it would be fitting to have a different kind of inauguration. We invited our faculty to plant a sapling each and then by lighting the lamp by our RUEDO convener Prof. T Padma, Prof. S. Rama Murthy and Dr. N Sunil Kumar followed by their inspirational speeches in the presence of the students. The inauguration ended with a prayer song sung by one of the students.




The following events started off greatly with huge crowd participation:

Plant Distribution:

As a key part of saving the environment, 500 saplings were distributed among students and teachers and were encouraged to take care of it.

Sign Board:

A sign board was set up in front of the 3rd block on which there was a promissory stating "I take an oath to save our planet" on which the students were to put their signature on. It turned out to be a huge success as students showed great enthusiasm and the sign board was filled completely within a few hours.

Workshop:

For the very first time, a solar mobile charger workshop was organised by two of our very own students Luqmaan Taha Siddiqui and Uttej Reddy. The participants were successfully taught how to make a solar mobile charger from scratch on a PCB (printed circuit board) using eagle software.

The event turned out to be much liked and very useful to the participants.



Paper Presentation:

Technical Papers were presented on theme of environmental issues. Over 50 papers were submitted for selection from various colleges across India.

Treasure hunt

A treasure hunt was organized and the clues were set up at various spots in the college premises and the students were given clues to identify the spots to reach the final destination.

Green Museum:

A museum was set up by the students showcasing how the environment degraded as the mankind evolved through centuries. It concentrated on showcasing the changes that had happened to forests, urban and rural areas throughout time.

Interesting facts were also put up on signs for informational purposes.

A mini theatre was set up in the museum as well for playing videos on our environment. The museum was a huge hit and raised a lot praises among the students as well as the teachers


Waste management seminar:

A waste management seminar was held in the college regarding how to manage waste and be pollution free.

4.4.2 Organisation of paper contests, design contests, etc. and achievements (3) Institute Marks : 3.00

(Instruction: The institution may provide data for past three years).

The Institute organizes contests in paper presentations, design contests in each department under an event title, and the details are as follows:

PRAGNYA is a national level annual technical symposium held at GRIET, and is one among the most popular and eagerly awaited events in Hyderabad. It is organized by the institute and conducted by the IEEE Student Branch of GRIET. The event offers a platform for students to enhance their class room knowledge in various domains and find connection with the real time world while collaterally having fun. Academically it challenges the students potential to exhibit their ideas, technical skills and prowess in their domain. The events like Paper Contest, Poster Presentation, Design Contest, Electronic Quiz, Code-O-Mania, Web Design, Show Your Potential, Robotics, CAD Mania, Master-Caster are conducted under the PRAGNYA Symposium.

x-Kernel is a annual event conducted to provide a platform for young Engineers to test their skills. This Event is organized by CSE Department. x-Kernel is not the usual programming contest. The core concept of the competition is the actual code consisting of logic and minimum time of computation. It deals with out of the box thinking where participants ransack their brains to find an accurate solution.

Scientific Fore Step is a technical competition wherein the students from various departments of the institution participate and show case in project design and development contest.

S no.	Contest name	Organised by	Date	Achievement / Benefit
1	Pragnya-Tech quiz	GRIET	2013	Exposure to latest developments
2	Workshop on ABS	GRIET (SAE)	2015	Workshop conducted for academic improvement
3	GRIET Industrial Expo	GRIET	2013	Indutsrial methos awareness
4	Seminar on SAE BAJA	GRIET (SAE)	2016	Exposure to latest developments
5	Workshop on “Sixth sence Ibotz, Android Botix	GRIET (SME)	2014	Detailed knowledge of upcoming project
6	Beat the clock	GRIET	2013	Basics of Computer concepts
7	Workshop on “AutoCAD Training	GRIET (SME)	2014	Exposure to Drafting techniques.
8	Auto expo (Automoble workshop)	GRIET	2013	Knowledge of Automotive Technology
9	“Automobiles “Robotryst”	GRIET (SAE)	2014	Aspects of Automobile technology.
10	Udyata- “A product developed workshop, Animax	GRIET (SME)	2016	Concepts of product development
11	Workshop on “3D printing Machine	GRIET (SME)	2016	Techniques in Rapid prototyping

4.4.3 Publication of technical magazines, newsletters, etc (3) Institute Marks : 3.00

(Instruction: The institution may list the publications mentioned earlier along with the names of the editors, publishers, etc.).

GRIET is actively engaged in R & D, in encouraging research, promoting and contributing information in this sphere as is evident from the publications originating from its campus.

e-GEM: GRIET e-Magazine (GeM) is an e-initiative taken by Gokaraju Rangaraju Institute of Engineering and Technology (GRIET) to encourage e-culture among its students. This will also serve as a wall for students to paint their thoughts and be as creative as their minds can be. Using GeM we plan to raise the awareness of how this multifaceted internet can also serve as a medium for colleges to encourage creativity among its students. Gem will be portal for students to showcase their oft hidden talents, be it in their literary skills or their knowledge of latest happenings in their respective field of interest.

REFLECTIONS: The College Magazine- “**Reflections”** truly reflects the mood and mind of GRIETians. College Editorial team brings out the reflections annually with college events, achievements, life elements in and around GRIET covering circular aspects and beyond GRIET

International journal of Advanced Materials Manufacturing & Characterization (IJAMMC): The aim of IJAMMC is to promote a greater knowledge and understanding of the attributes and capabilities of all types of modern engineering materials in the context of engineering processing and characterization. The objective of this journal is to bring together experts’ research ideas, advanced industry practices through various research organizations and professional engineers for sharing of knowledge, expertise and experience in the emerging trends related to advanced materials processing, manufacturing and characterization. And also make these ideas available to various academia and others to promote research in the country.

Management Today: An International Journal, published by Department of Management Studies, GRIET. The journal publishes the latest developments in Management Education, Practice and Profession. The principal objective is to provide a forum for academicians, researchers, and professionals in Management all over the world to promote their research, share their ideas, discuss and/or communicate their views on various issues and developments in different areas of Management. The areas of focus could include: General Management, Financial Management, Human Resource Management, Marketing Management, Production Management, Strategic Management, Management of Change, Organizational Behavior, Organizational Development, Management Information Systems, International Management, Management Accounting, Managerial Economics, etc.

International Journal of Advanced Computing (IJAC) is Quarterly Research Journal by GRIET and published from Hyderabad, Andhra Pradesh, India. It provides a world wide forum with innovative, practical development exposure as well as original research results on Computing Technologies. The Journal bring out the researchers and application developers from a wide range of Computing Techniques such as Statistics, Data Mining, VLSI, Nano Computing, Parallel Computing, Mobile Computing etc and is promoting high quality and novel research findings and innovative solutions to challenging Advanced Computing Problems, the Journal seeks to continuously advance the state of the art in Computing Techniques.

International Journal of Data Engineering and Computer Science (JDEC): As part of academic development and R&D, we have initiated this Journal with every effort to foster the values of inquisitiveness, exploration, invention. The Research community is invited to share their ideas through this Journal and publish their research work related to areas of Data Engineering and Computer Science.

Publications	Name of Magazine / newsletter	Issue	Started Year	Editor	Publisher(s)
e-Magazine	GEM	Monthly	2008	Ramya V	Gokaraju Rangaraju Institute of Engineering and Technology
News Letter	Reflections	Yearly	2001	Lakshmi Prasanna	Gokaraju Rangaraju Institute of Engineering and Technology
Journal	International Journal of advanced computing (IJAC)	Quarterly ISSN: 0975-7686	2009	Prof. P.S.Raju	Gokaraju Rangaraju Institute of Engineering and Technology
Journal	International Journal of Data Engineering and Computer Science (JDEC)	Yearly ISSN: 0975-8372	2009	Dr. Jandhyala N Murthy	Gokaraju Rangaraju Institute of Engineering and Technology
Journal	International Journal of Advanced Materials Manufacturing and Characterization (IJAMMC)	Yearly ISSN: 2277-3886	2012	Dr. Swadesh Kumar Singh	Gokaraju Rangaraju Institute of Engineering and Technology
Journal	Management Today, International Journal of Management Studies	Half Yearly ISSN: 2230-9764	2012	Dr. P.B. Appa Rao	Gokaraju Rangaraju Institute of Engineering and Technology

4.4.4 Entrepreneurship initiatives, product designs, and innovations (3) Institute Marks : 3.00

(Instruction: The institution may specify the efforts and achievements.)

Entrepreneurship Development Cell takes initiatives for motivating students in product designs and innovations concerned with the individual specialty.

Departmental Level Entrepreneurial Activities:

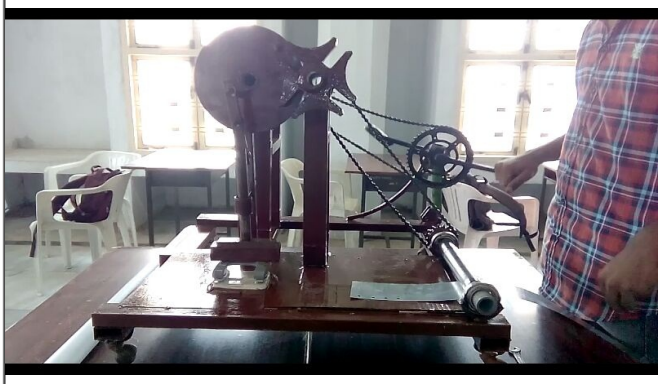
Event	Event Name / Effort	Achievements
2014-2015		
Entrepreneurship Initiatives	Incubation center for R & D Works is maintained in the Department, . design and Manufacturing work shop (L S Dyna software) CNC Lathe and milling seminar	All student projects are brought to the level of manufacturing
Product Designs	Design and manufacturing of the components on CNC Machines	All student projects are brought to the level of manufacturing
Innovations	Multi- purpose table	Made as a product
2013-2014		
Entrepreneurship Initiatives	design and Manufacturing work shop (L S Dyna software)	All student projects are brought to the level of manufacturing
Product Designs	Table Top Machines	All student projects are brought to the level of manufacturing
Innovations	Multi purpose solr system	Made as a product
2012-2013		
Entrepreneurship Initiatives	PCB design work shop (EAGLE software)	All student projects are brought to the level of manufacturing
Product Designs	Automated machine designs	All student projects are brought to the level of manufacturing
Innovations	Tabletop machine with multy purpose drilling	Made as a product

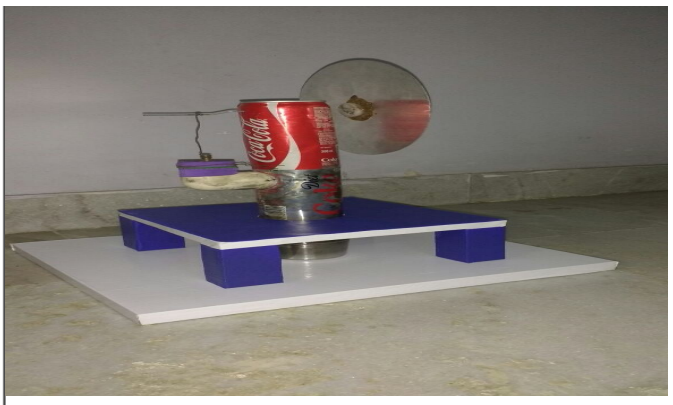
Institute Level Entrepreneurial Activities:

Year	Event	Achievement/ Impact
2014-15	1.Faculty Development programme in Entrepreneurship sponsored by NSTEDB ,organized by center for Entrepreneurship Development (CED). 2. Conducted Guest lecture on "Industrial opportunities, Entrepreneurship and soft skills" 3. Constituting managing committee for implementation of the scheme support for Entrepreneurial and managerial Development of SMEs through Incubators.	1. Establishment of Incubation center 2. Students actively joining family business. 3. process and practice of entrepreneurship development, communication and inter-personal skills, creativity, problem solving, achievement motivation training.
2013-14	1. conducted a competition on exhibiting and product development. 2. Organized a guest lecture on Creativity and innovation. 3. Conducted Round table discussion on Employability initiatives in life sciences segment.	
2012-13	1. conducted a CEO speak Session on "The Entrepreneurial Journey". 2. Conducted a guest lecture on "Entrepreneur opportunities and challenges " 4. Submitted proposal for implementation of the scheme "support support for Entrepreneurial and managerial Development of SMEs through Incubators".	

Product Design & Innovations

S.No	Batch Details	Title of the Project	Name of the Guide	Model
	D.Akshay Kumar – 13241A0330			

1.	G.Neelima – 13241A0342 G.Bharath Kumar – 13241A0333	Design and Fabrication of Air Engine	Dr.Karthikeyan	
2..	B.Rahul – 13241A0306 A.Jagapathi Reddy – 13241A0303 B.Naveen – 13241A0312	Auto Roll Punching Machine Using Geneva Mechanism	Dr.Karthikeyan	
3.	JB.Chandra Raju – 13241A0345 D.Pareekshith– 13241A0328 Anil Kumar Sharma– 14245A0302	Fabrication of Quadra Pod	Mr.K.Prashanth Reddy	
4.	A.Saikiran – 13241A0301 Ch.Rathan Kumar– 13241A0319 G.Manikanta – 13241A0335	Fabrication of Gamma Type Stirling Engine	Mr.K.Ratnababu	

4.4.5 Publications and awards in inter-institute events by students of the programme of study (3) Institute Marks : 3.00

(Instruction: The institution may provide a table indicating those publications, which fetched awards to students in the events/conferences organised by other institutes. A tabulated list of all other student publications may be included in the appendix.)

All Technological Universities and institutions hold technical festivals annually and paper and model presentations are awarded prizes. The students of GRIET have also won many laurels over the years and this is a regular annual achievement the institute is proud of.

Research Publications by Students:

S.NO	Name of the Student	Title of the Research paper	Journal/Conference	PP/Year
1.	H.Prashanth	Experimental studies on behavior of sintered copper wick heat pipe at different oreintation	International journal of innovative research in Advanced engineering	176-180(2015)
2.	C.Pradeep	Experimental studies on behavior of sintered copper wick heat pipe at different oreintation	International journal of innovative research in Advanced engineering	176-180(2015)
3.	Ghanta Ravichandra	Comparative study of bond strength of formal dehyde and soya based adhesive in wood fiber plywood	Procedia Materia science	2-9(2014)
4.	Vinay Kumar	Finite element simulation of ironing process under warm conditions	JMR&t	71-78(2014)
5.	P.Prudhvi Reddy	Finite element simulation of ironing process under warm conditions	JMR&t	71-78(2014)
6.	P.V.sasidhar	Formability studies of ASS 304 and evaluation of friction for AL in deep drawing set up at elevated temp using LS-Dyna	Journal of King Saudi University engg-sciences	21-31(2014)
7.	KVS Sruthy	Optimized machining of PRU based plate by developing of virtual machine tool kit	International journal of innovations in engg and tech	Vol 5 issue 4(2015)

Inter-Institute Events by Students:

Name of the Programme	Year	Place	Name of the student	Achievement
Internship	2013	BHEL India	A Nikhil Goud	Training
Internship	2013	BHEL India	Vamsi sai santosh	Training
Internship	2014	Hundi	D manoj	Training
Internship	2014	Hundi	V Prashanth reddy	Training

Internship	2014	BHEL India	K V S Satishravan	Training
Internship	2014	BHEL India	K Sandeep	Training
Internship	2014	Vizag steel plant	B B Venkatram	Training
SAEINDIA AERO MODELING WORKSHOP	2015	MLRIT	Khaja Faisal Hussain	Participation
SAEINDIA AERO MODELING WORKSHOP	2015	MLRIT	Subhash Reddy	Participation
SAEINDIA AERO MODELING WORKSHOP	2015	MLRIT	S nithin	Participation
SAEINDIA AERO MODELING WORKSHOP	2015	MLRIT	rakesh	Participation
SAEINDIA AERO MODELING WORKSHOP	2015	MLRIT	Vamsikiran	Participation
SAEINDIA AERO MODELING WORKSHOP	2015	MLRIT	Manil Reddy	Participation
SAEINDIA AERO MODELING WORKSHOP	2015	MLRIT	Sphoorthy V	Participation
SAEINDIA AERO MODELING WORKSHOP	2015	MLRIT	Gautami V	Participation
SAEINDIA AERO MODELING WORKSHOP	2015	MLRIT	Ajay S	Participation
SuperBa	2015	SMEC	C Chandra	Participation
SuperBa	2015	SMEC	K druvakumar	Participation
SuperBa	2015	SMEC	Dinesh Varma	Participation
SuperBa	2015	SMEC	Manisharath	Participation
SuperBa	2015	SMEC	Vamsikiran	Participation
SuperBa	2015	SMEC	Ravindar M	Participation
Robotryst	2015	GRIET	Sridhar	Participation
Robotryst	2015	GRIET	S gautam	Participation
Robotryst	2015	GRIET	P vinay	Participation
Robotryst	2015	GRIET	U S Jyothi	Participation
Robotryst	2015	GRIET	H Ganesh	Participation
Robotryst	2015	GRIET	K Venkatkrishna	Participation
Robotryst	2015	GRIET	PJ Mallik	Participation
Robotryst	2015	GRIET	B Rahul	Participation
Robotryst	2015	GRIET	S vamsi	Participation
SAEINDIA Aero Design Challenge	2016	HITS	Khaja Faisal Hussain	Participation
SAEINDIA Aero Design Challenge	2016	HITS	Subhash Reddy	Participation
SAEINDIA Aero Design Challenge	2016	HITS	S nithin	Participation
SAEINDIA Aero Design Challenge	2016	HITS	rakesh	Participation
SAEINDIA Aero Design Challenge	2016	HITS	Vamsikiran	Participation
SAEINDIA Aero Design Challenge	2016	HITS	Manil Reddy	Participation
SAEINDIA Aero Design Challenge	2016	HITS	Sphoorthy V	Participation
SAEINDIA Aero Design Challenge	2016	HITS	Gautami V	Participation
SAEINDIA Aero Design Challenge	2016	HITS	Ajay S	Participation
BAJA SAINDIA	2016	NITRIP	M Raghuvamsi	Participation
BAJA SAINDIA	2016	NITRIP	G Raj Sekhar	Participation

BAJA SAINDIA	2016	NITRIP	G tarunkumar	Participation
BAJA SAINDIA	2016	NITRIP	S Akhilchoudhary	Participation
BAJA SAINDIA	2016	NITRIP	S Vamsikiran	Participation
BAJA SAINDIA	2016	NITRIP	T Dinesh	Participation
BAJA SAINDIA	2016	NITRIP	G Rakesh	Participation
BAJA SAINDIA	2016	NITRIP	S nitin	Participation
BAJA SAINDIA	2016	NITRIP	S Harikumar	Participation

5 Faculty Contributions (175) **Total Marks : 108.34**

List of Faculty Members:

Exclusively for the Programme / Shared with other Programmes (20)

(Instruction: The institution may complete this table for the calculation of the student-teacher ratio (STR). Teaching loads of the faculty member contributing to only undergraduate programme (2nd, 3rd, and 4th year) are considered to calculate the STR.)

For CAYm2 2013-2014

Name of the faculty member	Highest Qualification	University	Year of graduation	Designation	date of joining the institution	Distribution of teaching load (%)			Number of research publications in journals and conferences	IPRs	R&D and consultancy work with amount		Holding an incubation unit
						1st Year	UG	PG			Funding Agency	Amount	
Dr. Swadesh Kumar Singh	PhD	IIT Delhi	2005	Professor	03/01/2007	0.00	100.00	0.00	12	Copyrights	national agency	3200000.00	YES
Mr. R. Raman Goud	ME/ M Tech	JNTUH	2004	Associate Professor	15/09/2005	0.00	100.00	0.00	2	None	None	0.00	0
Mr. L. Jayahari	ME/ M Tech	BTH SWEEDAN	2005	Associate Professor	14/11/2005	0.00	100.00	0.00	2	None	None	0.00	0
Mr. B. Ch. NookaRaju	ME/ M Tech	NITC	2004	Associate Professor	07/02/2005	0.00	100.00	0.00	1	None	national agency	600000.00	YES
Mr. K. Koteswara Rao	ME/ M Tech	SVU	1984	Associate Professor	12/12/2011	0.00	0.00	100.00	0	None	None	0.00	0
Mr. D. S. Naga Raju	ME/ M Tech	RGPVV Bhopal	2002	Associate Professor	07/07/2006	100.00	0.00	0.00	1	None	None	0.00	0
Ms. U. S. Jyothi	ME/ M Tech	JNTUH	2001	Associate Professor	30/06/2011	0.00	100.00	0.00	0	None	None	0.00	0
Mr. K. Sunil Kumar Reddy	ME/ M Tech	NITC	2000	Associate Professor	15/04/2014	100.00	0.00	0.00	0	None	None	0.00	0
Ms. Y. Shanthi	ME/ M Tech	JNTUK	2006	Associate Professor	26/07/2010	0.00	100.00	0.00	1	None	None	0.00	0
Mr. S. Ravi Sekhar	ME/ M Tech	JNTUH	2011	Assistant Professor	14/07/2008	0.00	0.00	100.00	0	None	None	0.00	0
Ms. B. Tanya	ME/ M Tech	JNTUK	2011	Assistant Professor	04/06/2012	100.00	0.00	0.00	1	None	None	0.00	0
Mr. K. Prashanth Reddy	ME/ M Tech	JNTUH	2007	Assistant Professor	03/07/2013	0.00	100.00	0.00	4	None	None	0.00	0
Ms. Ratna Deepika	ME/ M Tech	ANU	2011	Assistant Professor	15/06/2012	0.00	100.00	0.00	0	None	None	0.00	0
Mr. J. Venkata Suresh	ME/ M Tech	JNTUH	2005	Assistant Professor	05/07/2012	0.00	100.00	0.00	0	None	None	0.00	0
Ms. M. Mamatha Gandhi	ME/ M Tech	JNTUK	2012	Assistant Professor	27/04/2013	100.00	0.00	0.00	0	None	None	0.00	0
Mr. K. Siva Satya Mohan	ME/ M Tech	JNTUH	2005	Assistant Professor	10/06/2013	0.00	0.00	100.00	5	None	None	0.00	0

Mr. K. Ratna Babu	ME/ M Tech	JNTUH	2010	Assistant Professor	10/06/2013	100.00 0.00 0.00	1	None	None	0.00	0
Dr. K. Satyanarayana	PhD	NIT Warangal	2013	Associate Professor	17/02/2014	0.00 100.00 0.00	3	None	None	0.00	0
Ms. A. Anitha Lakshmi	ME/ M Tech	AU	2007	Assistant Professor	15/06/2012	0.00 100.00 0.00	0	None	None	0.00	0
Dr. Jandhyala N Murthy	PhD	Carnfield	1988	Professor	15/03/2001	0.00 100.00 0.00	2	None	None	0.00	0
Mr. D. Eswaraiah	ME/ M Tech	JNTUH	2010	Assistant Professor	21/07/2010	0.00 0.00 100.00	0	None	None	0.00	0
Dr. Adapa rama rao	PhD	JNTU	2007	Professor	12/12/2005	0.00 100.00 0.00	0	None	None	0.00	0
Dr. PAPN. Verma	PhD	JNTUH	2012	Professor	04/09/1998	0.00 100.00 0.00	3	None	None	0.00	0
Mr. P. Srinivas	ME/ M Tech	OU	2008	Assistant Professor	07/07/2008	0.00 0.00 100.00	0	None	None	0.00	0
Ms. T. Deepthi	ME/ M Tech	AU	2010	Assistant Professor	07/07/2011	0.00 100.00 0.00	0	None	None	0.00	0
Ms. K. Vasundhara	ME/ M Tech	AU	2011	Assistant Professor	02/08/2010	100.00 0.00 0.00	1	None	None	0.00	0
Ms. G. Gayatri	ME/ M Tech	JNTUH	2011	Assistant Professor	12/08/2013	0.00 0.00 100.00	0	None	None	0.00	0
Dr. K. G. K. Murthy	PhD	MU	1987	Professor	12/10/2013	0.00 100.00 0.00	6	None	national agency	850000.00	YES
Dr. P. S. V. Kurma Rao	PhD	AU	1977	Professor	22/12/2005	0.00 100.00 0.00	5	None	national agency	600000.00	YES
Mr. P. P. C. Prasad	ME/ M Tech	REW	1979	Assistant Professor	14/06/2004	0.00 100.00 0.00	2	None	None	0.00	0

For CAYm1 2014-2015

Name of the faculty member	Highest Qualification	University	Year of graduation	Designation	date of joining the institution	Distribution of teaching load (%)			Number of research publications in journals and conferences	IPRs	R&D and consultancy work with amount		Holding an incubation unit
						1st Year	UG	PG			Funding Agency	Amount	
Dr. Swadesh Kumar Singh	PhD	IIT Delhi	2005	Professor	03/01/2007	0.00	100.00	0.00	12	None	national agency	3200000.00	YES
Mr. R. Raman Goud	ME/ M Tech	JNTUH	2004	Associate Professor	15/09/2005	0.00	100.00	0.00	2	None	None	0.00	0
Mr. L. Jayahari	ME/ M Tech	BTH SWEEDAN	2005	Associate Professor	14/11/2005	0.00	100.00	0.00	2	None	None	0.00	0
Dr. Ram Subbaiah	PhD	SU	2013	Associate Professor	24/12/2014	0.00	100.00	0.00	0	None	None	0.00	0
Mr. B. Ch. NookaRaju	ME/ M Tech	NITC	2004	Associate Professor	07/02/2005	0.00	100.00	0.00	1	None	national agency	600000.00	YES
Mr. K. Koteswara Rao	ME/ M Tech	SVU	1984	Associate Professor	12/12/2011	0.00	0.00	100.00	0	None	None	0.00	0
Mr. D. S. Naga Raju	ME/ M Tech	RGPVV Bhopal	2002	Associate Professor	07/07/2006	100.00	0.00	0.00	1	None	None	0.00	0
Ms. U. S. Jyothi	ME/ M Tech	JNTUH	2001	Associate Professor	30/06/2011	0.00	100.00	0.00	1	None	None	0.00	0
Ms. Y. Shanthi	ME/ M Tech	JNTUK	2006	Associate Professor	26/07/2010	0.00	0.00	100.00	1	None	None	0.00	0
Mr. S. Ravi Sekhar	ME/ M Tech	JNTUH	2013	Assistant Professor	14/07/2008	0.00	0.00	100.00	0	None	None	0.00	0
				Assistant									

Ms. B.Tanya	ME/ M Tech	JNTUH	2011	Professor	04/06/2012	100.00 0.00 0.00	1	None	None	0.00	0
Mr. K. Prashanth Reddy	ME/ M Tech	JNTUH	2007	Assistant Professor	30/07/2013	0.00 100.00 0.00	4	None	None	0.00	0
Ms. Ratna Deepika	ME/ M Tech	ANU	2011	Assistant Professor	15/06/2012	0.00 100.00 0.00	0	None	None	0.00	0
Mr. J. Venkata Suresh	ME/ M Tech	JNTUH	2005	Assistant Professor	05/07/2012	0.00 50.00 0.00	0	None	None	0.00	0
Ms. M. Mamatha Gandhi	ME/ M Tech	JNTUK	2012	Assistant Professor	27/04/2013	100.00 0.00 0.00	0	None	None	0.00	0
Mr. K. Siva Satya Mohan	ME/ M Tech	JNTUH	2005	Assistant Professor	10/06/2013	0.00 100.00 0.00	0	None	None	0.00	0
Mr. K. Ratna Babu	ME/ M Tech	JNTUH	2010	Assistant Professor	10/06/2013	100.00 0.00 0.00	0	None	None	0.00	0
Ms. S. BhanuTeja	ME/ M Tech	JNTUK	2014	Assistant Professor	02/06/2014	0.00 100.00 0.00	0	None	None	0.00	0
Mr. S. Sravan Sashank	ME/ M Tech	Manipal Univercity	2013	Assistant Professor	11/09/2014	0.00 100.00 0.00	0	None	None	0.00	0
Mr. V. Balaji	ME/ M Tech	JNTUH	2014	Assistant Professor	07/07/2014	100.00 0.00 0.00	0	None	None	0.00	0
Ms. K. P. Sirisha	ME/ M Tech	JNTUK	2013	Assistant Professor	20/08/2014	100.00 0.00 0.00	0	None	None	0.00	0
Ms. Ch. Bandhavi	ME/ M Tech	JNTUK	2012	Assistant Professor	02/09/2014	0.00 100.00 0.00	0	None	None	0.00	0
Mr. B. Krishna Mohan	ME/ M Tech	JNTUK	2012	Assistant Professor	11/06/2014	0.00 100.00 0.00	0	None	None	0.00	0
Mr. P. Praveen	ME/ M Tech	JNTUH	2014	Assistant Professor	30/04/2015	0.00 100.00 0.00	1	None	None	0.00	0
Mr. P. Raja Sekar	ME/ M Tech	NIT Calicut	2004	Assistant Professor	03/02/2015	0.00 100.00 0.00	0	None	None	0.00	0
Mr. D. Suresh Kumar	ME/ M Tech	JNTUH	2014	Assistant Professor	08/06/2015	0.00 100.00 0.00	0	None	None	0.00	0
Dr. N Sateesh	PhD	OUH	2010	Professor	30/07/2014	0.00 100.00 0.00	4	None	None	0.00	0
Dr. K. Satyanarayana	PhD	NIT Warangal	2013	Associate Professor	17/02/2014	0.00 100.00 0.00	3	None	None	0.00	0
Ms. A. Anitha Lakshmi	ME/ M Tech	AU	2007	Assistant Professor	15/06/2012	0.00 100.00 0.00	0	None	None	0.00	0
Dr. R Karthikeyan	PhD	AU	2012	Professor	24/12/2014	0.00 100.00 0.00	0	None	None	0.00	0
Dr. Jandhyala N Murthy	PhD	Carnfield	1988	Professor	15/03/2001	0.00 100.00 0.00	2	None	None	0.00	0
Mr. D. Eswaraiah	ME/ M Tech	JNTUH	2010	Assistant Professor	21/07/2010	0.00 0.00 100.00	0	None	None	0.00	0
Dr. Adapa Rama Rao	PhD	JNTUH	2007	Professor	12/12/2005	0.00 100.00 0.00	0	None	None	0.00	0
Mr. P. Srinivas	ME/ M Tech	OU	2008	Assistant Professor	07/07/2008	0.00 0.00 100.00	1	None	None	0.00	0
Ms. T. Deepthi	ME/ M Tech	AU	2011	Assistant Professor	07/07/2011	0.00 100.00 0.00	0	None	None	0.00	0
Mr. L. Kiran kumar	ME/ M Tech	Univercity of Arkansas	2006	Assistant Professor	09/09/2014	0.00 0.00 100.00	1	None	None	0.00	0
Mr. Lin Prakash	ME/ M Tech	IIT HYD	2014	Assistant Professor	21/07/2014	0.00 100.00 0.00	0	None	None	0.00	0

For CAY 2015-2016

Name of the faculty member	Highest Qualification	University	Year of graduation	Designation	date of joining the institution	Distribution of teaching load (%)			Number of research publications in journals and conferences	IPRs	R&D and consultancy work with amount		Holding an incubation unit
						1st Year	UG	PG			Funding Agency	Amount	
Dr. Swadesh Kumar Singh	PhD	IIT Delhi	2005	Professor	03/01/2007	0.00	100.00	0.00	12	Copyrights	national agency	3200000.00	YES
Dr. R. RamanGoud	PhD	JNTUH	2015	Professor	15/09/2005	0.00	100.00	0.00	2	None	None	0.00	0
Dr. L. Jayahari	PhD	JNTUH	2015	Professor	14/11/2005	0.00	100.00	0.00	2	None	None	0.00	0
Dr. Ram Subbaiah	PhD	SU	2013	Associate Professor	24/12/2014	0.00	100.00	0.00	2	None	None	0.00	0
Dr. S. Surendarnath	PhD	NIT Trichy	2015	Associate Professor	30/04/2015	0.00	100.00	0.00	1	None	None	0.00	0
Sri B. Ch. NookaRaju	ME/ M Tech	NITC	2004	Associate Professor	02/07/2005	0.00	100.00	0.00	1	None	None	0.00	0
Sri K. Koteswara Rao	ME/ M Tech	SVU	1984	Associate Professor	12/12/2011	0.00	0.00	100.00	0	None	None	0.00	0
Sri D. S. Naga Raju	ME/ M Tech	RGPVV Bhopal	2002	Associate Professor	07/07/2006	0.00	100.00	0.00	0	None	None	0.00	0
Ms. U. S. Jyothi	ME/ M Tech	JNTUH	2001	Associate Professor	30/06/2011	0.00	100.00	0.00	3	None	None	0.00	0
Mr. K. Sunil Kumar Reddy	ME/ M Tech	NITC	2000	Associate Professor	15/04/2014	100.00	0.00	0.00	0	None	None	0.00	0
Ms. Y. Shanthi	ME/ M Tech	JNTUK	2006	Associate Professor	26/07/2010	0.00	100.00	0.00	0	None	None	0.00	0
Mr. K.Venkateswarlu	ME/ M Tech	JNTUH	2006	Associate Professor	30/04/2015	0.00	100.00	0.00	1	None	None	0.00	0
Mr. S. Ravi Sekhar	ME/ M Tech	JNTUH	2013	Assistant Professor	14/07/2008	0.00	0.00	100.00	1	None	None	0.00	0
Ms. B.Tanya	ME/ M Tech	JNTUK	2011	Assistant Professor	06/04/2012	0.00	100.00	0.00	1	None	None	0.00	0
Mr. K.Prashanth Reddy	ME/ M Tech	JNTUH	2007	Assistant Professor	07/03/2013	0.00	100.00	0.00	2	None	None	0.00	0
Ms. RatnaDeepika	ME/ M Tech	ANU	2011	Assistant Professor	15/06/2012	0.00	100.00	0.00	0	None	None	0.00	0
Mr. J.Venkata Suresh	ME/ M Tech	JNTUH	2005	Assistant Professor	05/07/2012	0.00	100.00	0.00	0	None	None	0.00	0
Ms. M.Mamatha Gandhi	ME/ M Tech	JNTUK	2012	Assistant Professor	25/04/2013	0.00	100.00	0.00	0	None	None	0.00	0
Mr. K.SivaSatya Mohan	ME/ M Tech	JNTUH	2005	Assistant Professor	10/06/2013	0.00	0.00	100.00	2	None	None	0.00	0
Mr. K.RatnaBabu	ME/ M Tech	JNTUH	2010	Assistant Professor	10/06/2013	100.00	0.00	0.00	1	None	None	0.00	0
Ms. S. BhanuTeja	ME/ M Tech	JNTUK	2014	Assistant Professor	02/06/2014	0.00	100.00	0.00	0	None	None	0.00	0
Mr. S SravanSashank	ME/ M Tech	MU	2013	Assistant Professor	11/09/2014	0.00	0.00	100.00	0	None	None	0.00	0
Mr. V.Balaji	ME/ M Tech	JNTUH	2014	Assistant Professor	07/07/2014	100.00	0.00	0.00	1	None	None	0.00	0
Ms. K.P.Sirisha	ME/ M Tech	JNTUK	2013	Assistant Professor	20/08/2014	100.00	0.00	0.00	0	None	None	0.00	0
Ms. Ch. Bandhavi	ME/ M Tech	JNTUK	2012	Assistant Professor	02/09/2014	0.00	100.00	0.00	0	None	None	0.00	0
Mr. B.Krishna				Assistant									

Mohan	ME/ M Tech	JNTUK	2012	Professor	11/06/2014	0.00	100.00	0.00	0	None	None 0.00	0
Mr. K.Ravi Kumar	ME/ M Tech	JNTUH	2015	Assistant Professor	03/03/2015	0.00	100.00	0.00	1	None	None 0.00	0
Mr. M.Prabhuteja	ME/ M Tech	JNTUH	2014	Assistant Professor	29/04/2015	0.00	100.00	0.00	1	None	None 0.00	0
Mr. J.PavanuSai	ME/ M Tech	JNTUK	2014	Assistant Professor	29/04/2015	0.00	100.00	0.00	1	None	None 0.00	0
Mr. Damodara Rao Maganti	ME/ M Tech	IIT Guhawati	2009	Assistant Professor	30/04/2015	0.00	100.00	0.00	0	None	None 0.00	0
Mr. P.Praveen	ME/ M Tech	JNTUH	2014	Assistant Professor	30/04/2015	100.00	0.00	0.00	0	None	None 0.00	0
Mr. P. Raja Sekar	ME/ M Tech	NIT Calicut	2004	Assistant Professor	03/03/2015	100.00	100.00	0.00	0	None	None 0.00	0
Mr.D.Suresh Kumar	ME/ M Tech	JNTUH	2014	Assistant Professor	06/08/2015	0.00	0.00	100.00	0	None	None 0.00	0
Ms.K Ramyasree	ME/ M Tech	JNTUH	2015	Assistant Professor	18/02/2016	0.00	100.00	0.00	1	None	None 0.00	0
Mr. C Raj Shekar	ME/ M Tech	JNTUH	2015	Assistant Professor	18/02/2016	0.00	100.00	0.00	0	None	None 0.00	0
Mr. M Sreekanth	ME/ M Tech	JNTUH	2015	Assistant Professor	18/02/2016	0.00	100.00	0.00	0	None	None 0.00	0
Mr. ShakirHussain	ME/ M Tech	JNTUH	2015	Assistant Professor	18/02/2016	0.00	100.00	0.00	0	None	None 0.00	0
Mr. K VijayKumar	ME/ M Tech	SAHE	2014	Assistant Professor	29/02/2016	0.00	100.00	0.00	0	None	None 0.00	0
Mr.T Balaji	ME/ M Tech	JNTUH	2015	Assistant Professor	26/02/2016	0.00	100.00	0.00	0	None	None 0.00	0
Ms.SnehaPriya M	ME/ M Tech	KLU	2013	Assistant Professor	03/03/2016	0.00	100.00	0.00	0	None	None 0.00	0
Mr.K Limbadri	ME/ M Tech	NIT RURKI	2015	Assistant Professor	26/02/2016	0.00	100.00	0.00	0	None	None 0.00	0
Dr. N Sateesh	PhD	OUH	2010	Professor	30/07/2014	0.00	100.00	0.00	4	None	None 0.00	0
Dr. K. Satyanarayana	PhD	NIT WARANGAL	2013	Associate Professor	17/02/2014	0.00	100.00	0.00	2	None	None 0.00	0
Ms. A. Anitha Lakshmi	ME/ M Tech	Andhra Univercity	2007	Assistant Professor	15/06/2012	0.00	100.00	0.00	1	None	None 0.00	0
Dr. R Karthikeyan	PhD	Annamalai Univercity	2012	Professor	24/12/2014	0.00	100.00	0.00	1	None	None 0.00	0
Dr. Jandhyala N Murthy	PhD	Carnfield	1988	Professor	15/03/2001	0.00	100.00	0.00	0	None	None 0.00	0
Mr. D. Eswaraiah	ME/ M Tech	JNTUH	2010	Assistant Professor	21/07/2010	0.00	0.00	100.00	0	None	None 0.00	0
Ms.Balubai	ME/ M Tech	JNTUH	2011	Assistant Professor	01/03/2016	0.00	100.00	0.00	0	None	None 0.00	0

5.1 Student-Teacher Ratio (STR) (20)

Total Marks : 15.55

Institute Marks : 15.55

Assessment = 20 × 15/STR; subject to maximum assessment of 20
STR = (x + y + z)/N1
where, x = Number of students in 2nd year of the programme
y = Number of students in 3rd year of the programme
z = Number of students in 4th year of the programme
N1 = Total number of faculty members in the programme (by considering fractional load)

Year	X	Y	Z	N1	X+Y+Z	STR	Assessment

2013-2014	144	144	144	18	432	24.00	12.50
2014-2015	216	144	144	25	504	20.16	14.88
2015-2016	216	216	144	37	576	15.57	19.27

Average assessment 15.55

N = Maximum {N1, N2}
N1 = Total number of faculty members in the programme (considering the fractional load)
N2 = Number of faculty positions needed for student-teacher ratio of 15

Year	Sanctioned Intake	Actual Admitted	N1	N2	N=Max.(N1,N2)
2013-2014	360	432	18	29	29
2014-2015	420	504	25	34	34
2015-2016	480	576	37	38	38

5.2 Faculty Cadre Ratio (20)

Total Marks : 20.00

Institute Marks : 20.00

Assessment = 20 × CRI
where, CRI = Cadre ratio index
= 2.25 × (2A + B)/N; subject to max. CRI = 1.0
where, A = Number of professors in the programme
B = Number of associate professors in the programme programme

Year	A	B	N	CRI	Assessment
2013-2014	6	9	29.00	1.00	20.00
2014-2015	5	9	34.00	1.00	20.00
2015-2016	6	10	38.00	1.00	20.00

Average assessment 20.00

5.3 Faculty Qualifications (30)

Total Marks : 22.28

Institute Marks : 22.28

Assessment = 3 × FQI
where, FQI = Faculty qualification index
= (10x + 6y + 2z0)/N2
where, x = Number of faculty members with PhD
y = Number of faculty members with ME/ M Tech
Z = Number of faculty members with B.E/B.Tech

	X	Y	Z	N	FQI	Assessment
2013-2014	7	23	0	29.00	7.10	21.31
2014-2015	7	30	0	34.00	7.18	21.53
2015-2016	9	39	0	38.00	8.00	24.00

Average assessment 22.28

5.4 Faculty Competencies correlation to Programme Specific Criteria (15)

Total Marks : 15.00

Institute Marks : 15.00

(Provide evidence that program curriculum satisfies the applicable programme criteria specified by the appropriate American professional associations such as ASME, IEEE and ACM. You may list the programme specific criteria and the competencies (specialisation, research publication, course developments etc.,) of faculty to correlate the programme specific criteria and competencies)

In GRIET, the quality and performance of the students during their course duration and subsequent passage in their careers are very important considerations. The institution evaluates student performance, advises students regarding curricular and career matters, and also monitors student's progress to foster their success in achieving program outcomes, thereby enabling them as graduates to attain program objectives. The institution has enforced policies for the validation of programme curriculum to satisfy the applicable programme criteria specified by the SAE and SME.

GRIET constantly endeavors to have faculty with relevant competency and qualification to satisfy all of the curricular areas of the program. The institution accommodates adequate levels of student-faculty interaction, student advising and counseling by the faculty, University service activities, professional development, and interactions with industrial and professional practitioners, as well as employers. The faculty ensures that the program curriculum devotes adequate attention and time to each component, consistent with the outcomes and objectives of the program and institution.

Our faculty has appropriate qualifications and demonstrates sufficient authority to ensure proper guidance of the program and to develop and implement processes for the evaluation, assessment, and continuing improvement of the program, and its objectives and outcomes. Our faculty has the overall competence with diversity of backgrounds, engineering experience, teaching experience, ability to communicate, enthusiasm for developing more effective programs, level of scholarship, participation in professional societies.

The Details of the faculty competencies that correlate to the programme Specific Criteria are given in the tables below

Specialization	Name of the Faculty	Subjects handled
	Dr. Swadesh Kumar Singh	Metallurgy and Material science
	Dr. R.Raman Goud	Production Technology & Automation in Manufacturing
	Dr. K. Satyanarayana	Machine tools & Machine Design
	Dr. Ram Subbaiah	Metallurgy and Material science & Production Technology
	Dr. R Karthikeyan	Production Technology

Manufacturing	Dr.S.Surendarnath	Production Technology
	Sri S. Ravi Sekhar	Manufacturing of MEMS and Micro systems
	Ms. B.Tanya	Engineering Graphics and Machine Drawing
	Ms. Ratna Deepika	Unconventional Machining
	Mr. K.Ratna Babu	Computer aided Manufacturing & FEM
	Mr. S Sravan Sashank	Special Manufacturing process
	Ms. Ch. Bandhavi	Metrology
	Mr. P.Praveen	Engineering Graphics and Machine Drawing
	Mr.K Ramyasree	Design for Manufacturing
	Mr. C Raj Shekar	Design for Manufacturing
	Mr. M Sreekanth	Design for Manufacturing
	K VijayKumar	Machine tools & Jigs and Fixture
	Ms.Balubai	CAD/CAM
	Mr. J.Pavanu Sai	CAD/CAM
Design	Dr.L. Jaya Hari	Design of Machine Members
	Dr. N Sateesh	Advanced CAD, FEM
	Dr PSV Kurma Rao	Machine Design
	K Vasundhara	Machine Drawing
	Sri K. Koteswara Rao	Machine Design
	Ms. M.Mamatha Gandhi	Design of MEMS
	Mr. V.Balaji	Mechanics of Solids
	Ms. K.P.Sirisha	Kinematics of Machinary
	Mr. B.Krishna Mohan	Design for Manufacturing and Assembly
	Mr. M.Prabhuteja	Design of Machine Members
	Mr. Damodara Rao Maganti	Mechanics of Solids
	Mr. P. Raja Sekar	Mechanics of Solids
	T Balaji	Design of Machine Members
	PPC Prasad	Metrology and Surface Engineering
	Mr.D.Suresh Kumar	Advanced mechanics of Solids
	Ms. Y.Shanthi	Dynamics of Machinary
	Mr. Lin Prakash	Advanced mechanics of Solids
	Ms. T V Deepthi	CAD/CAM
Thermal	Sri B.Ch. Nooka Raju	Applied thermodynamics
	Sri D.S. Naga Raju	Heat Transfer
	Ms. U.S. Jyothi	IC Engines
	Mr. K.Venkateswarlu	Fluid Mechanics and Hydraulic Machinary
	Mr. K.Prashanth Reddy	Computation Fluid Dynamics
	Mr. J.Venkata Suresh	Computation Fluid Dynamics
	Mr. K.Siva Satya Mohan	Thermodynamics

Ms. S. Bhanu Teja	Thermodynamics
Sneha Priya M	Thermodynamics
Dr. Jandhyala N Murthy	IC Engines
Mr. L Kiran kumar	Fluid Mechanics and Hydraulic Machinary
Dr PAPN Varma	Fluid Mechanics & Hydraulic Machinery
Dr Adapa Rama Rao	Power Plant Engineering

Dr. Jandhyala N Murthy, Professor

B.Tech (Mech) from IIT Madras, MS (Thermal Engineering), PhD (Combustion) from Cranfield Institute of Technology, UK, served in the Maintenance Branch of the Indian Air Force as an AE (M) officer for over 25 years , held various appointments looking after operations, overhaul , training at unit, station and command levels. He was an instructor at Air Force Technical College, Bangalore. He had tenure at combustor division, Gas Turbine Research and Development Establishment, Bangalore. He led an IAF Technical Training Team for providing training and maintenance support to Botswana Defence Force, Africa. He is an alumnus of Defence Services Staff College, Wellington. Currently a Professor in Department of Mechanical Engineering ,holding the appointment as the Principal of GRIET,an NBA accredited and autonomous college under JNTU Hyderabad. His areas of interest span the Thermal Engineering domain, Gas Turbine Combustion chambers and Simulation.

Dr Lade Jayahari, Professor & HOD

Dr. L. Jayahari, holds Ph.D from JNTU University, Hyderabad, with specialization “Sheet metal forming, Master’s degree from Blekinge Institute of Technology (BTH), Karlskrona, SWEDEN with specialization “Structural Mechanics’. He has published 6 research papers in reputed International journals, 01 National Journal and 10 international conference. His research work published in Elsevier journals-Journal of Iron and steel Research Impact factor (0.33), Journal of King Saud University – Engineering Sciences, Materials Today and Procedia Materials Science. He is an organizing Committee member of annually conducted International conference on materials processing and characterization (ICMPC) and also an organizing committee member of faculty development programme organized in GRIET 2013 and also attended many assessment Programs to enhance knowledge. He is having 11 years of teaching experience and at present working as Professor & HOD in the Department of Mechanical Engineering and Dean Publicity & Alumni affairs, GRIET. He is eminent faculty in teaching Design & Manufacturing subjects and also interested to guide the students in research oriented Projects and knowledge transfer to them in recent advances.

Dr. Swadesh Kumar Singh, Professor

M.Tech and Doctorate from IIT Delhi are specialized in Metal Forming. He has published 70 research papers in reputed international and national journals. He has worked in Indian Engineering Services (IES) as Assistant Executive Engineer. He is awarded with ‘Career Award for young teachers by AICTE and ‘Young Scientist award’ by DST for his research projects. He authored the books on Production Engineering, Industrial Engineering, Reasoning and Aptitude for standard publications. Many government agencies like DST, AICTE, DAE has recognized his research and awarded funds to support his work in Material Science. He also conducted and attended many faculty development programmes and international conferences which attracted the experts and participants in the area of material science from many parts of the world. His versatile knowledge in different subjects guide the students in understanding the basic concepts and depth of the subject with ease. His vast research experience help the students in developing projects that meet the industry needs. He is an asset for the students and the organization. He is the driving force of the latest technologies in the material science which steer the students to adapt to the changes.

Dr. N. Sateesh , Professor

Graduated in Mechanical Engineering from Nagarguna University AP, 1992. He has done his master degree from JNTUH, Hyderabad 2002 in CAD/CAM specialization. He has awarded doctorate degree in Mechanical Engineering from Osmania University, Hyderabad, 2010. He has 6 years of industrial experience and 16 years of experience in teaching and research. His area of research in CAD/CAM, Composite materials, Modelling and Simulation. He has published more than 31 papers in international journals and conferences. Presently he is working as Professor in this institution.

Dr R. Karthikeyan, Professor

Received his A.M.I.E (Mechanical) from The Institution of Engineers (India), Kolkata, M.E (Thermal Power Engineering) and Ph.D (Manufacturing Engineering) from Annamalai University, Annamalai Nagar. He worked in Fabrication, Non Destructive Testing and Special Waste Destruction (Incineration, Physical – Chemical Treatment, Recycling) concepts. And he contributed as a Co-Investigator in the project of Extramural Research & Intellectual Property Rights (ER&IPR), DRDO. He has published three research papers in international, one in national journal and made six presentations in both national and international conferences on various aspects of friction stir spot welding of age-hardenableluminium alloys. He is a life member of The Institution of Engineers (India), the Indian Welding Society and ISTE. Now, he is working as Professor in this institution.

Dr. R Raman Goud, Professor

Holds Doctorate in metal forming. B.E (Mechanical) from Osmania University and M.Tech from JNTU Hyderabad specialized in advanced Manufacturing Systems. He has published 4 research papers in reputed international and national conferences. He taught many subjects in manufacturing area like Production Technology, Machine Tools. He also taught more advanced subjects like Robotics, Automation in Manufacturing and Instrumentation & Control systems. He has 14 years teaching experience and 5 years in Research. He also organized and attended many faculty development programmes, workshops and industrial Expo in area of manufacturing and material science. His versatile knowledge in different subjects guides the students in understanding the basic concepts and depth of the subject with ease. His vast research experience help the students in developing projects that meet the industry needs. He is an asset for the students and the organization. He is the driving force of the latest technologies in robotics and automation in manufacturing which steer the students to adapt the technologies to move further studies and carrier.

Dr.Ram.Subbiah, **Associate Professor**

Holds Ph.D from Singhania University, Pilani, with specialization " Material Science – Surface Hardening, Master's degree from SRM University, Chennai with specialization 'Computer Integrated Manufacturing' as a Gold Medalist, Master of Business Administration from Alagappa University, Karaikudi, with specialization ''Education Management", Bachelor degree from Anna University, Chennai with specialization 'Mechatronics Engineering'. He has published his research work in 13 international Journal, 17 international conferences and 30 national conferences. He is an organizing Committee member of annually conducted International conference international conference on materials processing and characterization (ICMPC). His areas of interest are Mechatronics and Material science. He has 8 years of teaching experience and at present he's working as Associate professor in the Department of Mechanical engineering, GRIET and he is eminent faculty in teaching Manufacturing subjects and to guide the Projects and knowledge transfer to them in recent advances.

Dr. S. Surendranadh, Associate Professor

Received his B.E. Degree in Mechanical Engineering from Anna University, Chennai, Tamilnadu, India in 2007 and M.E degree in Engineering Design from Anna University, Tirunelveli, Tamilnadu, India in 2009. He completed his Full time Ph.D. in the Department of Mechanical Engineering, National Institute of Technology, Tiruchirappalli, Tamilnadu, India in April 2015.He research interest is Metal Forming Processes / Design / Composite Materials. He has published 5 international journals in reputed publications on his research findings. He has also participated and presented papers in Workshops / conferences at national / international levels. He has 2 years of teaching experience, at present he is working as an Associate professor in the Department of Mechanical engineering, GRIET, Hyderabad since April 2015. He taught Design subjects and guided Main projects for Undergraduate and Post graduate students.

Dr. Satyanarayana Kosaraju, **Associate Professor**

M.Tech and Doctorate from NIT Warangal are specialized in Machining. He has published research papers in reputed international Journals & attended several international conferences. His area of research includes the machinability studies. He has expertise in softwares like Dynoware, RSM modelling, Design of experiments, MINITAB,DEFORM 3D, AutoCAD & Pro E. He is a member of American Society of Mechanical Engineers (ASME) since 2009. His expertise in modelling & simulation of manufacturing problems will be a huge boost for the students.

Mr B.Ch.Nookaraju, Associate Professor

Pursuing PhD from JNTUH Hyderabad and holds Master's degree from National Institute of Technology NIT Calicut, with specialization as 'Thermal Sciences'. Presently he's working as an Associate professor in the department of mechanical engineering in GRIET and he is eminent faculty in teaching Thermodynamics, Fluid Mechanics and Hydraulic Machines subjects and his research work is going on in the area of Heat Transfer analysis in Heat pipes helps the student community to guide the Projects and knowledge transfer to them in recent advances in Thermal Engineering. He is the co-principal investigator for AICTE sanctioned Research Project on Heat Pipes. He prepared Fluid mechanics and Hydraulic machines manual for the B.Tech students. He has published 5 research papers in reputed national conferences and two papers are under review in international journals. He is an organizing Committee member of annually conducted International conference ICMPC and also an organizing committee member of faculty development programme organized in GRIET and also attended many FDP Programes to enhance his knowledge. His versatile knowledge in thermal subjects guide the students in understanding the basic concepts and depth of the subject with ease.

Mr D.S. Nagaraju, Associate Professor

Obtained B.Tech., Mechanical Engineering with distinction from S.V. University, Tirupathi in the year 1999 and M.E , Industrial Engineering and Management with distinction from SGSITS Indore (M.P) in the year 2002. Presently He is pursuing PhD in Supply Chain Management from JNTU Hyderabad. His research interests include supply chain management, Optimization techniques, Simulation studies Manufacturing Techniques. He has 11+ years of experience. He has guided M.Tech and B.Tech students. He is expert in handling subjects like Hydraulic Machines, Engineering Drawing, Applied Thermo Dynamics etc.

Mrs U.S.Jyothi, Associate Professor

Pursuing Ph.D from JNTU, Hyderabad in Alternative fuels of internal combustion engines. She completed her master's in Thermal Engineering. She has worked in Andhra Pradesh State Road transport Corporation (APSRTC) as Dy. Chief Mechanical Engineer and has experience of 12 years at various designations like Technical officer, Personnel officer, Stores & Purchase officer etc. She has 4 years of teaching experience and taught subjects like Thermodynamics, Applied thermodynamics and Automobile Engineering and handling Thermal Engineering lab. Her experience in maintenance, design of the systems and performance of the engines of the Automobiles helps the students to implement industry standards in their projects. Further her experience helps the student to understand the impact of engineering solutions in a global economic, environmental and social context. She was the key contributor in preparing the online manuals & videos for Thermal engineering lab experiments. Her experience as a personnel officer helps in coordinating the parents of poor performing students and to motivate the students towards maintenance of good attendance and achieving good academic results. She is also member of technical committee for International Conference on Material Processing & Characterization (ICMPC).

Dr. K. Venkateswarlu, Associate Professor

Awarded Ph.D at JNTU Kakinada in the area of I.C Engines and obtained his M.Tech in Thermal Engineering from Jawaharlal Nehru Technological University, Hyderabad. Presently he's working as Associate professor in the department of mechanical engineering in GRIET. He has been teaching Thermodynamics, Fluid Mechanics and Hydraulic Machines, Heat Transfer, Applied Thermodynamics and I.C Engines subjects. He has 16 years of teaching experience and 4 years of industrial experience. His research interests include alternative fuels and fuel efficiency improvement of diesel engines. He has 12 journal publications in national and international and three conference proceedings. He has guided 5 M.Tech(Thermal Engineering) thesis.

Dr.P.S.V.Kurmarao, Professor

Obtained his M.Tech and Ph.D degrees in Mechanical Engineering from Andhra University with Heat Transfer as specialization. He worked as Junior Research Fellow in UGC and Senior Research Fellow in CSIR before joining BHEL in 1974. He is responsible for Engineering, Research and Performance testing of various Heat Transfer Equipment used in Thermal, Process and Chemical Plants. He has two patents in these areas and the designs developed by him in the area of Condensers, Deaerators and Heaters/Coolers are operating in various Thermal Plants. He joined GRIET in 2005 as Professor of Mechanical Engineering and mainly responsible for students Project Work and seminars at under graduate and post graduate level. He teaches DFM and MEMS courses at M.Tech. He has about 42 Research Papers in National/International Journals and some of them are referred in American Encyclopedia of Chemical Processing and Design Text Books.

Dr.Sudheer Reddy, Professor

Graduated from Nagarjuna University and accomplished M.E in Design Engineering from BITS Pilani. He has obtained ph.D in Mechanical Engineering from National Institute of Technology, Karnataka. He worked for a short stinct at General Motors India and has 13 years of experience in teaching. His Research interest includes processing and characterization of Metal Matrix Composites, in particular optimizing processing parameters of stir casting technique and has published around 10 research papers in International/National Journals/Conferences. He has experience in other activities of the institute such as Industry-Institute Interaction.

Mr PPC Prasad, Associate professor

M.Tech from NIT (REC) Warangal is specialized in "Design and Production Engineering (Machine Tools). He is having very rich two decade industrial experience in the design of Special Purpose Machines from M/S HMT.Ltd as Dy. Chief Engineer (AGM). During his industrial service he got the opportunity to work in different fields like projects and R&D Departments. During his industrial experience he has developed many special purpose machines, lines for organizations like, Lohia Machies, Kinetic Honda, Escorts Ltd Maruti Udyog ltd. Mahindra and Mahindra. He has also served as consultant to M/S Central Institute of Tool Design Balanagar, Hyderabad, and involved in conducting the course like JIG & Fixtures, Cutting Tools, Geometrical Dimensions and tolerance in house and reputed organizations like DMRL, Indo German Tool Room etc. He is heading the Technology development Cell & Industry Institute Interaction Cell at GRIET and looking after the consultancy works. Under consultancy works he has worked for the giants like M/S BHEL Haridwar & BHEL Ramachandrapuram and NR Bearings inspired the co faculty members and students of mechanical and Electrical engineering. His papers are published in national events. He is dealing with the regular engineering subjects like Machine Tools along with specialized subjects like Robotics, Mechatronics. With his technical knowledge he guided the students in developing the useful machines and engineering equipment. One of it is the paper plate making machine, specially developed in GRIET. He is coordinating the M.Tech DFM program and taking the specialized subjects like Design of Hydraulic and Pneumatic systems. His knowledge and application is helpful for the technical labs.

Mr K. Prasanth Reddy, Assistant Professor

M.Tech (Thermal Engineering) and pursuing PhD from JNTU college of engineering Hyderabad is specialized in heat transfer. He has published research papers in national and international conferences, 1 international journal has an impact factor of 0.4. He has 14 years experience in teaching undergraduate students of mechanical engineering His knowledge in the field of CFD analysis with software tools like ANSYS has allowed the students to get awareness to modern mechanical engineering tools necessary for finding solutions to engineering problems. His long experience in teaching subjects like engineering mechanics has guided the students to apply the knowledge of maths and science in order to design innovative and novel products. His contribution to the department's progress is appreciable.

K Siva Satya Mohan, Assistant Professor

Graduated in the year 2002 in the area of Production Engineering from Acharya Nagarjuna University and Post Graduated in the year 2005 with specialization of Energy Systems from JNTU Hyderabad. Currently He is Pursuing Ph.D from Andhra University in the area of Heat Transfer. He has overall Experience of 12 Years including Foreign Teaching Experience of 2 Years (Eritrea Institute of Technology, Eritrea, North East Africa) in the areas of Design and Thermal. Due to his Experience students can be benefited in the above mentioned areas and Renewable Energy Technologies. He has attended nearly 25 National workshops, Published 3 International Journals, Presented 1 International Conference, 2 National Conferences etc.

J V Suresh, Assistant Professor

M.Tech(Energy Systems)& Pursuing Ph.D.(Mechanical engineering) from JNTUCE;Hyderabad is specialized in Heat Transfer. He has 10 Years of experience which includes 6 years of Teaching & 4 Years of Industry. He has presented a paper in National Conference & also another paper in International Conference. He has attended many Faculty Development Programs. He has worked in the areas of Mechanical Software's like Plant Design Software(PDS),is a comprehensive, intelligent Computer-aided Design/engineering application for plant design, construction and operations, Which in turn help the students to get an employ ability in the domain of Oil & gas, Process, Chemical, Thermal areas. He has knowledge of CAESAR II software makes it easy to input and display all the data needed to accurately define a piping system analysis model & also It evaluates the structural responses and stresses of your piping systems to international codes and standards, and enables you to access and modify, if necessary, input element by element or globally. This software knowledge helps the students to analyze the different fluid passage lines in piping industry. His Knowledge in Design, guides the students in understanding the basic concepts & depth of subject with ease. He has taught different subjects like Engineering Drawing, Machine Drawing which helps the students to enhance the their logical thinking, understanding of Basic principles, finding solutions to mechanical engineering problems etc.

Mrs G Gayathri Tanuja, Assistant Professor

pursuing PhD from GITAM University, Vishakhapatnam and holds Master's degree from JNTUK with Machine Design as specialization. She has 9 years of teaching experience in which helps the student community to guide the Projects and knowledge transfer to them in recent advances in Machine Design. She has attended many Faculty development programs in the areas of material science, Research methodology, advanced manufacturing Technology. Her versatile knowledge in different Machine design tools guides the students in understanding the basic concepts and depth of the subject with ease. Her experience helps the students in developing projects that meet the industry needs.

Mrs Y.Shanti, Assistant Professor

Pursuing Ph.D in GITAM University in the area of vibration of beams. She completed her M.Tech in JNTU Kakinada with specialization Machine Design. She attended many faculty development programmes and conferences held under the area of design. This experience is helping her to guide B.Tech & M.Tech students for their projects which meet the industry needs. She has presented a paper in national conference which was related to vibrations. This experience is an asset to her

which can help student to know more about new technologies implemented in design. She is having 7 years of teaching experience in the area of Machine Design. She has guided the students in understanding the basic concepts and depth of the subject. She has handled dynamics of machinery, engineering drawing subject, from these subjects students will be provided to have problem solving capability and drafting capability for the design.

Mrs K.Vasundhara, Assistant Professor

Completed her M.Tech from Andhra University, with specialization Machine Design. She attended many faculty development programmes and conferences held under the area of design. That experience is helping her to guide B.Tech & M.Tech students for their projects which meet the industry needs. She has presented a paper in national conference on piezo electric analysis. This experience is an asset to her which can help student to know more about new technologies implemented in design. She is having 5 years of teaching experience in the area of Machine Design. She has guided the students in understanding the basic concepts and depth of the subject and help the student to gain knowledge in this regards. She has taken Machine Drawing, engineering drawing subjects. From these subjects students will be provided to have problem solving capability and drafting capability for the design.

Mrs T. Venkata Deepthi, Assistant Professor

Pursuing Ph.D from JNTUH completed her M.Tech from Andhra University, with specialization CAD/CAM. She attended many faculty development programmes under the area of Computer Aided Design and Manufacturing. That experience is helping her to guide B.Tech & M.Tech students for their projects which meet the industry needs. This experience is an asset to her which can help student to know more about new technologies implemented in design. She is having 5 years of teaching experience in the area of CAD/CAM. She has guided the students in understanding the basic concepts and depth of the subject and help the student to gain knowledge in this regards. She handled Mechanics of Solids, CAD/CAM, and Engineering drawing subjects. From these subjects students will be provided to have problem solving capability and drafting capability for the design.

Mrs M. Mamatha Gandhi, Assistant Professor

Completed M.Tech from JNTUK specialization in CAD-CAM. She has 3 years of teaching experience & currently handling Engineering drawing. She has published paper in international, e-journals on Strength Analysis of Exhaust manifold of MPV Two cylinder Engine. She has attended workshops and faculty development programs in the area of machine design. Her knowledge in machine design & Engineering drawing helps the students in understanding the basics with ease.

Mrs B Tanya, Assistant Professor

M.Tech from JNTUK specialized in Machine Design. She has published research paper in International journal. She has attended many Faculty development programs in the areas of material science, Research methodology, advanced manufacturing Technology. She has 4 years of teching experience. She handled Engineering drawing, kinematics of machinery. Her versatile knowledge in different Machine design tools guides the students in understanding the basic concepts and depth of the subject with ease. Her experience helps the students in developing projects that meet the industry needs.

Mr K.Ratna Babu, Assistant Professor

Masters Degree from JNTU, Hyderabad and Bachelors Degree from QIS College of Engineering and Technology, Ongole. He is having 2 years of Industrial experience and 4 years of previous

teaching experience. He presently working as an assistant professor in Gokaraju Rangaraju Institute Of Engineering and Technology, Bachupally since 2013. His specialized areas are Design of machine elements and finite element methods. He got first class with distinction in M.Tech (AMS) from JNTU, Hyderabad. His research interests are analyzing bodies under mechanical vibrations.

 **Dr. Adapa Rama Rao, Professor**

Did M.Tech from REC (NIT) Warangal and did Ph.D from JNTU. He is a Doctorate did Product Research on Power generation by Gas Turbines with Fire Advance Technology. He published 13 research papers in both national and international journals and participated in 7 conferences. He worked in M/s BHEL for 26 years as Dy. General Manager (Production) and developed four new products like Oil Rigs, Large Steam Turbines, Pulverizes and Gas Turbines. He was deputed to many developed countries like USA, UK, Germany, Malaysia etc. Presently working in GRIET since 8 years as Dean and Professor. Form last 14 years he is developing the students for soft skills and CRT programs for grooming the students for campus placements. He is teaching the subjects like Power Plant engineering, and Automobile engineering with practical, industrial and example oriented methods. He created Course Files system and conducted the Faculty Development Programs. With his vast Industrial and Teaching experience for more than 40 years (26+14), he became an asset to the students community as well as for management. He conducted many Industrial tours while teaching the subjects for both UG & PG students; he is taking part in administration activities.

 **Dr. P A P Nagendra Varma,** Professor

M.Tech from NIT Rourkela and Doctorate from JNTUH, Hyderabad is specialized in Metal Forming. He has published research papers in reputed international journals and conferences. He has worked in Controllerate of Quality Assurance, DGQA, Ministry of Defense, and has experience in Quality Assurance of Defense Equipment. He has got a teaching experience of 21 years and 7 years of research experience. He was Co PI for an AICTE funded Research project and completed the project successfully. He also conducted and attended many faculty development programmes and international conferences which attracted the experts and participants in the area of material processing from many parts of the world. His teaching methodology is different in theory subjects, which mostly practically oriented. His industrial experience helps the students in developing projects that meet the industry needs. He is also having administrative experience in various levels in educational institutions. He is an asset for the organization where he works.

 **Mrs A Anitha Lakshmi, Assistant Professor**

M.Tech from Andhra University specialized in CAD/CAM. She has published 2 research papers in International and national journals. She has worked in TATA Consultancy and Services as System Engineer. She is the college Quiz convener and conducted Fizzicals for the college during the year 2013. She has attended many Faculty development programs in the areas of material science, Research methodology, advanced manufacturing Technology. Her versatile knowledge in thermal, guides the students in understanding the basic concepts and depth of the subject with ease. Her experience helps the students in developing projects that meet the industry needs.

 **Mr D. Eswaraiah, Assistant Professor**

M.Tech, from JNTUH is specialized in Thermal Engineering. He is having three years of teaching experience. He has published and presented one international journal and one international conference. He has handled various subjects like Thermal engineering, Heat Transfer, Thermal Engineering lab, Fluid Mechanics and Hydraulic Machinery lab. He is currently handling Applied thermodynamics-II and Thermal Engineering lab. He has participated in the workshops conducted in the college as well as JNTU university. He has worked in the domain of Mechanical Softwares like Ansys CFX; it is very helpful for numerical analysis in the areas of heat transfer and fluid flow, which in turn help the students to get an enhancement of knowledge in those areas. He had very close interaction with students to improve knowledge in the above said areas. Applied Thermodynamics is the basic subject for power plant systems. He has guided the students in understanding the basic concepts & depth of subject with ease.

 **Dr VV Kutumba Rao, Professor**

Pursued his M.Sc and Ph.D from BHU Varanasi, and is specialized in Metallurgical Engineering. He has published 80 research papers in reputed international and national journals and presentations at recent seminars and conferences. His principle fields of research includes analysis and modeling of deformation, fracture and metal working at high temperatures, Microstructure – mechanical property correlations in titanium alloys, aluminium alloys and steels, low cycle fatigue and creep – fatigue interactions in super alloys, process and physical metallurgy of aluminium and alloys. His vast research experience help the students in developing projects that meet the industry needs. He is an asset for the students and the organization. He is the driving force of the latest technologies in the material science which steer the students to adapt to the changes.

Dr KGK Murti, Professor

Specialized in the area of MATERIALS JOINING and has 30 years industrial experience and 10 years teaching experience. Because of vast experience and good academic record in B Tech, M Tech, Ph.D was able to guide more than 80 post graduate students and 6 Ph.D scholars. Several consultancy projects and research projects were handled in Welding technology. WON best paper awards in National welding Conferences conducted by Indian institute of welding. Many funded projects by DST and AICTE were supervised as principal investigator. As HOD of MECHANICAL ENGG.DEPT at GRIET successfully conducting B Tech and M Tech courses and the dept. has good reputation all over state. New PG course is introduced on Thermal engineering in 2013.The department has good placement record as well as recognition having won GOLD MEDALS from JNTU. Many students are encouraged to pursue higher studies in India and abroad. Students are encouraged to work on research projects, industrial projects as well as for industrial training. Several need based certification and faculty development programmes are conducted regularly. Staff is encouraged to improve qualification by registering for M Tech and Ph.D. Very close interaction with industries is proving advantageous for students and staff to improve knowledge in current areas. As B O S chairman was able to introduce new subjects in PG courses.

Mrs Ratna Deepika, Assistant Professor

M.Tech from JNTUK specialized in CAD/CAM. She has published research paper in National and International journals. She has attended many Faculty development programs in the areas of material science, Research methodology, advanced manufacturing Technology. She handled Engineering drawing, CAD/CAM. Her versatile knowledge in different CAD/CAM tools guides the students in understanding the basic concepts and depth of the subject with ease. Her experience helps the students in developing projects that meet the industry needs.

Mr.K.Sunil K Reddy, **Assistant Professor**

M.Tech from NIT Calicut is specialized in Thermal Sciences. He is having 12 years of industrial & teaching experience. He has handled Engineering Mechanics, Mechanics of Solids Lab and Heat Transfer for undergraduate students. He has participated in the workshops conducted in the college. He has MBA degree from Wolverhampton University in UK & also have international work experience from UK. His versatile knowledge in different subjects guides the students in understanding the basic concepts & depth of the subject with ease.

S.Bhanu Teja , **Assistant Professor**

Completed M.Tech in Thermal Engineering and B.Tech from GMRIT. She published two international journals and looking forward to pursue PhD. Presently working as assistant professor in GRIET. Areas of Interest are Heat exchanging devices, Vortex tube Technology, Air-conditioning

V.Balaji, Assistant Professor

Holds his Masters Degree (Advanced Manufacturing Systems) from JNTU, Hyderabad and Bachelors Degree (Mechanical Engineering) from SRKR Engineering College, Bhimavaram in the year 2001. He has 7years of Industrial experience in manufacturing sector. He served as Technical Consultant for **Indian Navy** (Defence Machinery and Design Establishment, Secunderabad) to develop and manufacture submarine spare parts during 2008- Feb 2010 through reverse engineering. He started his teaching profession in the year 2010 at Vardhaman College of Engineering, Shamshabad, this academic year he is aiming to pursue his PhD from JNTU Hyderabad in the area of 'Experimental and Finite Element Analysis of formability of copper alloy at elevated temperatures'.

K.Poornima Sireesha, Assistant Professor

holds her Master Degree in CAD/CAM from JNTU-Kakinada. She taught Fluid Mechanics and Hydraulic Machinery and has 2 Years of teaching experience. She has good exposure to current trends and research in the field of CAD/CAM. She guided many students in their successful completion of PG and UG projects. She is looking forward to pursue her Ph.D.

Ch.Bandhavi, **Assistant Professor**

Pursuing her PhD. in the field of Material Science at Koneru Lakshamaiah University (KLU), M.Tech from JNTUK specialized in CAD/CAM. She has attended many Faculty development programs in the areas of material science, Research methodology, Advanced manufacturing Technology. She handled Engineering drawing, Dynamic of machinery, CAD/CAM. Her versatile knowledge in different subjects, guides the students in understanding the basic concepts and depth of the subject with ease. Her experience helps the students in developing projects that meet the industry needs.

B. Krishna Mohan, Assistant Professor

Completed M. Tech in CAD/CAM from JNTUK. He has More than 10 Years of teaching experience and 4 years of Industrial Experience. He taught various subjects like Finite Element Methods, Robotics, Mechanics of Solids and guided many PG and UG students for successful completion of their projects, he also attended several FDP'S. He has vast experience in CAD and CAE Software's such as SolidWorks 2015, ABAQUS 6.13, ANSYS 16. Currently he is doing research on Metal Forming.

Damodara Rao Maganti, **Assistant Professor**

Has more than 8 years' experience in CFD analysis, Teaching, Research, Training and Consultancy. UG, mechanical (JNTU hyderabad) B.TECH. (2006), PG IIT guwahati, (2009).Prior to GRIET, he was associated with UTC aerospace systems as Aero-Thermal analysis engineer. He also worked with CMC Ltd as senior aero-thermal analysis engineer. He has vast experience in Thermal analysis of electronic components. His areas of interest are Computational Fluid Dynamics and Heat Transfer. He has more than 5years of experience in training GATE and IES aspirants.

S.Sravan Sashank, Assistant Professor

Holds **M.Tech** in Manufacturing Engineering & Technology at Manipal University. His research interests are product development and design. He worked on **Development of Wire Winding Machine** and brake valves.

M Prabhu Teja, Assistant Professor

He completed his Masters from JNTU Hyderabad and bachelor's degree from KL University. He has three years of teaching experience and taught various subjects related to design. He is interested in designing and metal forming, published International journal on the same. He is looking forward to pursue his PhD.

J Pavanu Sai , Assistant Professor

He Completed his PG from JNTU Kakinada and awarded Gold Medal for his academic excellence. He has 4 years of teaching experience and has his research interests in Thermal analysis on composite materials. He attended various workshops and FDP'S. He published an international journal and looking forward to pursue his Ph.D.

D Suresh Kumar, Assistant Professor

He Completed M.Tech, from JNTUH and specialization in Machine Design. He has 1.5 Years of industrial experience having expertise in software's like AutoCAD, Catia, Solidworks, PDMS (Piping Design Management System), Abaqus, Ansys. He taught various subjects to UG and PG students and helped in depth understanding of the subject.

Pagidipalli Praveen , Assistant Professor

He completed his B.Tech in year 2011 from JNTU- Hyderabad in area of Mechanical Engineering and obtained his masters degree in year 2014 from JNTU-Hyderabad, Specialized in Advanced Manufacturing Systems. He has 3 Years of teaching experiences and taught various subjects related to Manufacturing and Graphics. His areas of interests are Production, Automation, Advanced Manufacturing and Robotics. So, his Experience will be benefited for the students in the above mentioned areas.

Balaji Thottempudi, Assistant Professor

He completed his B.Tech from Bapatla Engineering college in the year 2012 and his M.Tech from JNTU Hyderabad. He have 2+ years experience in teaching. He completed industrial training in CATIA at Central Institute of Tool Design. Also he got appreciation certificate from the DRDL HYDERABAD scientist E for academic project. His knowledge towards design is helpful for students to improve their conceptual clarity.

Vijaykumar Kalwa, Assistant Professor

He Completed his M.Tech in Product Design & Manufacturing (2014) at SSIT Tumkur and B.E at PDACE Gulbarga. He has 2 years of teaching experience and published two international journals. He worked as Training Officer in Edutech NTTF India Pvt. Ltd. and guided several students in their project works.

Balubai M, Assistant Professor

Balubai Mahenderker Graduated in the year 2005 in mechanical Engineering from Gokaraju Rangaraju institute of engineering and Technology, JNTUH University and Post Graduated in the year 2011 with specialization in Mechatronics field from JNTU Hyderabad. She has overall Experience of 6 Years in the field of CAD working as Design engineer in MahindraSatyam in 2006-2009 and in IGATE from 2012-2015 in the areas of Design. Due to her Experience students can be benefited in the above mentioned areas.

M.SREEKANTH, Assistant professor

He completed his Masters from GRIET under JNTUH .He completed Bachelors degree from JNTUH . His areas of interests are CAD/CAM and Manufacturing. He has done projects related to Design and Manufacturing and he is looking forward to establish his carrier in teaching by pursuing PhD

K.Ramyasree, Assistant Professor

She completed M.Tech JNTUH specialized in design for manufacturing She has published research papers in international journals & attended international conferences. Her area of research includes the machinability studies. She is presently working as assistant professor at GRIET and she is currently handling Metrology lab and engineering workshop, she has guided the students in understanding the basic concepts & depth of subject with ease.

Mr P Srinivas, Assistant professor

M.Tech, specialized in the area of Tool Design from Osmania University and has 5 years teaching experience, guided more than 10 graduate students. He is currently handling Machine Drawing for B.Tech and Tool design for M.Tech (Design for Manufacturing). He has participated in the

workshops conducted in the college. He had very close interaction with students to improve knowledge in the above mentioned areas.

Mr.LinPrakashP.S, Assistant Professor

Holds M.Tech from IIT Hyderabad & is specialized in Manufacturing Engineering.HisMtech research work was in the field of Incremental Sheet Metal Forming which is one of the latest developments in metal forming.Recently he participated in the workshop on FRP Composites. Presently he is working as an Assistant Professor in the department of Mechanical Engineering in GRIET. He has proficiency in MATLAB & softwares like ANSYS, ABAQUS etc. Which will helpful for students to develop analysis skills.

Dr.R.Ganesh, Associate Professor

Graduated from University of Madras in Mechanical Engineering. He has done his Masters from Anna University, Chennai in the specialization Computer Integrated Manufacturing and Doctorate from Anna University, Chennai in the specialization Characterization and machinability of Metal Matrix Composites. He has excellent academic track record and secured University 4th rank in B.E and Gold Medal in M.E. He has overall 11 years of acedamic experience in various reputed engineering colleges. He has published around 23 technical and research papers in reputed International, national journals and conferences. He is a life member of IACSIT and member of Society of Automotive Engineers (SAE). Currently he is working as Associate Professor in this institution. He is a life member of The Institution of Engineers (India), the Indian Welding Society and ISTE. Now, he is working as Professor in this institution.

Department Faculty Research Publications

S.NO	FACULTY NAME	PUBLICATIONS
1	A.Anitha Lakshmi	1. Anitha lakshmi Akkireddy "KBE approach towards design Automation of Francis Turbine spiral Casing"ICMPC-2,2013,pp 311-316
		2. Ramyasree keerthi and Anitha lakshmi Akkireddy "To Investigate the Effect of Process Parameters on Surface Roughness of Aisi1045 Steel in Dry Machining with CBN Cutting Tool Using ANOVA"IJETT- 25,2015,pp 15-24.
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		5. Raghuram Karthik Desu, Hansoge Nitin Krishnamurthy, Aditya Balu, Amit Kumar Gupta, Swadesh Kumar Singh, "Mechanical properties of Austenitic Stainless Steel 304L and 316L at elevated temperatures" Journal of Materials Research and Technology, To appear in Volume soon.
		6. Syed Mujahed Hussaini, Swadesh Kumar Singh and Amit Kumar Gupta, " Development of Experimental and Theoretical Forming Limit Diagrams for Warm Forming of Austenitic Stainless Steel 316" Journal of Manufacturing Processes 18 (2015) 151–158.
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8	Dr. N.Sateesh	1. N.Sateesh, Robotics in clothes manufacture, International Journal of Mechanical Engineering and Applications (IJMEA), Publisher: Science Publishing Group, 2013 1(1), PP.17-27. 2. N.Sateesh, Automatic pre-mesh CAD data repairing, International Journal of Mechanical Engineering and Applications (IJMEA), Publisher: Science Publishing Group, 2013 1(1), PP.1-9. 3. Eshwara K. Prasad, Raman R. Goud, Swadesh Kumar Singh, and N. Sateesh, Construction of Strain Distribution Profiles of EDD Steel at Elevated Temperatures, International Journal of Chemical, Molecular, Nuclear, Materials and Metallurgical Engineering Vol:9, No:12, 2015, pp. 1320-1326, World Academy of Science, Engineering and Technology(Impact Factor=2.215) 4. N.Sateesh, Improvement in Motion Characteristics of Cam-Follower Systems Using NURBS, International Journal on Design and Manufacturing Technologies, Chennai, India July, 2014, Vol8, Issue 2. (ISSN No. 0973-9106), pp.15-21.
9	Dr.R.Karthikeyan	1. R.Karthikeyan and V.Balasubramanian, (2013) Statistical optimization and sensitivity analysis of friction stir spot welding process parameters for joining AA7075 aluminum alloy. International Journal of Experimental Techniques. Vol. 37 (2), pp 6-15 (Society for Experimental Mechanics Wiley-Blackwell)
10	Dr. Ram Subbaiah	1. Ram. Subbiah, Dr.R.Rajavel. (2014), “Salt Bath Nitriding on 316LN Austenitic Stainless Steel Material”, Australian Journal of Basic and Applied Sciences, pp 188-192 – Impact Factor: 0.162 2. Ram.Subbiah, S.Satheesh, Shoan C.Sunny, G.Kishore, K.Fahad, Dr.R.Rajavel. (2014), “Assessment of Properties on 316LN Austenitic Stainless Steel Material under Low Temperature Liquid Nitriding Process”, International Journal of Innovative Engineering and Exploring Research, Vol.3, pp 69-71 – Impact Factor: 1.00 3. Ram.Subbiah, S.Satheesh, Shoan C.Sunny, G.Kishore, K.Fahad, Dr.R.Rajavel. (2014), “Effect of Nitrogen on Stainless Steel Material at Low Temperature Salt Bath Solution Applicable to Ship Propeller Blades”, International Journal of Recent Technology and Engineering, Volume-3, March 2014 – Impact Factor: 1.00 4. Ram. Subbiah, P. Karthick, R.Manjunath, T. Prasanth, R. Ilavarasan, Dr.R. Rajavel, (2014), “Experimental Investigation on Hardness of Gas Implanted AISI 316LN Austenitic Stainless Steel”, International journal of Inventive Engineering and Sciences, Volume-2, Issue-3, pp 51-55 – Impact Factor: 1.00 5. Ram. Subbiah, P. Karthick, R.Manjunath, T. Prasanth, R. Ilavarasan, Dr.R. Rajavel, (2014), “Effect of Nitrogen on Low Temperature Nitrided

		Stainless Steels for Steam Turbine Blades", International Journal of Recent Technology and Engineering, Volume-3, March 2014 – Impact Factor: 1.00
11	Dr.Surendranath	1. Surendarnath S.; Sankaranarayanasamy K.; Ravisankar B. (2014) "Workability study on 99.04 % pure aluminum processed by ECAP" Materials and manufacturing Processes. Vol. 29 (6), PP. 1-6. 2. Surendarnath S.; Sankaranarayanasamy K.; Ravisankar B. (2014) "A Comparative Study of commercially Pure Aluminium Processed by ECAP Using Conventional and New Die" Mate- rials and manufacturing Processes, Vol. 29 (10), PP. 1172-1178. 3. Surendarnath S.; Sankaranarayanasamy K.; Ravisankar B. (2014) "Experimental investiga- tion on performance of New Equal Channel Angular Pressing Die" IOP Conference Series- Materials Science and Engineering, Vol. 63, PP. 1-8
12	Dr.K.Satyanarayana	1. Satyanarayana. Kosaraju, Anne Venu Gopal, and N. Ravi. "Studies on surface integrity and its optimization in turning Ti-6Al-4V." International Journal of Precision Technology 5(3-4), pp 312-329, 2015 2. Satyanarayana Kosaraju and Chandraker, Satyam. "Taguchi Analysis on Cutting Force and Surface Roughness in Turning MDN350 Steel." Materials Today: Proceedings 2.4: 3388-3393, 2015. 3. Satyanarayana Kosaraju, Venu Gopal Anne and Bangaru Babu Popuri, "Analysis for Optimal Decisions on Turning Ti6Al4V with Taguchi-Grey Method", Proc IMechE Part C: Journal of Mechanical Engineering Science, Sage Publication. (Impact factor 2013; 0.589). vol 228, Nos 1, pp 152-157, 2014. DOI: 10.1177/0954406213480599 (SCI Journal) 4. Satyanarayana Kosaraju, Venu Gopal Anne and Bangaru Babu Popuri, "Online tool condition monitoring in turning Titanium (Grade 5) using Acoustic Emission: Modeling", International Journal of Advanced Manufacturing Technology, ISSN No 0268-3768,Vol No: 67, pp 1947-1954, 2013 (Impact factor 2013: 1.779) DOI: 10.1007/s00170-012-4621-2. 5. Satyanarayana Kosaraju and Venu Gopal Anne, "Optimal Machining Conditions for Turning Ti-6Al-4V using Response Surface Methodology", International Journal of Advances in manufacturing. Vol No: 1, pp 329-339, 2013.DOI: 10.1007/s40436-013-0047-9. 6. Satyanarayana Kosaraju, Venu Gopal Anne and Bangaru Babu Popuri, "Design Optimization of Machining Parameters for Turning Titanium Alloys with Taguchi-Grey Method", International Journal of Machining and Machinability of Materials., Vol. 13, Nos. 2/3, pp 191-202, 2013.DOI: 10.1504/IJMMM.2013.053222 7. Satyanarayana Kosaraju, Venu Gopal Anne and Bangaru Babu Popuri, "Taguchi analysis on cutting forces and temperature in turning Titanium Ti-6Al-4V", International Journal of Mechanical and Industrial Engineering (IJMIE), ISSN No. 2231–6477, Vol-1, Issue-4,pp 55-59, 2012. 8. Satyanarayana Kosaraju, Venu Gopal Anne and Bangaru Babu Popuri, "Experimental Investigations and Modeling of Machining Titanium Alloy – Ti-6Al-4V", International Journal of Applied Mechanics and materials. Vols. 315, pp 562-566, 2013. 9. Sateesh, N., Rao, P. S., Ravishanker, D. V., &

		Satyanarayana, K.. "Effect of Moisture on GFRP Composite Materials". Materials Today: Proceedings, 2(4), 2902-2908 2015
		10. Ramanuj kumar, A K Sahoo and Satyanarayana Kosaraju, "Finite element simulation of forces and temperature in turning titanium alloy using DEFORM 3D", International Journal of Mechanical Engineering and Research, ISSN No. 2249-0019, Vol-3, Issue-5, pp 330-334, 2013.
		11. Kumar, Ramanuj, Ashok Kumar Sahoo, K. Satyanarayana, and G. Venkateswara Rao. "Some studies on cutting force and temperature in machining Ti-6Al-4V alloy using regression analysis and ANOVA. International Journal of Industrial Engineering Computations. Vols 4, pp 427-436, 2013.
13	Mr.Venkateswarlu	1. K.Venkateswarlu, B.S.R Murthy, V.V Subbarao., An experimental investigation to study the effect of fuel additives and exhaust gas recirculation on combustion and emissions of diesel-biodiesel blends. *The Journal of Brazilian Society of Mechanical Sciences and Engineering*, J Braz. Soc. Mech. Sci. Eng. DOI 10.1007/s40430-015-0376-7(Published online June-2015).
		2. K.Venkateswarlu, B.S.R Murthy, V.V Subba Rao., "Performance and Emission Improvement of Biodiesel Fueled Diesel Engine with Exhaust Gas Recirculation and Ethyl Hexyl Nitrate Additive," International Journal of Bio-Science and Bio-Technology,Vol.7(2), (2015), pp.87-106.
		3. K.Venkateswarlu, B.S.R Murthy, V.V Subba Rao., The Effect of Exhaust Gas Recirculation and Di-Tertiary Butyl Peroxide on Diesel-Biodiesel Blends for Performance and Emission Studies, *International Journal of Advanced Science and Technology*,Vol 54,pp49-60,2013.
14	Mr. K.Siva Satya Mohan	1. An Experimental Investigation on Diesel engine with palmstearin Diesel blends at Different Injection Pressures,Published at International Journal of Engineering Research and Technology(IJERT),Volume 2,issue4,April 2013
		2. Periodic simulation for Heat Transfer Applications using CFD, Published in International Journal of Engineering Research and Technology(IJERT),Volume 2,issue12,December 2013.
		3. Analysis of Comparison of Fluid Jet Impingement Heat Transfer on flat plate using CFD, Published in International Journal of Thermal Energy and Applications, Volume 1,issue1,August 2015
54	Mr.K.Prashanth Reddy	1. Bhramara, Panitapu, T. K. K. Reddy, and K. Prashanth Reddy. "CFD Analysis of Desktop Heat Sink." *Journal of Enhanced Heat Transfer* 15.3 (2008).pp 261-272. Published by Begell house Inc. (impact factor 0.6) 50 cross highway, Redding, CT 0689 USA.
15	Mr. V. Balaji	1. Published a research paper in Elsevier Ltd on "Manufacture of Aluminum metal matrix composite (Al7075-SiC) by stir casting technique". Material today: Proceedings 2(2015) 3403-3408
		1. S.Bhanuteja and D.Azad "Effect of pressure drop on performance of a Shell and Tube Heat Exchanger using nano fluids" IJRSAT, Issue-3, Volume-1, Jan-Feb 2014 pp 001-004.

16	Ms. S. Bhanu Teja	2. S.Bhanuteja and D.Azad, "Thermal Performance and flow analysis of nano fluids in a Shell and Tube Heat Exchanger" IJMET, Volume 4, Issue 5, September-October 2013, pp 164–172.
17	Mr.Prabhu Teja	1. M.Prabhu Teja, K.Veeranjaneyulu "Modeling Studies on Formability of Al-Mg-Si Alloy - Computational Solid Mechanics Approach" September-2014 878 ISSN 2229-5518.
18	Mr.J. Pavan Sai	1. J. Pavanu Sai, A. Srinivasa Rao, Dr. N. Hari Babu, "Experimental Investigation of Effect of Aluminum Filler Material on Thermal Properties of Palmyra Fiber Reinforced Composite" Int. Journal of Engineering Research and Applications ISSN : 2248-9622, Vol. 4, Issue 12(Part 4), December 2014, pp.23-29.

5.5 Faculty as participants/resource persons in faculty development/training activities (15)

Total Marks : 12.30

Institute Marks : 12.30

(Instruction: A faculty member scores maximum five points for a participation/resource person.)

File Name
Faculty as participants in Faculty development training activities STTPs
Certificates sample

Name of the faculty	max. 5 per faculty		
	2013-2014	2014-2015	2015-2016
Dr. Adapa rama rao	0.00	5.00	0.00
Dr. Jandhyala N Murthy	5.00	5.00	5.00
Dr. K. Satyanarayana	0.00	0.00	5.00
Dr. L. Jayahari	5.00	5.00	5.00
Dr. N Sateesh	0.00	5.00	5.00
Dr. R Karthikeyan	0.00	5.00	5.00
Dr. Ram Subbaiah	0.00	3.00	5.00
Dr. Swadesh Kumar Singh	5.00	5.00	5.00
Mr. B.Krishna Mohan	0.00	5.00	5.00
Mr. C Raj Shekar	0.00	0.00	0.00
Mr. D. Eswaraiah	5.00	5.00	5.00
Mr. Damodara Rao Maganti	0.00	0.00	5.00
Mr. J.PavanuSai	0.00	0.00	5.00
Mr. J.Venkata Suresh	5.00	5.00	5.00
Mr. K VijayKumar	0.00	0.00	0.00
Mr. K.Prashanth Reddy	5.00	5.00	5.00
Mr. K.RatnaBabu	5.00	5.00	5.00
Mr. K.Ravi Kumar	0.00	0.00	0.00
Mr. K.SivaSatya Mohan	5.00	5.00	5.00
Mr. K.Venkateswarlu	0.00	0.00	0.00
Mr. M Sreekanth	0.00	0.00	0.00
Mr. M.Prabhuteja	0.00	0.00	5.00
Mr. P. Raja Sekar	0.00	0.00	0.00
Mr. P.Praveen	0.00	0.00	5.00
Mr. S SravanSashank	0.00	3.00	5.00
Mr. S. Ravi Sekhar	3.00	5.00	5.00
Mr. ShakirHussain	0.00	0.00	0.00
Mr. V.Balaji	0.00	0.00	5.00
Mr.D.Suresh Kumar	0.00	0.00	5.00

Mr.K Limbadri	0.00	0.00	0.00
Mr.T Balaji	0.00	0.00	0.00
Ms. A. Anitha Lakshmi	5.00	5.00	5.00
Ms. B.Tanya	5.00	5.00	5.00
Ms. Ch. Bandhavi	0.00	5.00	5.00
Ms. K.P.Sirisha	0.00	0.00	3.00
Ms. M.Mamatha Gandhi	3.00	5.00	5.00
Ms. RatnaDeepika	0.00	3.00	5.00
Ms. S. BhanuTeja	0.00	3.00	5.00
Ms.Balubai	0.00	0.00	0.00
Ms.K Ramyasree	0.00	0.00	0.00
Ms.SnehaPriya M	0.00	0.00	0.00
Dr. K. G. K. Murthy	5.00	5.00	0.00
Dr. P. S. V. Kurma Rao	5.00	5.00	0.00
Dr. PAPN. Verma	5.00	5.00	0.00
Dr. R. RamanGoud	5.00	5.00	5.00
Dr. S. Surendarnath	0.00	0.00	0.00
Mr. B. Ch. NookaRaju	5.00	5.00	5.00
Mr. K. Koteswara Rao	0.00	0.00	0.00
Mr. K. Sunil Kumar Reddy	0.00	0.00	0.00
Mr. L. Kiran kumar	0.00	0.00	0.00
Mr. Lin Prakash	0.00	0.00	0.00
Mr. D. S. Naga Raju	5.00	5.00	5.00
Mr. D. Suresh Kumar	0.00	0.00	5.00
Mr. P. P. C. Prasad	5.00	0.00	0.00
Mr. P. Praveen	0.00	0.00	5.00
Mr. P. Srinivas	5.00	0.00	0.00
Ms. G. Gayatri	5.00	0.00	0.00
Ms. K. Vasundhara	0.00	0.00	0.00
Ms. T. Deepthi	5.00	0.00	0.00
Ms. U. S. Jyothi	5.00	5.00	5.00
Ms. Y. Shanthi	5.00	0.00	0.00
Sum	116.00	132.00	168.00
N	29.00	34.00	38.00
Assessment = 3 × Sum/N	12.00	11.65	13.26

Average assessment 12.30

5.6 Faculty Retention (15)

Total Marks : 10.32

Institute Marks : 10.32

Assessment = 3 × RPI/N
where RPI = Retention point index
= Points assigned to all faculty members
where points assigned to a faculty member = 1 point for each year of experience at the institute but not exceeding 5.

Item	2013-2014	2014-2015	2015-2016
Number of faculty members with experience of less than l year (x0)	0.00	0.00	10.00
Number of faculty members with 1 to 2 years experience (x1)	0.00	12.00	11.00
Number of faculty members with 2 to 3 years experience (x2)	5.00	4.00	8.00
Number of faculty members with 3 to 4 years experience (x3)	3.00	3.00	5.00
Number of faculty members with 4 to 5 years experience (x4)	7.00	7.00	5.00
Number of faculty members with more than 5 years experience (x5)	15.00	11.00	9.00
N	29.00	34.00	38.00
RPI = x1 + 2x2 + 3x3 + 4x4 + 5x5	122.00	112.00	107.00
Assessment	12.62	9.88	8.45

Average assessment 10.32

5.7 Faculty Research Publications (FRP) (20)

Total Marks : 6.55

Institute Marks : 6.55

(Instruction: A faculty member scores maximum five research publication points depending upon the quality of the research papers and books published in the past three years.)

Assessment of FRP = 4 * (Sum of the research publication points scored by each faculty member)/N

File Name
Faculty research publications

Name of the Faculty (contributing to FRP)	FRP points (max. 5 per faculty)		
	2013-2014	2014-2015	2015-2016
Dr. Adapa rama rao	0.00	5.00	0.00
Dr. Jandhyala N Murthy	0.00	0.00	0.00
Dr. K. G. K. Murthy	5.00	0.00	0.00
Dr. K. Satyanarayana	0.00	5.00	5.00
Dr. L. Jayahari	5.00	5.00	5.00
Dr. N Sateesh	0.00	5.00	5.00
Dr. P. S. V. Kurma Rao	5.00	0.00	0.00
Dr. PAPN. Verma	5.00	5.00	0.00
Dr. R Karthikeyan	0.00	0.00	5.00
Dr. R. RamanGoud	5.00	5.00	5.00
Dr. Ram Subbaiah	0.00	5.00	0.00
Dr. S. Surendarnath	0.00	0.00	0.00
Dr. Swadesh Kumar Singh	5.00	5.00	5.00
Mr. B. Ch. NookaRaju	0.00	5.00	5.00
Mr. B. Krishna Mohan	0.00	0.00	0.00
Mr. B.Krishna Mohan	0.00	0.00	0.00
Mr. C Raj Shekar	0.00	0.00	0.00
Mr. D. Eswaraiah	0.00	3.00	0.00
Mr. D. S. Naga Raju	0.00	0.00	0.00
Mr. D. Suresh Kumar	0.00	0.00	0.00
Mr. Damodara Rao Maganti	0.00	0.00	0.00
Mr. J. Venkata Suresh	0.00	3.00	3.00
Mr. J.PavanuSai	0.00	0.00	0.00
Mr. K VijayKumar	0.00	0.00	0.00
Mr. K. Koteswara Rao	0.00	0.00	0.00
Mr. K. Prashanth Reddy	0.00	3.00	3.00
Mr. K. Ratna Babu	0.00	0.00	0.00
Mr. K. Siva Satya Mohan	0.00	3.00	3.00
Mr. K. Sunil Kumar Reddy	0.00	0.00	0.00
Mr. K.Ravi Kumar	0.00	0.00	0.00
Mr. K.Venkateswarlu	0.00	0.00	3.00
Mr. L. Kiran kumar	0.00	0.00	0.00
Mr. Lin Prakash	0.00	0.00	0.00
Mr. M Sreekanth	0.00	0.00	0.00
Mr. M.Prabhuteja	0.00	0.00	0.00
Mr. P. P. C. Prasad	0.00	0.00	0.00
Mr. P. Praveen	0.00	0.00	0.00
Mr. P. Raja Sekar	0.00	0.00	0.00
Mr. P. Srinivas	0.00	0.00	0.00
Mr. P.Praveen	0.00	0.00	0.00
Mr. S SravanSashank	0.00	0.00	0.00
Mr. S. Ravi Sekhar	0.00	0.00	3.00
Mr. ShakirHussain	0.00	0.00	0.00
Mr. V. Balaji	0.00	0.00	0.00
Mr.D.Suresh Kumar	0.00	0.00	0.00
Mr.K Limbadri	0.00	0.00	0.00
Mr.T Balaji	0.00	0.00	0.00
Ms. A. Anitha Lakshmi	3.00	3.00	3.00
Ms. B. Tanya	0.00	3.00	3.00
Ms. Ch. Bandhavi	0.00	0.00	0.00
Ms. G. Gayatri	0.00	0.00	0.00
Ms. K. P. Sirisha	0.00	0.00	0.00

Ms. K. Vasundhara	0.00	0.00	0.00
Ms. M. Mamatha Gandhi	0.00	0.00	0.00
Ms. RatnaDeepika	0.00	0.00	0.00
Ms. S. BhanuTeja	0.00	0.00	0.00
Ms. T. Deepthi	0.00	0.00	0.00
Ms. U. S. Jyothi	0.00	5.00	5.00
Ms. Y. Shanthi	5.00	0.00	0.00
Ms.Balubai	0.00	0.00	0.00
Ms.K Ramyasree	0.00	0.00	0.00
Ms.SnehaPriya M	0.00	0.00	0.00
Sum	38.00	68.00	61.00
N	29.00	34.00	38.00
Assessment of FRP = 4 × Sum/N	5.24	8.00	6.42

Average assessment 6.55

5.8 Faculty Intellectual Property Rights (FIPR) (10)

Total Marks : 1.91

Institute Marks : 1.91

Assessment of FIPR = 2 × (Sum of the FIPR points scored by each faculty member)/N
(Instruction: A faculty member scores maximum five FIPR points each year??. FIPR includes awarded national/international patents, design, and copyrights.)

Name of faculty member (contributing to FIPR)	FIPR points (max. 5 per faculty member)		
	2013-2014	2014-2015	2015-2016
Dr. Adapa ram rao	5.00	0.00	0.00
Dr. Adapa Rama Rao	0.00	0.00	0.00
Dr. Jandhyala N Murthy	0.00	0.00	0.00
Dr. K. Satyanarayana	0.00	5.00	5.00
Dr. L. Jayahari	5.00	5.00	5.00
Dr. N Sateesh	0.00	0.00	5.00
Dr. PAP N Verma	5.00	0.00	0.00
Dr. R Karthikeyan	0.00	0.00	0.00
Dr. R.RamanGoud	0.00	0.00	0.00
Dr. Ram Subbaiah	0.00	0.00	5.00
Dr. S.Surendarnath	0.00	0.00	0.00
Dr. Swadesh Kumar Singh	5.00	5.00	5.00
Dr.KGK Murthy	5.00	0.00	0.00
Dr.PSV Kurma Rao	0.00	0.00	0.00
G Gayatri	0.00	0.00	0.00
K vasundhara	0.00	0.00	0.00
L Kirankumar	0.00	0.00	0.00
Lin Prakash	0.00	0.00	0.00
Mr. B.Ch. NookaRaju	5.00	5.00	5.00
Mr. B.Krishna Mohan	0.00	0.00	0.00
Mr. C Raj Shekar	0.00	0.00	0.00
Mr. D. Eswaraiah	0.00	3.00	0.00
Mr. D.S. Naga Raju	0.00	0.00	0.00
Mr. Damodara Rao Maganti	0.00	0.00	0.00
Mr. J.PavanuSai	0.00	0.00	0.00
Mr. J.Venkata Suresh	0.00	0.00	0.00
Mr. K VijayKumar	0.00	0.00	0.00
Mr. K. KoteswaraRao	0.00	0.00	0.00
Mr. K.Prashanth Reddy	0.00	0.00	0.00
Mr. K.RatnaBabu	0.00	0.00	0.00
Mr. K.Ravi Kumar	0.00	0.00	0.00
Mr. K.Siva Satya Mohan	0.00	0.00	0.00
Mr. K.SivaSatya Mohan	0.00	0.00	0.00
Mr. K.Sunil Kumar Reddy	0.00	0.00	0.00

Mr. L. Jayahari	0.00	0.00	0.00
Mr. M Sreekanth	0.00	0.00	0.00
Mr. M.Prabhuteja	0.00	0.00	0.00
Mr. P Srinivas	0.00	0.00	0.00
Mr. P. Raja Sekar	0.00	0.00	0.00
Mr. P.Praveen	0.00	0.00	0.00
Mr. R.RamanGoud	0.00	0.00	0.00
Mr. S SravanSashank	0.00	0.00	0.00
Mr. S. Ravi Sekhar	0.00	0.00	0.00
Mr. ShakirHussain	0.00	0.00	0.00
Mr. V.Balaji	0.00	0.00	0.00
Mr.D.S. Naga Raju	0.00	0.00	0.00
Mr.D.Suresh Kumar	0.00	0.00	0.00
Mr.K Limbadri	0.00	0.00	0.00
Mr.K. KoteswaraRao	0.00	0.00	0.00
Mr.T Balaji	0.00	0.00	0.00
Ms. A. Anitha Lakshmi	3.00	3.00	3.00
Ms. A. AnithaLakshmi	0.00	0.00	0.00
Ms. B.Tanya	0.00	3.00	0.00
Ms. Ch. Bandhavi	0.00	0.00	0.00
Ms. K.P.Sirisha	0.00	0.00	0.00
Ms. M.Mamatha Gandhi	0.00	0.00	0.00
Ms. RatnaDeepika	0.00	0.00	0.00
Ms. S. BhanuTeja	0.00	0.00	0.00
Ms. U.S. Jyothi	0.00	0.00	0.00
Ms. Y.Shanthi	0.00	0.00	0.00
Ms.Balubai	0.00	0.00	0.00
Ms.K Ramyasree	0.00	0.00	0.00
Ms.SnehaPriya M	0.00	0.00	0.00
P Srininvas	0.00	0.00	0.00
PPC Prasad	0.00	0.00	0.00
Sri B.Ch. NookaRaju	0.00	0.00	0.00
Sri D.S. Naga Raju	0.00	0.00	0.00
Sri K. KoteswaraRao	0.00	0.00	0.00
T Deepthi	0.00	0.00	0.00
Sum	33.00	29.00	33.00
N	29.00	34.00	38.00
Assessment of FIPR = 2 × Sum/N	2.28	1.71	1.74

Average assessment 1.91

5.9 Funded R&D Projects and Consultancy (FRDC) Work (20) **Total Marks : 0.92**

Institute Marks : 0.92

(Instruction: A faculty member scores maximum 5 points, depending upon the amount.) A suggested scheme is given below for a minimum amount of Rs. 1 lakh:)

Assessment of R&D and consultancy projects = 4 × (Sum of FRDC by each faculty member)//N
Five points for funding by national agency,
Four points for funding by state agency,
Four points for funding by private sector, and
Two points for funding by the sponsoring trust/society.

Name of faculty member (contributing to FRDC)	FRDC points (max. 5 per faculty member)		
	2013-2014	2014-2015	2015-2016
Dr. Adapa rama rao	0.00	0.00	0.00
Dr. Jandhyala N Murthy	0.00	0.00	0.00
Dr. K. G. K. Murthy	0.00	0.00	0.00
Dr. K. Satyanarayana	0.00	0.00	0.00
Dr. L. Jayahari	0.00	0.00	0.00
Dr. N Sateesh	0.00	0.00	0.00

Dr. P. S. V. Rama Rao	0.00	0.00	0.00
Dr. PAPN. Verma	0.00	0.00	0.00
Dr. R Karthikeyan	0.00	0.00	0.00
Dr. R. RamanGoud	0.00	0.00	0.00
Dr. Ram Subbaiah	0.00	0.00	0.00
Dr. S. Surendarnath	0.00	0.00	0.00
Dr. Swadesh Kumar Singh	5.00	5.00	5.00
Mr. B. Ch. NookaRaju	5.00	0.00	0.00
Mr. B. Krishna Mohan	0.00	0.00	0.00
Mr. B.Krishna Mohan	0.00	0.00	0.00
Mr. C Raj Shekar	0.00	0.00	0.00
Mr. D. Eswaraiah	0.00	0.00	0.00
Mr. D. S. Naga Raju	0.00	0.00	0.00
Mr. D. Suresh Kumar	0.00	0.00	0.00
Mr. Damodara Rao Maganti	0.00	0.00	0.00
Mr. J. Venkata Suresh	0.00	0.00	0.00
Mr. J.PavanuSai	0.00	0.00	0.00
Mr. J.Venkata Suresh	0.00	0.00	0.00
Mr. K VijayKumar	0.00	0.00	0.00
Mr. K. Koteswara Rao	0.00	0.00	0.00
Mr. K. Prashanth Reddy	0.00	0.00	0.00
Mr. K. Ratna Babu	0.00	0.00	0.00
Mr. K. Siva Satya Mohan	0.00	0.00	0.00
Mr. K. Sunil Kumar Reddy	0.00	0.00	0.00
Mr. K.Prashanth Reddy	0.00	0.00	0.00
Mr. K.RatnaBabu	0.00	0.00	0.00
Mr. K.Ravi Kumar	0.00	0.00	0.00
Mr. K.SivaSatya Mohan	0.00	0.00	0.00
Mr. K.Venkateswarlu	0.00	0.00	0.00
Mr. L. Jayahari	0.00	0.00	0.00
Mr. L. Kiran kumar	0.00	0.00	0.00
Mr. Lin Prakash	0.00	0.00	0.00
Mr. M Sreekanth	0.00	0.00	0.00
Mr. M.Prabhuteja	0.00	0.00	0.00
Mr. P. P. C. Prasad	0.00	0.00	0.00
Mr. P. Praveen	0.00	0.00	0.00
Mr. P. Raja Sekar	0.00	0.00	0.00
Mr. P. Srininvas	0.00	0.00	0.00
Mr. P. Srinivas	0.00	0.00	0.00
Mr. P.Praveen	0.00	0.00	0.00
Mr. R. Raman Goud	0.00	0.00	0.00
Mr. S SravanSashank	0.00	0.00	0.00
Mr. S. Ravi Sekhar	0.00	0.00	0.00
Mr. S. Sravan Sashank	0.00	0.00	0.00
Mr. ShakirHussain	0.00	0.00	0.00
Mr. V. Balaji	0.00	0.00	0.00
Mr. V.Balaji	0.00	0.00	0.00
Mr.D.Suresh Kumar	0.00	0.00	0.00
Mr.K Limbadri	0.00	0.00	0.00
Mr.T Balaji	0.00	0.00	0.00
Ms. A. Anitha Lakshmi	0.00	0.00	0.00
Ms. B. Tanya	2.00	0.00	0.00
Ms. B.Tanya	0.00	0.00	0.00
Ms. Ch. Bandhavi	0.00	0.00	0.00
Ms. G. Gayatri	0.00	0.00	0.00
Ms. K. P. Sirisha	0.00	0.00	0.00
Ms. K. Vasundhara	0.00	0.00	0.00
Ms. K.P.Sirisha	0.00	0.00	0.00

Ms. M.Mamatha Gandhi	0.00	0.00	0.00
Ms. Ratna Deepika	0.00	0.00	0.00
Ms. RatnaDeepika	0.00	0.00	0.00
Ms. S. BhanuTeja	0.00	0.00	0.00
Ms. T. Deepthi	0.00	0.00	0.00
Ms. T. Deepthi	0.00	0.00	0.00
Ms. U. S. Jyothi	0.00	0.00	0.00
Ms. Y. Shanthi	0.00	0.00	0.00
Ms.Balubai	0.00	0.00	0.00
Ms.K Ramyasree	0.00	0.00	0.00
Ms.SnehaPriya M	0.00	0.00	0.00
Sri B. Ch. NookaRaju	0.00	0.00	0.00
Sri D. S. Naga Raju	0.00	0.00	0.00
Sri K. Koteswara Rao	0.00	0.00	0.00
Sum	12.00	5.00	5.00
N	29.00	34.00	38.00
Assessment of FRDC = 4 × Sum/N	1.66	0.59	0.53

Average assessment 0.92

5.10 Faculty Interaction with Outside World (10) **Total Marks : 3.51**

Institute Marks : 3.51

(Instruction: A faculty member gets maximum five interaction points, depending upon the type of institution or R&D laboratory or industry, as follows)

FIP = Faculty interaction points
Assessment = 2 × (Sum of FIP by each faculty member)/N
Five points for interaction with a reputed institution abroad, institution of eminence in India,
or national research laboratories,
Three points for interaction with institution/industry (not covered earlier).

Name of faculty member (contributing to FIP)	FIP		
	2013-2014	2014-2015	2015-2016
Dr. Adapa rama rao	5.00	0.00	0.00
Dr. Jandhyala N Murthy	5.00	5.00	0.00
Dr. K. G. K. Murthy	5.00	0.00	0.00
Dr. K. Satyanarayana	0.00	5.00	5.00
Dr. L. Jayahari	5.00	5.00	5.00
Dr. N Sateesh	0.00	5.00	5.00
Dr. P. S. V. Kurma Rao	5.00	0.00	0.00
Dr. PAPN. Verma	5.00	0.00	0.00
Dr. R Karthikeyan	0.00	0.00	5.00
Dr. R. RamanGoud	3.00	5.00	5.00
Dr. Ram Subbaiah	0.00	0.00	3.00
Dr. S. Surendarnath	0.00	0.00	0.00
Dr. Swadesh Kumar Singh	5.00	5.00	5.00
Mr. B. Ch. NookaRaju	3.00	5.00	5.00
Mr. B. Krishna Mohan	0.00	0.00	5.00
Mr. B.Krishna Mohan	0.00	0.00	0.00
Mr. C Raj Shekar	0.00	0.00	0.00
Mr. D. Eswaraiah	0.00	0.00	0.00
Mr. D. S. Naga Raju	0.00	0.00	0.00
Mr. D. Suresh Kumar	0.00	0.00	0.00
Mr. Damodara Rao Maganti	0.00	0.00	0.00
Mr. J. Venkata Suresh	0.00	0.00	3.00
Mr. J.PavanuSai	0.00	0.00	0.00
Mr. J.Venkata Suresh	0.00	0.00	0.00
Mr. K VijayKumar	0.00	0.00	0.00
Mr. K. Koteswara Rao	0.00	0.00	0.00
Mr. K. Prashanth Reddy	0.00	3.00	3.00
Mr. K. Ratna Babu	0.00	3.00	3.00

Mr. K. Sunil Kumar Reddy	0.00	0.00	0.00
Mr. K.Prashanth Reddy	0.00	0.00	0.00
Mr. K.RatnaBabu	0.00	0.00	0.00
Mr. K.Ravi Kumar	0.00	0.00	0.00
Mr. K.SivaSatya Mohan	0.00	0.00	0.00
Mr. K.Venkateswarlu	0.00	0.00	0.00
Mr. L. Kiran kumar	0.00	0.00	0.00
Mr. Lin Prakash	0.00	0.00	0.00
Mr. M Sreekanth	0.00	0.00	0.00
Mr. M.Prabhuteja	0.00	0.00	0.00
Mr. P. P. C. Prasad	3.00	0.00	0.00
Mr. P. Praveen	0.00	0.00	0.00
Mr. P. Raja Sekar	0.00	0.00	0.00
Mr. P. Srininvas	0.00	0.00	0.00
Mr. P. Srinivas	0.00	0.00	0.00
Mr. P.Praveen	0.00	0.00	0.00
Mr. R. Raman Goud	0.00	0.00	0.00
Mr. S SravanSashank	0.00	0.00	0.00
Mr. S. Ravi Sekhar	0.00	0.00	0.00
Mr. S. Sravan Sashank	0.00	0.00	0.00
Mr. ShakirHussain	0.00	0.00	0.00
Mr. V.Balaji	0.00	3.00	0.00
Mr.D.Suresh Kumar	0.00	0.00	0.00
Mr.K Limbadri	0.00	0.00	0.00
Mr.T Balaji	0.00	0.00	0.00
Ms. A. Anitha Lakshmi	3.00	3.00	3.00
Ms. B. Tanya	3.00	3.00	3.00
Ms. Ch. Bandhavi	0.00	0.00	0.00
Ms. G. Gayatri	0.00	0.00	0.00
Ms. K. P. Sirisha	0.00	0.00	0.00
Ms. K. Vasundhara	0.00	0.00	0.00
Ms. M. Mamatha Gandhi	0.00	0.00	0.00
Ms. Ratna Deepika	0.00	0.00	0.00
Ms. S. BhanuTeja	0.00	0.00	0.00
Ms. T. Deepthi	0.00	0.00	0.00
Ms. U. S. Jyothi	0.00	5.00	5.00
Ms. Y. Shanthi	0.00	0.00	0.00
Ms.Balubai	0.00	0.00	0.00
Ms.K Ramyasree	0.00	0.00	0.00
Ms.SnehaPriya M	0.00	0.00	0.00
Sum	53.00	58.00	66.00
N	29.00	34.00	38.00
Assessment of FIP = 2 × Sum/N	3.66	3.41	3.47

Average assessment 3.51

6 Facilities and Technical Support (75) **Total Marks : 75.00**

Description of classrooms, faculty rooms, seminar, and conference halls:

Description of classrooms, faculty rooms, seminar, and conference halls:

Room description	No. of Rooms	Usage	Shared/ Exclusive	Capacity	Rooms Equipped with PC, Internet, etc.
Class Rooms	8	For conducting class work	Exclusive	72 for each	State-of-art infrastructure, Wi-Fi
HOD Room	1	For Head of the Department	Exclusive	1	C, Laptop with Wi-Fi, scanner, printer,
Faculty Rooms	4	For Department faculty	Exclusive	35	Modern infrastructure , Wi-Fi
Seminar Halls	1	For conducting workshops, Guest lectures and departmental meetings	Exclusive	60	Air-conditioned with modern teaching aids
Conference Hall	1	For conducting conferences and technical events	Exclusive	150	Air-conditioned with modern systems

Rooms	2	For conducting tutorial and remedy classes	Exclusive	80	Modern teaching aids
Laboratories	13	For conducting practical sessions	Exclusive	36	Modern equipment and licensed softwares with LAN and Wi-Fi
Drawing Halls	2	For conducting drawing practice sessions	Exclusive	48	Modern teaching aids

6.1 Classrooms in the Department (20) — Total Marks : 20.00

6.1.1 Adequate number of rooms for lectures (core/electives), seminars, tutorials, etc., for the program (10) — Institute Marks : 10.00

(Instruction: Assessment based on the information provided in the preceding table.)

No. of Class rooms : 8

No. of Seminar Halls : 1

No. of Tutorial rooms : 2

Detailed information about the rooms in the department is given below

Room No	Usage	Exclusive/ Shared	Room Equipped with
4302	Class Room	Exclusive	Class rooms are equipped with good infrastructure and are well designed to give ideal teaching and learning environment.
4304			
4324			
4501			
4502			
4504			
4424			
4301			
4506	Tutorial room	Exclusive	Tutorial rooms with a seating capacity of 80 students are available for special and remedial classes
4503			
4512	Seminar Halls	Exclusive	Air conditioned hall equipped with modern teaching aids and projector and with cpu control

6.1.2 Teaching aids---multimedia projectors, etc (5) — Institute Marks : 5.00

(Instruction: List the various teaching aids available)

Teaching Aids:

From the inception, the teaching staff at GRIET uses the modern Teaching aids for effective way of teaching. The process of teaching-learning depends on different types of teaching aids and tools available in the classroom. Teaching aids used at GRIET facilitate the student learning without having to rely only on textbooks and form an integral component of a classroom and are very important in the TLP (Teaching Learning Process). These teaching aids play an important role in assisting students to improve reading comprehension skills, illustrating or reinforcing a skill or concept, differentiating instruction and relieving anxiety or boredom by presenting information in a new and interesting way.

The teaching – learning resources address multiple learning styles, themes, grades and academic skill levels. Teachers at GRIET find these aids, as supplements to curriculum materials. Such resources can make teaching and learning, a rewarding experience. We use the latest teaching aids available in the form of audio, video and audio-visual aids. They are very important in implementation of learning objectives which affects the outcomes.

We at GRIET enjoy the following advantages by implementing Teaching Aids:

1. Students tend to forget if they only listen in their classroom. Appropriate teaching aid if properly used helps them to retain the concepts better and for a longer period.
2. Providing conceptual thinking and imagining capabilities.
3. Helping the student to get clarity on the subject more clearly.
4. Enhancing the learning experience for the students by motivating those using different teaching aids.
5. Making the classrooms more interesting, live and interactive.
6. Helping the students to increase and improve their vocabulary and communication skills.
7. Creating a proper image of the subject when the students hear, visualize and imagine.
8. Creating an interesting environment for the students.
9. Provide hands-on experience to the students with the help of teaching aids such as models
10. The written matter on the board is meant to attract the attention and it stays visually for a long time to the student
11. It acts as a prompt and a reminder of the on-going lecture. Thus acts as a reinforcing tool in TLC.
12. It is used simultaneously along with other aids which may last a short period visually.
13. It helps in step-wise/sequentially depict a process or derive formulae.
14. It makes the student put his or her understanding on the board, upon an invitation of the teacher in front of the audience.
15. The summary of the lecture is captured on the board, reinforcing the teaching objective.

Different Teaching aids used in GRIET:

Visual Aids:

i. **The Bulletin-Board**

- It has a wider reach, serving as a mass communication tool.
- The display summarizes the class room activity.
- The activity of a group or the present status is made available.
- It acts as a display for result of an individual or group activity.
- It acts as a motivator when displaying awards and prizes or appreciations.
- Visual information other than written/ typed matter, photos and posters are also displayed.

ii. **Overhead Projector/ LCD Projector.**

- They evoke more involvement by the audience as the visuals are strong in composition and content.
- The teacher has the flexibility of using still photos, typed matter and video.
- Numerical data is projected as tables, graphs, charts, flow-charts, info graphics, which provoke self analysis of the projection as against the information being talked.
- Projected data or figures are put for discussion and for analysis by the group.
- Still projections are used for quiz, tests and guide students effectively.

iii. **Representations -charts, sketches, flash cards, posters, pictures, pamphlets, hand-outs etc.**

- A good way to present and practice and also recycle vocabulary for all the activities in a class room.
- We use bright and colorful Flash cards to make visual impact on the viewer that leaves a longer imprint of the content on the minds.
- Increases the creative time of students and also adds context to subject learning.
- They are visually stimulating and very versatile in fitting most of the activities at all levels.

Audio-Visual aids:

i. **Motion pictures / Video Lectures**

- Video lectures are virtual classes by subject experts which not only provide content; they also stimulate the interest that makes the curriculum relevant, meeting the course objectives.
- Students can watch these video lectures or they can revisit the stream at any point replaying the part that they did not understand.
- Students can view and study this instructor's lecture as often as they wish until they understand the material.
- These video lectures helps in improving student's grades and increases their overall level of satisfaction and confidence.
- Even the most complex and challenging subjects can be delivered to the students in a more interesting way.

Activity aids:

i. **Industrial Tours, Excursion, field trips.**

- Industrial visits are considered as one of the most strategic methods of teaching and learning process.
- These tours provide students with an opportunity to learn in real time, practically through interaction, working methods and employment practices.
- They represent an important activity that contributes to the achievement of various essential learning outcomes and program objectives for the pre-final year and final year students.

ii. **Preparation of models, charts, Role play, Demonstration, Interactive games, Quizzical, Questionnaires**

- This is an instant way of assessment of the students and reflects the teaching and learning process.
- The teacher prepares the questionnaire based on the subject, divides the class into groups and conducts the questionnaire or interactive games.
- They evoke memory recall of the subject or the topic(s) that are covered in the classroom by the students very effectively.
- It is used as a tool to elicit competitive spirit to gain good grades and winning attitude.
- Overall, this helps the students to prepare for online tests and quizzes which are assessments.

Internet:

- Internet provides access to an amazing number of constantly updated and expanding resources and an incredible wealth of information.
- The Teaching-Learning Process at the institute includes self-research by students on topics given as assignments and seminars. Students use it as discussion boards, to discuss what they find with classmates or, if they're using e-mail, with students in another class or an expert in the field they are studying, and finally they can publish their work on the Web.
- Students are empowered as learners, they are motivated to use e-tools to enhance and develop team building skills, and learning through sharing.
- The framework for learning is more adaptable to a fast-changing world, resources for learning are replaced by online link to the real world, resources can be adapted to immediate learning needs and skills are developed for the information age.
- The institute records all activity under Mini- and Major Projects as video presentations for motivating and educating the fresh batch students providing a platform for novelty, innovative thinking and interaction with alumni.
- Internet skills are important for employment, improve quality of life, etc.; our students need to master them no matter whatever their field or profession.

6.1.3 Acoustics, classroom size, conditions of chairs/benches, air circulation, lighting, exits, ambience, and such other amenities/facilities (5) — Institute Marks : 5.00

(Instruction: Assessment based on the information provided in the preceding table and the inspection thereof.)

- All the classrooms are well furnished, ventilated, and spacious and equipped with modern teaching aids.
- Separate rooms are available for tutorial classes with necessary infrastructure.
- Large size classrooms, seminar halls and laboratories have two exits for emergencies.
- All classrooms are acoustically designed to minimize echo and sound distortion.

technology enhance learning with all the modern teaching aids and amenities.

Room No	Room Size in sq.mt / strength	Acoustics	Conditions of chairs/benches	Air circulation / lighting / Exit / Ambience	Amenities / Facilities
4302	85sq.mt / 48	Good	Excellent	Excellent	State-of-art infrastructure, necessary gadgets
4304	80sq.mt / 48				
4501	95sq.mt / 48				
4502	85sq.mt / 48				
4504	80sq.mt / 48				
4301	95sq.mt / 48				
4424	80sq.mt / 48				
4324	80sq.mt / 48				

6.2 Faculty Rooms in the Department (15)

Total Marks : 15.00

6.2.1 Availability of individual faculty rooms (5)

Institute Marks : 5.00

(Instruction: Assessment based on the information provided in the preceding table.)

- Two halls of size 87 sq.mt each are utilized to have room for the teaching faculty.
- Each hall is portioned into 8 cubicles for accommodating 1 – 3 faculty members comfortably.
- Each cubicle is well equipped with necessary infrastructure, good ventilation and Wi-Fi facility round the clock.
- The cabins are spacious enough to have interactions with students personally.

Room No	No. of Cabins	Room size in sq.mt
4314	1	25 sq.mt
4514	5	25 sq.mt
4313	8	87 sq.mt
4316	4	80 sq.mt
4513	10	87 sq.mt

6.2.2 Room equipped with white/black board, computer, Internet, and such other amenities/facilities (5)

Institute Marks : 5.00

(Instruction: Assessment based on the information provided in the preceding table)

- Some of the faculty rooms have a white board aiding for discussions.
- Faculty rooms have desktop, scanner and printer, apart from the use of laptops. They can use their personal gadgets for which power sockets are provided in the faculty rooms.
- The cubicles also have lockable storage racks for keeping the academic material apart from the individual desk storage space with lockable drawers.
- The faculty rooms are connected with LAN and Wi-Fi for Internet access.
- They also have constant supply of RO water through dispensers, and a kitchenette for the refreshment of the faculty.

Room No	Usage	White/Black Board	Computer /Internet facilities	Room equipped with
4301	Class room	Yes	Wi-Fi and Laptops	Rooms are equipped with good infrastructure and are well designed to give ideal teaching and learning environments.
4302				
4304				
4324				
4424				
4501				
4502				
4504				
4503	Tutorial			
4506				
4512	Seminar			

Room No	White/ Black Board	Computer/ Internet Facilities	Cupboards	Amenities/facilities
4314	Yes	Wi-Fi and Laptops	Adequate in number	Desktop computer, scanner, printer, water purifier, refrigerator and kitchenette
4313	Yes			
4514	Yes			
4513	Yes			
4316	Yes			

6.2.3 Usage of room for counselling/discussion with students (5) Institute Marks : 5.00

(Instruction: Assessment based on the information provided in the preceding table and the inspection thereof.)

- Adequate space is available in the faculty rooms for discussions / clarifications / counseling with the students.
- Each faculty can have discussion with his / her project team or research group in their respective cabins.
- Faculty mentors are assigned to students in the program. Mentors meet one – on – one with students in their respective cubicles to counsel on course planning, inspire students to gain confidence and self- motivation.

Room No	Space For Discussions with Students	Department library facility for faculty
4313	Yes	Yes
4314		
4513		
4514		
4316		

The following table is required for the subsequent criteria.

Laboratory description in the curriculum	Exclusive use / shared	Space, number of students	Number of experiments	Quality of instruments	Laboratory manuals
CAD/CAM Lab	Exclusive	190 sq.mt, 72	15	Excellent	Available
Mechanics of Solids Lab	Exclusive	190 sq.mt, 48	14	Excellent	Available
Workshop	Exclusive	280 sq.mt, 60	32	Excellent	Available
Machine Tools	Exclusive	280 sq.mt, 48	14	Excellent	Available
Fluid Mechanics and Hydraulic Machines	Exclusive	280 sq.mt, 48	12	Excellent	Available
Thermal Engineering	Exclusive	190 sq.mt, 48	14	Excellent	Available
Production Technology	Exclusive	190 sq.mt, 48	12	Excellent	Available
Metrology	Exclusive	80 sq.mt, 48	12	Excellent	Available
Instrumentation & Controls	Exclusive	80 sq.mt, 48	10	Excellent	Available
Heat Transfer	Exclusive	80 sq.mt, 48	14	Excellent	Available
Metallurgy	Exclusive	80 sq.mt, 48	12	Excellent	Available
Metal Forming	Exclusive	Metal Forming Exclusive 95 sq.mt, 48	8	Excellent	Available

6.3 Laboratories in the Department to meet the Curriculum Requirements and the POs (25)

Total Marks : 25.00

6.3.1 Adequate, well-equipped laboratories to meet the curriculum requirements and the POs (10) Institute Marks : 10.00

(Instruction: Assessment based on the information provided in the preceding table.)

- The department has excellent laboratory infrastructural facilities and all the year students are trained in their respective laboratories to enhance their practical skills and also to meet their curriculum requirements.
- Laboratories are equipped with sufficient hardware & licensed software to run program specific curriculum and off program curriculum.
- These laboratories are under the guidance of well experienced faculty, lab assistants and lab technicians.
- Lab manuals are available for all the lab courses which consist of solutions for curriculum experiments and additional experiments.
- Product laboratory is available for faculty and students to carry their innovative products and projects.
- Exclusively a project lab has been provided for the students to carry out their mini and major project work.

Lab Description in the Curriculum	Exclusive / Shared	Space (Sq.mts), Number of Students	Number of Experiments	Quality of instruments	Lab manuals
CAD/CAM	Exclusive	190 sq.mt, 72	15	Excellent	Available
Mechanics of Solids		190 sq.mt, 48	14		
Workshop		280 sq.mt, 48	32		
Machine Tools		280 sq.mt, 48	14		
Fluid Mechanics & Hydraulic		280 sq.mt, 48	16		
Thermal Engineering		190 sq.mt, 48	14		
Production Technology		190 sq.mt, 48	12		
Metrology		80 sq.mt, 48	12		
Instrumentation and Control Systems		80 sq.mt, 48	12		
Heat Transfers		80 sq.mt, 48	14		
Metallurgy		80 sq.mt, 48	12		
Metal Forming		95 sq.mt, 48	8		

Mapping of Laboratories with POs

Name of the Laboratory	P Os											
	a	b	c	d	e	f	g	h	i	j	k	l
CAD/CAM	X	X	X			X	X	X			X	X
Mechanics of Solids	X			X			X	X		X	X	
Workshop	X	X	X		X			X	X	X	X	X
Machine Tools	X			X		X		X			X	X
Fluid Mechanics & Hydraulic Machines	X	X	X	X	X		X	X		X	X	X
Thermal Engineering	X	X		X	X	X		X			X	
Production Technology	X	X		X	X		X	X	X		X	X
Metrology	X	X		X	X	X`		X		X	X	
Instrumentation & Controls	X	X		X	X			X			X	X
Heat Transfer	X	X		X		X	X	X		X	X	
Metallurgy	X			X		X		X	X		X	

6.3.2 Availability of computing facilities in the department (5) Institute Marks : 5.00

(Instruction: Assessment based on the information provided in the preceding table.)

For UG programme more than 126 Desk Top & PCs are available in the labs with fully loaded licensed software to facilitate students to carry their course work.

Laboratory	Room Number	No of Computers/ Laptops	Condition of Equipment	Hardware / Software	PEOs
CAD/CAM Lab	4305,4307	72	Excellent	Auto CAD, Solidworks, ABAU|QUS, cam,ansys	1,2,3,4
Manufacturing simulation Lab	4505,4506,4507	32	Excellent	Flexsim	1,2,3,4
Mechanical Research Lab	4101	06	Excellent	dynaform, LS-dyna	1,2,3,4
Metrology Lab	4315,16	02	Excellent	Image Analyser	1,2,3,4

6.3.3 Availability of laboratories with technical support within and beyond working hours (5) Institute Marks : 5.00

(Instruction: Assessment based on the information provided in the preceding table.)

- The college timings are staggered for all the four year students in order to avoid any discrepancy in the laboratory schedules.
- All the laboratories are open from 8:00AM in the morning till 6:00PM in the evening and the technical staff is made available for the time the laboratory is open to assist the students in their respective sessions irrespective of their lab schedules.
- All the laboratories have sufficient equipment in running condition for the students to perform their experiments.
- The ratio of student to equipment available is maintained to be 2:1 to have a clear understanding of all the experiments performed in the lab sessions.
- Technical staff is trained to handle all the laboratory activities and every laboratory has an in-charge who takes care of all the laboratory equipment.
- To ensure the smooth functioning of the laboratory a couple of staff members accompany the technical staff along with lab assistants and lab technicians.

Year	College Timings	Laboratories and Student projects Lab timings	Availability of tech support in lab timings
II	8.00 A.M to 2.00 P.M	8.00 A.M to 5.00 P.M	YES
III	9.00 A.M to 3.00 P.M	8.00 A.M to 5.00 P.M	YES
IV	11.00 A.M to 5.00 P.M	8.00 A.M to 5.00 P.M	YES

Name of the Laboratory	Working Hours	Work carried out in beyond working hours	Lab In-charge	Lab Faculty
CAD/CAM Lab	8:00 A.M to 6:00 P.M	Projects on Pro-E, Catia,Solid works Ansys,Fanuc 6M for CNC, CNC Milling and Turning Machines	NSM Raju	Dr N.Sateesh
Manufacturing simulation Lab	8:00 A.M to 6:00 P.M	Flexim, Walleys(RoboMentor), LSM Controller software	NSM Raju	Dr K.Satyanarayana
Mechanical Research Lab	8:00 A.M to 6:00 P.M	LS Dyna, Presys,40Ton hydraulic press, 5 ton electronic contrl UTM	Gangadhar	Dr. S K Singh

6.3.4 Equipment to run experiments and their maintenance, number of students per experimental setup, size of the laboratories, overall ambience, etc (5)

Institute Marks : 5.00

(Instruction: Assessment based on the information provided in the preceding table.)

- The laboratories are equipped with high-end configuration systems needed for execution of experiments.
- Laboratories are well maintained by the technical and non-technical staff.
- Sufficient number of systems is available for the students to carry out the experiments.

Laboratory	Equipment	Maintenance	No of Students per Experiment	Size of the Laboratory	Overall ambience
CAD/CAM Lab	Computers with Design and Analysis software	Maintained by Skilled lab technician & computer Hardware Professional	1	190 sq.mt	Qualified faculty, staff with good condition of Lab equipment has created an ambience for learning
Machine Tools	Lathes, Milling Machines, Grinding, Drilling Machines, Cutting Machines	Maintained by Skilled lab technician & Professional	2	280 sq.mt	Qualified faculty, staff with good condition of Lab equipment has created an ambience for learning
Manufacturing Simulation Lab	CNC Lathe, CNC Milling Machines	Maintained by Skilled lab technician & Skilled Hardware Professional	2	95 sq.mt	Qualified faculty, staff with good condition of Lab equipment has created an ambience for learning
Production Technology	Arc welding, Gas welding, Sand Moulding and Plastic Moulding Machinery	Maintained by Skilled lab technician & Skilled Professional	1	190 sq.mt	Qualified faculty, staff with good condition of Lab equipment has created an ambience for learning
Mechanics of Solids	UTM, Hardness testing equipment, computerized material property testing machines	Maintained by Skilled lab technician & Skilled computer Hardware Professional	2	190 sq.mt	Qualified faculty, staff with good condition of Lab equipment has created an ambience for learning
Thermal Engineering Lab	4-S single cylinder petrol and Diesel Engines,4S multi cylinder engine, compressor, Refrigeration unit	Maintained by Skilled lab technician & Professional	2	190 sq.mt	Qualified faculty, staff with good condition of Lab equipment has created an ambience for learning
Fluid Mechanics & Hydraulic Machinery	Turbines, Pumps and pipe flow losses, Jet flows, Venturimeter& Orifice meter etc..	Maintained by Skilled lab technician & Professional	2	280 sq.mt	Qualified faculty, staff with good condition of Lab equipment has created an ambience for learning
	Conduction,				Qualified faculty, staff

Heat Transfer	Radiation, Heat pipe, boiling and condensation related equipments	Skilled lab technician & Professional	2	190 sq.mt	with good condition of Lab equipment has created an ambience for learning
Metallurgy	Computerized microscopes, material grain structure identification equipment	Maintained by Skilled lab technician & Skilled Professional	2	95 sq.mt	Qualified faculty, staff with good condition of Lab equipment has created an ambience for learning
Metrology	Surface roughness measurement, Optical projector, micrometer, vernier calipers, screw gauge	Maintained by Skilled lab technician & Professional	2	95 sq.mt	Qualified faculty, staff with good condition of Lab equipment has created an ambience for learning

6.4 Technical Manpower Support in the Department (15) **Total Marks : 15.00**

Name of the technical staff	Designation	pay-scale	Exclusive / shared work	Date of joining	Qualification At Joining	Qualification Now	Other technical skills gained	Responsibility
PVRK Anjaneya Raju	Lab Assistant	6700-55600	Exclusive	24/11/1997	I.T.I (Fitter)	I.T.I (Fitter)	All types of Welding, Training in Metal Forming Equipment	Assistance TE and PT Lab
G. Ramakrishnam Raju	Lab Assistant	6700-55600	Exclusive	24/11/1997	I.T.I (Fitter)	I.T. (Fitter)	Training on Drilling, Milling and Lathe operations	MT and FMHM Lab
P. Venkat Raju	Mechanic	6700-55600	Exclusive	16/11/1997	I.T.I (Fitter)	I.T.I (Fitter)	Training on Surface Finishing, UTM	MOS,I & C and MET
V.Satyanarayana Raju	Lab Assistant	6700-55600	Exclusive	24/11/1997	S.S.C	S.S.C	Training on NDT	Office Assistance
NSM Raju	Mechanic	6700-55600	Exclusive	03/08/2007	Diploma	Diploma	Training on Manufacturing and simulation lab	CAD/CAM, Simulation Lab
NCK Kumar Raju	Lab Assistant	6700-55600	Exclusive	27/06/2011	Inter	Inter	Training on Heat transfer equipment	Heat Transfer
D venkateswara raju	Lab Assistant	6700-55600	Exclusive	18/11/2015	S.S.C	S.S.C	Training in engineering work shop	workshop
G.Srinivas	Lab Assistant	6700-55600	Exclusive	13/10/2014	S.S.C	S.S.C	Training in Carpenter work shop	workshop

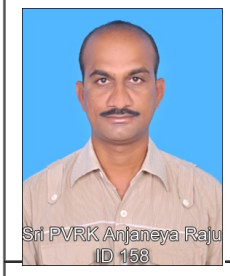
6.4.1 Availability of adequate and qualified technical supporting staff for programme-specific laboratories (10) Institute Marks : 10.00

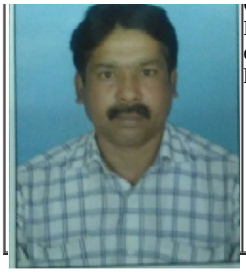
(Instruction: Assessment based on the information provided in the preceding table.)

- The technical proficiency of the technical staff is such that they are highly versatile in adapting as per programme needs and running the experiment and cater to requirements of all the three year-wise batches and their experiments.
- Each laboratory is maintained by one Technical Staff and they are available exclusively for that laboratory based on the semester requirements.
- Their duties are:
  - Issuing the components and equipment, Monitoring and take the responsibilities along with concerned lab in charge faculty.
  - Maintenance of the equipment, collecting the complaints from students / staff on equipment and resolve their complaints.
  - Maintain the stock register as per the guidelines from the higher authorities.
  - Taking safety precautionary measures while handling the equipment.
- The technical staff regularly enhances their skills through participating in workshops.

S.No	Laboratory	Qualified technical Staff	Designation
1	CAD/CAM	NSM Raju	Lab Assistant
2	Machine Tools	G Rama Krishnam Raju	Lab Assistant
3	Metallurgy	V.Satyanarayana Raju	Lab Assistant
4	Metrology	P Venkata Raju	Lab Assistant
5	Manufacturing Simulation	NSM Raju	Lab Assistant
6	Thermal Engineering	P V R K Anjaneya Raju	Lab Assistant
7	Heat Transfer	NCK Kumar Raju	Lab Assistant
8	Fluid Mechanics & Hydraulic Machinery	G Rama Krishnam Raju	Lab Assistant
9	Instrumentation & Control Systems	P Venkata Raju	Mechanic
10	Mechanics of Solids Lab	P Venkata Raju	Mechanic
11	Production Technology	P V R K Anjaneya Raju	Lab Assistant
12	Engineering Workshop	Murthy raju	Mechanic
13	Metal Forming Lab	P V R K Anjaneya Raju	Lab Assistant

Technical Staff competencies with Programme specific criteria

	**G Venkata Raju**, completed ITI Fitter in 1985, worked as a machinist, as a Operator, as a Production officer. He joined as a Lab Assistant in GRIET 1997. He attended various development programmes like advanced machining techniques and welding processes and practice skills improvement in fabrication. His practical experience is useful in handling Mechanics of solids Lab, Metrology and Machine Tools Lab and Instrumentation and control systems Lab. At present he's working as a Mechanic in the department of mechanical engineering in GRIET and he is eminent non Teaching faculty in helps to students in labs, mini and major projects.
	**G. Rama Krishna Raju**, completed ITI (Fitter) in 1987 worked as a machinist, as a Operator, as a Production officer. He joined as a Lab Assistant in GRIET 1997. He attended various development programmes like advanced machining techniques and welding processes and practice skills improvement in fabrication. His practical experience is useful in handling Machine Tools Lab and Fluid Mechanics and Hydraulic Machinery Lab. At present he's working as a Mechanic in the department of mechanical engineering in GRIET and he is eminent non Teaching faculty in helps to students in labs, mini and major projects.
	**P.V.R.K.Anjaneya Raju**, completed ITI Fitter in 1985, worked as a machinist, as a Operator, as a Production officer. He joined as a Lab Assistant in GRIET 1997. He attended various development programmes like advanced machining techniques and welding processes and practice skills improvement in fabrication. His practical experience is useful in handling Thermal Engineering Lab and Production Technology Lab. At present he's working as a Mechanic in the department of mechanical engineering in GRIET and he is eminent non Teaching faculty in helps to students in labs, mini and major projects.
	**V.Satyanarayana Raju**, completed ITI in 1985, worked as a machinist, as a Operator, as a Production officer. He joined as a Lab Assistant in GRIET 1997. He attended various development programmes like advanced machining techniques and welding processes and practice skills improvement in fabrication. His practical experience is useful in handling Metallurgy Lab and Fluid Mechanics and Hydraulic Machinery Lab. At present he's working as a Lab Assistant in the department of mechanical engineering in GRIET and he is eminent non Teaching faculty in helps to students in labs, mini and major projects.
	**N.S.M.Raju,** completed Diploma in 2005, worked as a shift supervisor, Maintenance Engineer, CAD Designer. He joined as a Lab Assistant in GRIET 2007. He attended various development programmes like Auto CAD, Pro-E, Desktop publishing, Page maker, Corel draw, Photo shop, Multimedia and Web design, advanced Machining techniques and welding processes and practice skills improvement in fabrication. His practical experience is useful in handling CAD/CAM Lab, Precision Engineering and Java Lab. At present he's working as a Mechanic in the department of mechanical engineering in GRIET and he is eminent non Teaching faculty in helps to students in labs, mini and major projects.
	**N C Kumar Raju**, completed inter/ITI in 2006, worked as a machinist. He joined as a Lab Assistant in GRIET 2010. He attended various development programmes like advanced machining techniques and welding processes and practice skills improvement in fabrication. His practical experience is useful in handling Heat Transfer Lab and Machine Tools Lab. At present he's working as a Lab Assistant in the department of mechanical engineering in GRIET and he is eminent non Teaching faculty in helps to students in labs, mini and major projects.
	**D venkateswara raju**, worked as a machinist in turbo vent industries pvt lmtd. He joined as a Lab Assistant in GRIET 2015. His practical experience is useful in handling engineering workshop Lab and production technology Lab. At present he's working as a Lab Assistant in the department of mechanical engineering in GRIET and he is eminent non Teaching faculty in helps to students in labs
	G.Srinivas Worked as a machinist in vbc pvt lmtd. He joined as a Lab Assistant in



GRIET 2014. His practical experience is useful in handling engineering workshop Lab . At present he's working as a Lab Assistant in the department of mechanical engineering in GRIET and he is eminent non Teaching faculty in helps to students in labs

6.4.2 Incentives, skill-upgrade, and professional advancement (5) Institute Marks : 5.00

(Instruction: Assessment based on the information provided in the preceding table.)

INCENTIVES

- College provides incentives to non teaching and technical staff members
- The staff on official work are compensated for the conveyance expenses
- Staff deputed for any outstation programs is reimbursed the amount by the administration.
- Group Insurance Schemes are implemented.
- Interest free loans are disbursed for emergency needs on a case-to-case basis.
- Subsidized lunch & snacks facility are provided.
- Free lunch coupons are provided under a general scheme to help staff in times of need.
- Transportation is free
- Free medical facility is provided in the campus, apart from medical leaves and medical allowances.
- Educational loan for higher studies is available in eligible cases.
- Employee State Insurance (ESI), Employee Provident Fund (EPF) subscription available as per norms.
- College arranges get-together every year for non teaching and technical staff along with their family members.

SKILL UPGRADE

- Staff training programmes are organized and conducted regularly to upgrade the technical skills of both technical and non teaching staff members
- Staff is trained on new equipments or tool by the Vendor during induction and installation in the department.
- Training is provided on operation of PCs, Printer, and Scanner, Internet modems, configuring IP address, power connection, software installations, PC format activity and antivirus installation.
- Training is provided on MS Office, Excel to non teaching and technical staff members as part of computer literacy programme
- Regular Training is provided to improve soft skills and communication skills.
- Training is provided on the aspects of safety, security and best laboratory practices.
- Training is provided on energy conservation for optimum use of all other resources.
- Induction and orientation programmes are conducted for all new recruits
- Intensive training provided on all laboratory experiments to meet changing syllabus requirements.

PROFESSIONAL DEVELOPMENT

- Eligible non teaching and technical staff members are given chance to study B.Tech and M.Tech course with subsidized tuition fee
- Eligible staff is promoted to the next cadre upon accumulation of seniority and experience in service e.g., eligible Lab assistant are promoted as Lab supervisors.
- Administrative staff is promoted as senior assistants; senior assistants are promoted to the next level in administration.
- Lab staff upon successful completion of B.Tech and M.Tech programmes is considered for promotion as teaching faculty after suitable orientation training like FDP.
- Technical staff are given free time to upgrade their knowledge and technical skill.

7 Academic Support Units and Teaching-Learning Process (75) **Total Marks : 70.91**

Students' Admission

Admission intake (for information only)

(Instruction: The intake of the students during the last three years against the sanctioned capacity may be reported here.)

Item	2015-2016	2014-2015	2013-2014	2012-2013
Sanctioned intake strength in the institute (N)	1080	1110	1110	930
Number of students admitted on merit basis (N1)	756	699	745	610
Number of students admitted on management quota/otherwise (N2)	324	306	308	259
Total number of admitted students in the institute (N1 + N2))	1080	1005	1053	869

Admission quality (for information only)

(Instruction: The admission quality of the students in terms of their ranks in the entrance examination may be presented here.)
Tabular data for estimating student-teacher ratio and faculty qualification for first year common courses)

Rank Range	2015-2016	2014-2015	2013-2014	2012-2013
1-10000	70	50	114	145
10000-50000	460	449	452	347
50000-100000	143	148	131	77
100000-150000	32	28	31	28
150000-200000	40	24	9	12
200000 and above	11	0	8	1
admitted through	324	306	308	259

List of faculty members teaching first year courses:

(Instruction: The institution may list here the faculty members engaged in first year teaching along with other relevant data.)

Name of faculty member	Qualification	Designation	Date of joining the institution	Department with which associated	Distribution of teaching load(%)		
					1st year	UG	PG
Dr. S. Rama Murthy	Ph.D	Professor	14/07/2000	Basic Sciences	100	0	0
Dr. B R K Reddy	Ph.D	Professor	06/01/1998	Basic Sciences	100	0	0
Dr. D. Indira	Ph.D	Professor	24/01/2004	Basic Sciences	100	0	0
Dr. P.B. Appa Rao	Ph.D	Professor	25/04/2009	Basic Sciences	100	0	0
Dr. B.Srinivasa Rao	Ph.D	Professor	29/05/2013	Basic Sciences	100	0	0
Dr. K.V.Subba Raju	Ph.D	Professor	28/04/2014	Basic Sciences	100	0	0
Dr. C.R.Venkateswara Rao	Ph.D	Professor	29/03/2015	Basic Sciences	100	0	0
Dr. G.Patrick	Ph.D	Professor	27/03/2015	Basic Sciences	100	0	0
Dr. G Srinivas Bapiraju	Ph.D	Professor	05/06/2015	Basic Sciences	100	0	0
Dr. K.V.S.Raju	Ph.D	Assoc. Professor	08/11/2015	Basic Sciences	100	0	0
M. Sridhar	M.Sc, M.Tech	Assoc. Professor	14/09/2006	Basic Sciences	100	0	0
Dr.V.N. Rama Devi	M.Sc., MBA Ph.D	Asst. Professor	07/07/2008	Basic Sciences	100	0	0
Dr. G.Swapna	Ph.D	Asst. Professor	29/04/2015	Basic Sciences	100	0	0
Ms. Y. Gayathri	M.Com M.Phil	Asst. Professor	01/12/2003	Basic Sciences	100	0	0
K. Vagdevi	M.Sc., M.Tech	Asst. Professor	14/09/2005	Basic Sciences	100	0	0
M. Aravind Kumar	M.Phil (Ph.D)	Asst. Professor	30/06/2006	Basic Sciences	100	0	0
V. Lakshmi Prasanna	MA, M.Phil (Ph.D)	Asst. Professor	28/07/2008	Basic Sciences	100	0	0
Nirmalya Kumar Mohanty	M.Sc, M.Tech	Asst. Professor	19/07/2007	Basic Sciences	100	0	0
P. Sujeetha	MA	Asst. Professor	12/09/2007	Basic Sciences	100	0	0
S. Bhagath Kumar	M.Sc, M.Tech	Asst. Professor	10/01/2008	Basic Sciences	100	0	0
Ch. Phani Rama Krishna	M.Sc (Ph.D)	Asst. Professor	05/09/2008	Basic Sciences	100	0	0
R. Lakshmi Kanthi	MA (Ph.D)	Asst. Professor	02/07/2009	Basic Sciences	100	0	0
Ch.Vani	M.Sc	Asst. Professor	09/11/2009	Basic Sciences	100	0	0
Bh Saroja Rani	M.Sc	Asst. Professor	17/07/2010	Basic Sciences	100	0	0

K. Kalpana	M.Sc (Ph.D)	Asst. Professor	21/07/2010	Basic Sciences	100	0	0
M. Haritha Kiranmai	M.Sc	Asst. Professor	21/07/2010	Basic Sciences	100	0	0
Ms. N.Latha	MBA	Asst. Professor	26/07/2010	Basic Sciences	100	0	0
M. Krishna	M.Sc	Asst. Professor	17/07/2010	Basic Sciences	100	0	0
B. Shanti Sree	M.Sc	Asst. Professor	08/08/2011	Basic Sciences	100	0	0
M.V.Srikantha Reddy	M.Sc (ph.d)	Asst. Professor	23/09/2011	Basic Sciences	100	0	0
Ms. D.Roopa	MBA	Asst. Professor	20/10/2011	Basic Sciences	100	0	0
P. Lakshmi	M.Sc., M.Tech	Asst. Professor	01/07/2012	Basic Sciences	100	0	0
P.M. Rekha	M.Sc (Ph.D)	Asst. Professor	02/02/2012	Basic Sciences	100	0	00
B.Suresh	M.Sc (Ph.D)	Asst. Professor	09/02/2012	Basic Sciences	100	0	0
P.Naveen	M.Sc	Asst. Professor	16/06/2012	Basic Sciences	100	0	0
V.Sesha Sai Kumar Reddy	M.Sc	Asst. Professor	18/06/2012	Basic Sciences	100	0	0
J.Kishore Babu	M.Sc	Asst. Professor	13/09/2012	Basic Sciences	100	0	0
V. Sailaja	MBA	Asst. Professor	26/07/2012	Basic Sciences	100	0	0
Ms. G.Kalpana	M.Sc	Asst. Professor	07/01/2013	Basic Sciences	100	0	0
Ms.Arshia Fathima	M.Sc	Asst. Professor	17/06/2013	Basic Sciences	100	0	0
Ms. Sailaja Eswara	M.A, M.Phil	Asst. Professor	16/10/2013	Basic Sciences	100	0	0
Ms.M.Madhavi	M.Sc	Asst. Professor	07/10/2013	Basic Sciences	100	0	0
Ms. M. Hema Sri	M.SC, M.TECH & M.Phil	Asst. Professor	07/01/2014	Basic Sciences	100	0	0
Ms. Niharika A	Ms. Niharika A	Asst. Professor	10/02/2014	Basic Sciences	100	0	0
Ms. S.Rama	M.Sc	Asst. Professor	27/08/2014	Basic Sciences	100	0	0
Ms. S.Rama	M.Sc	Asst. Professor	22/09/2014	Basic Sciences	100	0	0
Mr. M.Srinivas	M.Sc	Asst. Professor	30/04/2015	Basic Sciences	100	0	0
Mr. A Sri Hari	M.Sc	Asst. Professor	30/04/2015	Basic Sciences	100	0	0
Mr. V.Vinay Kumar	M.Sc	Asst. Professor	30/04/2015	Basic Sciences	100	0	0
Ms. G. Saimatha	M.Sc	Asst. Professor	06/11/2015	Basic Sciences	100	0	0
Mr. J.R. Hari Ram	M.A	Asst. Professor	06/11/2015	Basic Sciences	100	0	0
Ms. M.Pushpa Latha	M.A	Asst. Professor	07/12/2015	Basic Sciences	100	0	
Ms. Rimy Kulshreshtha	M.A	Asst. Professor	07/12/2015	Basic Sciences	100	0	0
Ms T Sabitha	M.A	Asst. Professor	07/12/2015	Basic Sciences	100	0	0
Ms T Sabitha	M.A	Asst. Professor	07/12/2015	Basic Sciences	100	0	0
G. Surekha	M.Tech	Asst. Professor	25/06/2007	ECE	100	0	0
N.Madhusudhana Rao	M.Tech	Asst. Professor	10/07/2007	ECE	100	0	0
D.Chandrashekar	M.Tech	Asst. Professor	07/11/2007	EEE	100	0	0
G. Sandhya Rani	M.Tech	Asst. Professor	11/07/2007	EEE	100	0	0
V.Himabindu	M.Tech	Asst. Professor	28/06/2011	EEE	100	0	0
M.Lohitha	M.Tech	Asst. Professor	23/04/2015	EEE	100	0	0
K. Sudha	M.Tech	Asst. Professor	12/08/2014	EEE	50	50	0
V V S Madhuri	M.Tech	Asst. Professor	30/06/2011	EEE	50	50	0
		Asst.					

D. Dakshayini	M.Tech	Asst. Professor	15/12/2014	IT	100	0	0
P. Bharathi	M.Tech	Asst. Professor	19/12/2014	IT	50	50	0
Dr.Y.Vijayalatha	Phd	Professor	04/11/2007	IT	50	50	0
K. Sunil Reddy	M.Tech	Asst. Professor	15/04/2014	ME	100	0	0
M.Mamatha Gandhi	M.Tech	Asst. Professor	25/04/2013	ME	50	50	0
K.P Sirisha	M.Tech	Asst. Professor	20/08/2014	ME	100	0	0
P.Praveen	M.Tech	Asst. Professor	30/04/2015	ME	100	0	0
STGY Sandhya	M.Tech	Asst. Professor	10/06/2013	CSE	100	0	0
K.CH Suneetha	M.Tech	Asst. Professor	10/06/2013	CSE	100	0	0
D. Suguna Kumari	M.Tech	Asst. Professor	04/09/2014	CSE	100	0	0
A. Shravanthi	M.Tech	Asst. Professor	04/09/2014	CSE	100	0	0
H. Suresh	M.Tech	Asst. Professor	05/09/2014	CSE	100	0	0
P.Vijaya Lakshmi	M.Tech	Asst. Professor	06/09/2014	CSE	100	0	0
P.Vijaya Lakshmi	M.Tech	Asst. Professor	26/03/2015	CSE	100	0	0
P.Sujana	M.Tech	Asst. Professor	23/04/2015	CSE	100	0	0
P.Rajesh	M.Tech	Asst. Professor	09/09/2014	CSE	100	0	0
S.P.Raju	M.Tech	Asst. Professor	15/10/2010	CIVIL	50	50	0
P.Sirisha	M.Tech	Asst. Professor	10/02/2014	CIVIL	50	50	0
P.Bharat	M.Tech	Asst. Professor	01/07/2015	CIVIL	50	50	0

7.1 Academic Support Units (35) — Total Marks : 30.91

7.1.1 Assessment of First Year Student Teacher Ratio (FYSTR) (10) — Institute Marks : 10.00

Year	No. of students(approved intake strength)	No. of faculty members(considering fractional load)	FYSTR	Assessment=(10 x 15)/FYSTR(Max. is 10))
2013-2014	1110	75	14.8	10
2014-2015	1110	75	14.8	10
2015-2016	1080	75	14.4	10

Average assessment 10

7.1.2 Assessment of Faculty Qualification Teaching First Year Common Courses (15) — Institute Marks : 10.91

Assessment of qualification = 3 × (5x + 3y + 2z0)/N, where x + y + z0 ≤ N and z0 ≤ Z
x = Number of faculty members with PhD
y = Number of faculty members with ME/MTech/NET-Qualified/MPhil
z = Number of faculty members with BE/BTech/MSc/MCA/MA
N = Number of faculty members needed for FYSTR of 25

Year	X	Y	Z	N	Assessment of faculty qualification
2013-2014	11	38	33	45	10.73
2014-2015	13	36	33	45	11.00
2015-2016	13	36	33	45	11.00

Average assessment 10.91

7.1.3 Basic science/engineering laboratories (adequacy of space, number of students per batch, quality and availability of measuring instruments, laboratory manuals, list of experiments) (8) — Institute Marks : 8.00

(Instruction: The institution needs to mention the details for the basic science/engineering laboratories for the first year courses. The descriptors as listed here are suggestive in nature.)

Laboratory description	Space, number of students	Software Used	Type of experiments	Quality of instruments	Laboratory manuals
Engineering Physics Lab – 1	90 sqm / 30	nil	12 experiments in Optical electrical	Excellent	Available
Engineering Physics Lab – 2	98 sqm / 30	nil	12 experiments in Optical electrical	Excellent	Available

Physics Lab – 2	85 sqm / 30	nil	and analytical	Excellent	Available
Engineering Physics Lab – 2	80 sqm / 30	nil	10 experiments in Volumetric and analytical	Excellent	Available
Engineering Physics Lab – 2	80 sqm / 30	nil	10 experiments in Volumetric and analytical	Excellent	Available
Computer programming and Data Structures Lab – 1	85 sqm / 30	DevC, Turbo C, Linux with Ubuntu,	30 experiments in C language	Excellent	Available
Computer programming and Data Structures Lab – 1	80 sqm / 30	DevC, Turbo C, Linux with Ubuntu,	30 experiments in C language	Excellent	Available
Computer programming and Data Structures Lab – 1	85 sqm / 30	DevC, Turbo C, Linux with Ubuntu,	30 experiments in C language	Excellent	Available
Computer programming and Data Structures Lab – 1	85 sqm / 30	DevC, Turbo C, Linux with Ubuntu,	30 experiments in C language	Excellent	Available
Computer programming and Data Structures Lab – 1	85 sqm / 30	DevC, Turbo C, Linux with Ubuntu,	30 experiments in C language	Excellent	Available
Engineering Workshop – 1	133 sqm / 30	nil	9 experiments in Letterings, Projections, views	Excellent	Available
Engineering Workshop – 1	133 sqm / 30	nil	9 experiments in Letterings, Projections, views	Excellent	Available
Engineering Workshop – 1	133 sqm / 30	nil	9 experiments in Letterings, Projections, views	Excellent	Available
IT Workshop Lab-1	120 sqm / 60	Microsoft office, CISCO	16 experiments in Assembling disassembling of components, worksheets involving Microsoft office, installations of OS	Excellent	Available
IT Workshop Lab-1	120 sqm / 60	Microsoft office, CISCO	16 experiments in Assembling disassembling of components, worksheets involving Microsoft office, installations of OS	Excellent	Available

7.1.4 Language laboratory (2) Institute Marks : 2.00

(Instruction: The institution may provide the details of the language laboratory. The descriptors as listed here are not exhaustive).

Language Laboratory	Space, number of students	Software Used	Type of experiments	Quality of instruments	Guidance
English Language and Communication Skills Lab -1	85 sqm/60	Study skills, Clarity, Sky pronunciation suite, Teacher	Grammatical Exercises, Phonetics, pronounciation, Resume writing	Excellent	Students are guided & monitored by the instructor
English Language and Communication Skills Lab -2	85 sqm/60	KAPLAN, Clarity, Sky Pronunciation suite	Grammatical Exercises, Phonetics, pronounciation, Resume writing	Excellent	Students are guided & monitored by the instructor

7.2 Teaching – Learning Process (40) Total Marks : 40.00

7.2.1 Tutorial classes to address student questions: size of tutorial classes, hours per subject given in the timetable (5) Institute Marks : 5.00

(Instruction: Here the institution may report the details of the tutorial classes that are being conducted on various subjects and also state the impact of such tutorial classes).

- Provision of tutorial classes in timetable(Yes/No) Yes
- Tutorial sheets provided(Yes/No) Yes
- Tutorial classes taken by: Faculty
- Number of tutorial classes per subject per week: 1
- Number of students per tutorial class: 40
- Number of subjects with tutorials: 1st year..... 2nd year..... 3rd year..... 4th year.....

1st Year : 72 2nd Year: 80 3rd Year : 76 4th Year : 55

Tutorial Classes for the Year 2015-16:

Branch	I Year	II Year	III Year	IV Year	Total
Electrical and Electronics					

Engineering	11	10	10	7	38
Mechanical Engineering	11	10	10	7	38
Electronics and Communication Engineering	11	10	9	6	36
Computer Science and Engineering	11	10	10	7	38
Information Technology	11	10	10	7	38
Civil Engineering	11	10	9	7	37
Biomedical Engineering	-	10	9	7	26
Biotechnology	-	10	10	7	27
Total	66	80	77	55	278

Tutorial classes are conducted for majority of the subjects for all the years. Additional exercises are designed for critical theory or practical subjects so as to enhance subject knowledge. Tutorials help the students to understand the subject through analysis, problem solving and in a discussion mode with the tutor. Tutorial impact is apparent through the higher performance level of the students and subsequent evaluation stages and their higher confidence levels when the subject is discussed in subsequent lecture classes.

7.2.2 Mentoring system to help at individual levels (5) Institute Marks : 5.00

(Instruction: Here the institution may report the details of the mentoring system that has been developed for the students for various purposes and also state the efficacy of such system).

- Mentoring System: Yes
- Type of Mentoring: Total Development
- Number of faculty mentors: all
- Number of students per mentor: 20
- Frequency of meeting: Fortnightly or on need basis

Mentoring program is adopted in GRIET in order to improve the performance of the graduate students. Each mentor is assigned with a group of students (mentees) to closely monitor their academic performance and give timely guidance**.** Good mentoring is crucial to graduate student success both during and after graduation. Mentoring moves beyond advising because it becomes a more personal relationship that involves socialization into the norms of the profession, role modeling, career guidance, and friendship along with support during research and thesis preparation.

Duties and Responsibilities of Mentor:

A **Mentor** is a teacher doing the role of friend, philosopher and guide to strengthen the weak student's academic performance. A Mentor is responsible for his/her mentees assigned, for the entire academic year and is answerable to the programme coordinator and has the following responsibilities:

- Maintaining the mentoring record of the students containing the information such as contact details, admission details, academic record, co / extra-curricular activities, achievements and disciplinary actions if any.
- Conducting counseling sessions at least once a fort night and keeping a record of it. The frequency of meeting may be increased based on need.
- Noting the physical, mental, and emotional status of the assigned mentees and to provide assistance.
- Keeping a tab on absenteeism in classes or exams, poor academic performance, unacceptable behavior and bringing to the notice of the college authorities and their parents.

All the counseling sessions lay emphasis on attitudes, value systems, hard work, and career planning.

7.2.3 Feedback analysis and reward / corrective measures taken, if any (5) Institute Marks : 5.00

(Instruction: The institution needs to design an effective feedback questionnaire. It needs to justify that the feedback mechanism it has developed really helps in evaluating teaching and finally contributing to the quality of teaching).

- Feedback collected for all courses(Yes/No): Yes
- Specify the feedback collection process

1. Feedback is collected through structured forms from students, parents, employees and alumina. 2. Student's feedback on faculty is collected twice in semester once at the beginning of the course and one at the end. 3. Same feedback can also be taken through online 4. Parents, Employers, Alumina as and when they visit the institute, every effort is made to collect feedback. (a) Organisation is responsive to the needs of the stakeholders by continuously monitoring the pulse of the Institution. This will ensure proper implementation of programmes, help to take mid course corrections, provide a mechanism to monitor and reward the good performers at the same time make the lagging behind to improve. Also to ensure an effective feedback and corrective mechanisms (b) Feedback forms are carefully designed for the following stake holders with responsibility indicated in brackets. i. Students (Head of Individual Dept) ii. Faculty (Dean of Faculty Development) iii. Parents (HOD of Individual Dept) iv. Employers (Dean of Training &Placements) v. Alumni (GRIET Alumni Association)

- Percentage of students participating: 60%
- Specify the feedback analysis process

1. Feedback form consists of 10 questionnaires 2. Each questionnaire consists of the grading 4-1 3. Cumulative analysis is done taking help of the feedback form for every faculty 4. Based on the analysis the teaching /learning process in improved Periodicity The Periodicity is chosen to form a valuable and appropriate input (a) Student: Twice in a academic session once after a month of subject coverage andsecond after the subject completion. (b) Faculty: Twice a year in the month of May and November. (c) Parent: Once on Institute Parent Interaction Day and as and when a parent visitsthe institution. (d) Employer: Once a year at least. (e) Alumni: Once on Alumni Day i.e. on 15th August of each year.

- Basis of reward / corrective measures, if any

Rewards: Letters of appreciation • Monetary benefits • Encouragement in terms of privileges • Appreciations through mention in public functions Corrective Mechanism (a) The feedbacks are analyzed by respective departmental Heads and provide the summary for discussion for Departmental and Institutional Developmental Monitoring meetings. (b) The student feedback is confidential. Therefore each HOD should exercise while preparing the summary sheet strictly for the benefit of the individual concerned, take his/her signature on the summary sheet and the same needs to be transferred to the appraisal system. (c) Alumni feedback is perused by GRIET alumni association secretary. (d) Employer's feedback need to be reviewed by Dean Training and Placements.

- Number of corrective actions taken in the last three years: 37

7.2.4 Scope for self-learning (5) Institute Marks : 5.00

(Instruction: The institution needs to specify the scope for self-learning / learning beyond syllabus and creation of facilities for self-learning / learning beyond syllabus.)

- Scope
  - The Co-curricular calendar is published at the beginning of each year which helps students to time their activity and involvement in self-learning.

College timings are much wider than student working hours, giving students the time to refer and research, consult and learn.

- Time table is framed and provides for adequate leisure time to focus on self-learning.
- Two electives in fourth year I Semester and three electives in fourth year II Semester gives ample flexibility to probe into advanced topics in the discipline concerned.
- Students are encouraged to utilize facilities to promote synthesis of knowledge by research while choosing topics for seminars, industry-oriented mini projects or main project/dissertation.
- The Programme centers introduce from time to time, innovative ways of combining Certification courses with the curriculums to give a professional touch to the learning process.
- College has created a digital class room as a remote center of IIT Bombay with facilities such as specialized internet 2Mbps bandwidth to watch programmes through Aview software. Computers, LCD projector and sound system is provided in the digital class room to see special video classes from the web.
- Digital library access is given to all the students through wifi internet where they can read latest research papers from the IEEE, Elsevier, Science Direct, McGraw Hill and ACM in the college campus.
- Professional Society Events are conducted in the college through ICI, IEEE, ISTE, IETE, IEI and CSI to create a platform for students to discuss various technical topics and demonstrate, exhibit their projects.
- Project exhibition is conducted yearly once in the college to encourage students to demonstrate their work to all the college students, faculty, invitees, press and media
- Group discussions and technical quiz activities are conducted regularly to make students curious about innovating things.
- New additional facilities are provided to the students to explore innovative things in the laboratories.

7.2.5 Generation of self-learning facilities, and availability of materials for learning beyond syllabus (5) Institute Marks : 5.00

(Instruction: The institution needs to specify the facilities for self-learning / learning beyond syllabus.)

The institute patronizes self-leaning environment and has invested in facility building to support and enhance teaching-learning process.

Self learning facilities available for both the staff and students alike are:

1. The Institute Library, a vast repository of volumes and titles
2. Department Library, a specialized repository of volumes and titles and projects.
3. e-learning Tools

    - Digital Libraries (IEEE, ACM, NPTEL)
    - e-lessons by faculty on college portal
    - CDs, Video bank in the library

1. Links to other institutions locally and across the country:

    - Organizing seminars / Technical and Hands-on workshops; taking part in them by students
    - Membership in students-chapter of professional bodies like ICI, IEI, IEEE, ISTE, IETE, CSI, SAE.
    - Availability of course material from IUCEE
    - Interaction with eminent academic personalities through Guest lectures.
    - Interaction with industry experts through academic alliance events.
    - Organizing and taking part in displays and road shows of industry oriented mini projects at the institute.
    - Taking part in Co-curricular activities, contests like x-Kernal, Scientific Fore Step and activities of Entrepreneurship Development Cell.
    - Access to streaming videos from ‘You Tube’ and uploading the projects on to ‘You Tube’ for receiving open critique.
    - Accessibility to popular Free access journals and resources on line such as:

      www.eng-tips.com

      www.sakshat.ac.in

      www.ocw.mit.edu

The above facilities go on, not only to strengthen the teaching-learning process for the students but also generates-academic discipline, scientific attitude, innovativeness and inculcates the self-learning process, and availability of materials support learning beyond syllabus whose beneficiary are both the faculty and the students.

7.2.6 Career Guidance, Training, Placement, and Entrepreneurship Cell (5) Institute Marks : 5.00

(Instruction: The institution may specify the facility and management to facilitate career guidance including counselling for higher studies, industry interaction for training/internship/placement, Entrepreneurship cell and incubation facility and impact of such systems)

Facilities

GRIET has set up separate cells as per guidelines prescribed, to facilitate and manage career guidance, counseling, industry interaction, entrepreneurship development, incubation facility and to monitor their impacts.

“Career and Counseling”, “Training and Placement” and “Entrepreneurship Development cell” are under the charge of a senior faculty with industrial experience.

Career Guidance and Counseling Cell (CG &C):

The Dean of Career Guidance and Counseling monitors the cell. The cell provides, Career Guidance and Counseling to students as per requirement.

- The Dean CG &C is assisted by 32 Counselors (8 Branches x 4 Batches each) who are faculty from respective Programme/Branch/Discipline.
- The cell reaches out to the students both professionally and personally.
- All eligible and employable graduates are transformed into competent employees for prospective industrial houses both in India and overseas with the help

- In its service CG&C apart from career guidance, it also organizes seminars on career planning, soft skills development and campus recruitments and also interacts proactively with Industry HRD cells to facilitate campus placements.
- The Dean CG&C and his counselors are accessible to the students and it makes adequate arrangements for the guidance of students during admissions. They are counseled on choice of careers, and show empathy to their state of confusion and anxiety. They are also given psychological and social counseling apart from academic and career counseling.
- CG&C share a common facility created with the training and placement cell. Facilities available includes: One air conditioned Seminar hall with seating capacity for 250 persons with Wi-Fi and LCD projectors and screens, stage lighting and audio equipment. This is used for seminars on soft skills and technical subjects and for pre-placement seminars by companies.
- Air conditioned cabins are available for conducting interviews and one to one discussions.
- There are 19 discussion rooms to provide the necessary accommodation for any information exchange.
- Dean Career Guidance and Counseling also assists the Training and Placement cell on the vital aspect of higher education.
- Books and software are available in Library for GATE / GRE / TOEFL / IELTS / GMAT / CAT preparation.
- GATE preparation books written by GRIET staff are also made available.
- Awareness lectures are given by Dean and other senior faculty from time to time.
- Alumni studying at IIMs, IITs whenever they visit GRIET are made to interact with students.
- Consultants of Higher Education and Universities of repute are invited to interact with students for clarification on higher studies, admission procedures, requirements and immigration rules.
- Impact

Higher studies information (MBA, M.Tech and MS)

For higher studies both in India and abroad for last three years record is as follows:

Batch	Higher Studies Students in Abroad	Higher Studies Students In India	Total
2013-14	123	91	214
2014-15	111	18	129
2015-16	120	50	170

Training and Placements Cell:

Training and placements is one of the vital departments at GRIET. The cell is handled by a senior faculty with rich experience who is also Dean Training and Placement. He is also associated with Dean CG & C. The broad areas handled by the cell are:

1. Training on Soft Skills and personality development right from first year so as to prepare students for careers in industry.
2. It coordinates with industry for campus training, internship and for suitable placements.

The activities consist of:-

- Arranging personality development sessions both by experts from college, and from industry consultants like Time, Globe Arena, Career Path etc, appropriate to the year of study.
  - In the first year B.Tech. the focus is on goal setting and value systems
  - In the second year B.Tech. Time Management, Communication and Analytical Skills.
  - In the pre final and final years B.Tech. Group discussions, Interview skills, mock Interviews, H.R. & Technical Aptitude tests are conducted.
- College organize a unique Programme called ‘Parampara’, which is an interactive session between students in final year who are placed with pre-final students and also with the alumni who are about to face placement interviews.
- Periodic motivational lectures from industry experts.
- Periodic psychometric tests to assess the students.
- Arrange internships with industry and R&D.
- Arrange interactive sessions by noted consultants of Higher Education and Universities of repute to clarify on higher studies, admission procedures, requirements and immigration rules.

Facilities

GRIET Training and Placement section is staffed well with qualified personal as below.

Dean Training and Placements	:1
Dean Career Guidance and Counseling	:1
Training and Placement Officer	:1
Placement Coordinators	:2

Placement Assistant	:1

- One Air conditioned Conference Hall is available with capacity of 250 students at a time. This is being used for giving training to the students of all academic years for soft skills development and technical subjects. This is also being used for the Pre-placement Talk by companies during Campus Placements.
- Air-conditioned rooms are available to simultaneously conduct a number of panels of Group Discussions (GDs), with each panel accommodating up to about 12 students.
- Air-conditioned cabins are available to simultaneously conduct interviews for a large number of students.
- Rooms are available to simultaneously conduct written test for a large number of students during Campus Placements.
- Online test can be conducted for about 200 students at a time.
- E-mail groups are formed every year for each batch of final year students for effective communication with the final year and passed out students.

Impact:

Batch	Placements
2013-14	407
2014-15	440
2015-16	450

Entrepreneurship Development Cell and Incubation Facility

Entrepreneurship Development Cell (EDC) is inaugurated on 5th October 2005 at Gokaraju Rangaraju Institute of Engineering and Technology with the aim of

- Developing entrepreneurial awareness and ability in students
- Creating a forum for potential entrepreneurs
- Developing an interface between academy and industry

The following programs are organized to develop entrepreneurship skills in students and also to familiarize them with various procedures required in converting an idea into a successful business.

It is handled by EDC &IF coordinator who is senior faculty with experience.

Entrepreneurship Activities:

Year	Event	Achievement/ Impact
2013-14	• Organized a guest lecture by eminent and entrepreneur Mr. Srikanth of sunfield energy pvt.Ltd on 23.10.2013 • An interactive session with CEO of Fortune Automobiles Mr. Nirav Modi on 22.11.2013 • Conducted competition on exhibiting innovative products on 22.01.2014	1. Explained entrepreneur opportunities to students 2. Motivation to students 3. Students participated with their ideas received the prizes and appreciation certificates
2014-15	• Organized a seminar on importance of entrepreneurship on 27-8-2014 and Assistant Director MSME was chief guest • Conducted " idea tree" on 19-2-2015 • Conducted an FDP for GRIET Staff from 26-3-2015 to 8-4-2015 in collaboration with Centre for Entrepreneurship Development GRIET initiated the culture of incubation centres in association with Govt.of India and private industries. • GRIET established incubation centre with Micro	1. motivated the students 2. selected 2 ideas to be presented for Financial assistance to MSME 3.thiry faculty participated in this program 4.encouraging students to

	Enterprise(MSME) • GRIET received grant worth Rs. 52 lakhs funding for 8 projects from MSME (Micro Small Medium Enterprise) a central government organization for encouraging students to become entrepreneurs	
2015-16	• NATIONAL ENTREPRENEURSHIP NETWORKS (NEN) 21st APRIL/ 2016 GRIET Partner with Nenglobal.org • One day workshop (NEN) on April /19/2016 at GRIET. • On 10th & 11th march 2016**GRIET - EDC**OrganizedStudents challenge program. To develop A Novel mobile application / mobile app for ECG recording 10,000/-rupees cash prize is rewarded. • One day program attended by staff and students @ MIT Global startup workshop , Conducted on 21 to 23 March 2016 • **DHI labs impact chapter** conducted event in GRIET EDC ON 26TH MARCH 2016 students attended program at HICC Novatel Hyderabad at on 13th- 14th of March 2016 • 50rs /- Gameorganized by EDC – GRIET based on Creativity And Innovation from 06/1/2016 – 08/01/2016 products made by students like bracelets , friendship bands , Mehndi arts, Nutritional noodles , kits …..etc. • Workshop on entrepreneurship and startup and culture under TEQIP-II BY Dr.Radhika Shankar CEO OWL CONSULTANCY.	1. Explained entrepreneur opportunities to students 2. Encouraging students to become entrepreneurs 3. Students participated with their ideas received the prizes and appreciation certificates

7.2.7 Co-curricular and Extra-curricular Activities (5) Institute Marks : 5.00

(Instruction: The institution may specify the Co-curricular and extra-curricular activities, e.g., NCC/NSS, cultural activities, etc)

GRIET lays stress on beyond academic activities through structured Co and Extra-curricular activities integrated and spread over the entire academic year, as they have profound impact in shaping up the overall personality of a student.

a) All activities are preplanned and included in the college diary.

b) All activities are planned and executed by the student bodies with assistance from faculty when needed.

c) Pragnya (the Tech festival) and Pulse (the Cultural festival) are the major annual attractions.

Co-curricular activities:

a) Associations:

- Institute of Engineers India (IEI)
- Indian Concrete Institute(ICI)
- Computer Society of India (CSI)
- Institute of Electrical and Electronics Engineers (IEEE)
- The Institution of Electronics and Telecommunication Engineers (IETE)
- Society for Automobile Engineers (SAE)
- Society of Manufacturing Engineers (SME)
- Indian Society for Technical Education (ISTE)
- Confederation of Indian Institute (CII)

- Free Software Foundation
- Robotics Club
- Gaming Club
- Faculty Club
- GRIET is a life member of Institution of Engineers

GRIET-IEEE student branch is declared as III best exemplary branch in 2012-13 in R10 (Asia Pacific Region 10)

b) Annual Events:

Spirals: This event focuses on literary activities such as debates, essay writing, elocution, crosswords; treasure hunts etc such that skills required projecting one's intellect and personality are sharpened and honed.

Quizzicals: This event aims to provide a platform to concentrate on facts and figures with spontaneity in this competitive world through quiz programmes.

x-Kernel: This event conducts periodic contests mainly in the software area.

Scientific Forestep: Skills in hardware are put to constant test through this event.

i-TRIx and e-TRIx: These are popular annual events on Robotics including both hardware and software components and students from across the country competes.

Pragnya: An annual technical fest is organized during September-October.

Extra-Curricular Activities:

a) Games:

The Institute has a college team in all major games and sports. The teams participate in inter-university and state level tournaments and have won the prizes. GRIET has been regularly winning the local tournaments.

b) Cultural Activities:

The College has been conducting annual cultural competitions every year through the following bodies.

Rhythms: Rhythms is an annual event wherein the students showcase their talents in music and dance. Competitive spirit is infused by way of awards and prizes for best performance. The event has created a Rock Band which has set a trend.

Spices: This is an annual event where the culinary skills of students are tested annually – it is unique and the most popular contest in GRIET

Pulse: A cultural festival held during the months of Jan-Mar every year to showcase the talents in dance, music and to witness the performances of famous Indian artists.

c) NSS Activities:

The National Service Scheme Unit of GRIET is actively involved in making students to be socially conscious by promoting involvement in the following activities:

Involvement with NIRMAN, a home for mentally challenged students at Chintal, Hyderabad. Every year time and assistance is spared to make a one day memorable for the inmates. On 15 Aug 2011, students of Mechanical Engineering designed & Manufactured a paper plate making machine as part of the final year project and donated the same to NIRMAN to make them self-reliant. A true example of Engineers Social Responsibility vindicating the GRIET Mission statement.

Associated with 'Sahaya', a home for destitute children at Miyapur, Hyderabad.

Blood Donation Camp: GRIET is honoured by Governor, AP in June 2011 for being the highest donor in college category by Red Cross Society. The College has received this award four times in the last five years.

Green Campus awareness – waste disposal, power and water optimization, plantations etc.

In the recently held great power race, clean energy campus competitions in India, China & US in July-Oct 2010, GRIET is adjudged the second best.

As part of WOW (Wealth from Waste), an effort from ITC, GRIET was appreciated as one of the top contributors in saving Trees. GRIET was felicitated on National Recycling Day on 01 July 11.

Relief activities during floods in AP in October 2009

Reudo: An Environmental fest is organized annually.

d) Other activities:

College promotes literary expressions through REFLECTIONS the college annual magazine, and GEM (GRIET E Magazine) a monthly letter.

Other Important Annual Functions are as follows:

- Annual Day: Celebrated on 26 January of each year
- Graduation Day: Second Saturday in July of each year. A unique celebration similar to the convocation ceremony in University. Graduate students are presented with provisional certificates in traditional graduation robes.
- Alumni Day: 15 Aug of each year Alumni meet at the college
- Parents Interaction Day: Parents are welcome to interact on every second Saturday
- Women's Day
- Blood Donation Day
- Teachers Day, Engineers Day are also celebrated.

7.2.8 Games and Sports facilities, and qualified sports instructors (5) Institute Marks : 5.00

(Instruction: The institution may specify the facilities available and their usage in brief)

GRIET understands that real education should concentrate on activities to develop body, mind and soul. There is adequate emphasis and facilities for physical activities. Mr.R.Srinivasa Raju, MPEd., the Director of Physical Education supervises the students, oversees the management of equipment and the facility apart from interacting with other external sporting bodies for involving his protégé's in sports competitions. Sports and games is an essential extra-curricular activity to maintain competitive spirit, disciple and team spirit. Physical education also encourages the talented sports persons of the institute to excel in the all India inter-university competitions. Those who come out with good performance are given suitable incentives. The Director of Physical Education acts as the chief organizer of the sports events plans, conducts and supervises them throughout the year.

Sports Facilities available in the college:

S.No	Name of the Event	Facility available	Management	Usage of Students
OUTDOOR GAMES:				
1	Basket Ball	38 x18 mtrs	Physical Director	60
2	Volley Ball	28 x 20 mtrs		120
3	Foot Ball	110 x 70 mtrs		80
4	Hockey	100 x 50 mtrs		20
5	Throw Ball	20 x 15 mtrs		150
6	Tennikoit	12 x 9.5 mtrs		75
7	Shuttle Badminton	13.5 x 6 mtrs		50
8	Ball Badminton	24 x 12 mtrs		30
9	Atheletic Track	200 mtrs		20
10	Cricket	Hard Pitch		200
INDOOR GAMES:				
1	TT	5 International Standard tables	Physical Director	80
2	Carroms	5 Game Boards		50
3	Chess	10 Game Boards		50
4	Gymnasium	Assorted Fitness Equipment worth Rs.15 lakhs		40
5	Billiards	1 Table with accessories		30

All the games and sports as mentioned above are extensively played every working day also at times holidays are also utilized for play in the spirit of competition.

Listed below are the categories and events that the students have participated in National/International and won awards in the last three academic years.

National and International Achievements:

1. G. Rohit of ECE (2006-10 Batch) is a Chess Player and

- Participated in World Junior Chess Championship
- Runner in Asian Junior Chess Championship

- Winners in JNTU Inter University Championship

2. K. Sreekanth of Civil Engineering (2009-13 Batch) is a Cricket Player and

- Participated under 25 Andhra 'A' Team
- Participated under 22 Andhra Team
- Participated in South Zone Inter University Championship
- Runners Vizzy Trophy
- Participated in Ranji Trophy T20
- Selected for BCCI Specialist Academy Chennai

Others:

· Moulikaram of I B Tech CSE in Tennis, P Tejasri of I B Tech CE Ball Badminton.

· Mr L Rakesh lal of IV B Tech (EEE) won the "TCS Fit4life-Campus Challenge" a 5KM run organized by TCS on 08 Feb 15.

· Ms. Moulika Ram of II B Tech (CSE) won the 26 Rank in ITF and Runner of South Zone Inter University.

· Mr N Abhishek, 14245A0423, II B Tech (ECE) won the Gold Medal in Hyderabad District Archery Championship, Bronze Medal in 34th Sub junior National Archery Championship at Haryana, and through glory to the state by imagining , Bronze Medal in 35th National Games at Kerala. Please give them a big hand to encourage them.

· Swimming: Mr C M Sai Prasad participated in All Inter University.

· Volley Ball: Mr Varun of IV B Tech (EEE) participated in South Zone Inter University

· Circket: Mr Vikram II B Tech (CE) and Circket Mr Rohit B II B Tech (ECE) participated in South Zone Inter University

· Basket Ball: Ms Mrunalini II B Tech participated in South Zone Inter University

· Ball Badminton: Ms. S Soujanya participated in South Zone Inter University

· Kabadi: Ms Prameela B Tech (Mech) participated in South Zone Inter University

· Food Ball: Mr V Kalyan III B Tech (CSE) and Mr Varun Giri IV B Tech (BT) participated in South Zone Inter University

· Shuttle Badminton: Ms. P Teja girls single runners in JNTUH Inter college Competitions

Other Achievements:

Session	Category Name	Event Name	Organizer	Results
2013-14	Football	SNIST tournament	SNIST	Runners
	Football	MGIT Tournament	MGIT	Runners
	Football	CVSR Tournament	CVSR	Runners
	Basket Ball	Sreenidhi Tournament	Sreenidhi	Runners
	Basket Ball	NBA JAM	NBA	Runners
	Basket Ball	Osamania University Tournament	OU	Winners
	Basket Ball	All India BITs PILANI	BITs PILANI	Runners
	Basket Ball	HITAM College Tournament	HITAM College	Runners
	Basket Ball	CMR College Tournament	CMR College	Runners
	Cricket	MGIT Tournament	MGIT	Runners
	Table Tennis (Doubles)	SNIST Fest	SNIST	Runners
	Table Tennis (Singles)	SNIST Fest	SNIST	Runners
2014-15	Cricket	Vignan University Tournament	Vignan University	Winners
	Cricket	MVSR	MVSR	Semis
	Cricket	Aurora	Aurora	Semis
	Cricket	JNTU Zonals	JNTU	Leagues
	Cricket	JNIT	JNIT	Quarters
	Cricket	Telangana	Telangana	Semis
	Cricket	JNTUH tournament	JNTUH	Runners
	Cricket	MGIT Tournament	MGIT	Runners
	Basket Ball	MRCET Tournament	MRCET	Runners
	Basket Ball	CMRIC Tournament	CMRIC	Runners
	Basket Ball	VNR SLASH Tournament	VNR	Runners
	Basket Ball	MVSR Tournament	MVSR	Winners
	Basket Ball	HITAM Tournament	HITAM	Winners
	Basket Ball	BITS Hyderabad All India Tournament	BITS	Runners

8 Governance, Institutional Support and Financial Resources (75) **Total Marks : 75.00**

8.1 Campus Infrastructure and Facility (10) **Total Marks : 10.00**

8.1.1 Maintenance of academic infrastructure and facilities (4) Institute Marks : 4.00

(Instruction: Specify distinct features)

- Immaculately maintained campus with aesthetic Green coverage by Housekeeping and gardening personnel.
- All rooms have ample and large windows for day light and ventilation, Electrical illumination and electric fans as backup.
- Furnished Class rooms and labs with Desks and chairs, experiment tables; Lecture halls have White board, Over–head Projectors and LCD projectors-on demand, Wi-Fi internet. Maintained by qualified and trained Technical support staff.
- Laboratories are well equipped for the contemporary experiments as well as for projects, maintained by Laboratory Technicians and support staff.
- The campus has a fiber-optic cable backbone between the buildings and has Wi-Fi internet connectivity manned by qualified technical staff.
- Well-equipped workshops.
- Library Facility available at both Central and Department levels. Central library is maintained by the Librarian and support staff.
- Four seminar halls with seating capacity of 250 persons and a Main seminar hall with seating capacity for 450 persons, maintained by the House keeping and Trade technicians.
- Fully furnished and equipped Department Seminar Halls with LCD TV/Monitor, Projection screen, Lectern, Audio-Video equipment, Power backup and Air-conditioners, maintained by the House keeping and Trade technicians.
- Fully equipped and manned Career Guidance, Training and Placement cell.
- Open air Amphitheater and stage with seating capacity for 2000 persons.
- Adequate Toilet facilities are maintained by housekeeping.
- Reverse Osmosis water treatment Plant for purified drinking water. The raw water is brought by water tankers on a need basis for drinking and general purposes.
- Ample parking space on campus, coordinated by the Security wing.
- Oriental Bank of Commerce, Bachupally, GRIET campus- a nationalized bank with ATM facility on campus is maintained by branch personnel.
- Equipped Sports facilities for both Outdoor and Indoor games supervised by the Physical Director and manned by support staff.
- Hygienic Food Service by a Canteen, Kiosks and other catering facilities maintained by contractors.
- Institute owns a Fleet of Buses and Vans to cater to transportation needs of staff and students. They are operated and maintained by a team of experienced drivers, cleaners overseen by a Supervisor-Transport department and his support staff. The bus service covers all the corners of the city as per student demand.
- Stationery and Reprographic Centre maintained by contractor.
- Stand by Generators for uninterrupted power supply apart from UPS at vital nodes maintained by Support staff.
- The Institute contributes to reduction in Carbon foot print by adopting Green initiative -Solar Power generation with an installed capacity of 110 kW, the excess power being transferred to the State Power grid.
- Established Infrastructure Maintenance team of Housekeeping, Mechanical, Electrical, Plumbing, civil trades.
- Round-the-clock Security Team and Surveillance devices, maintained by Contractor.
- Dedicated Health Centre with Doctor and a Paramedic.

8.1.2 Hostel (boys and girls), transportation facility, and canteen (2) Institute Marks : 2.00

Transport facility:

College owns an exclusive fleet of 32 Light and Heavy vehicles for students and staff, ferrying them to and from notified stops on prominent routes in the surrounding areas and Special routes running across the city connecting borders of the city limits including maintenance vehicles.

Category	Passenger Buses	Mini Buses	Minivan /Trucks/Trollies
Student	19	7	-
Staff	1	1	-
Maintenance	-	-	Mini trucks-2; Water Tanker -1; Tractor Trolly-1

The routes and destinations are designed to transport students residing along an axis based on their density. The drivers are whetted for their experience and driving skills required to drive Education Institution vehicles and the support staff are trained to ensure safe and prompt shuttle services keeping the schedules. All Vehicles used are complying with the safety norms laid down by the Road Transport Authority for educational institution passenger vehicles. The Institute Transport committee periodically updates the staff on safety and related issues.

Canteen Facility:

Meeting the shift timings of Instructions for each batch of students the diet component is kept in mind to facilitate them with healthy food made by approved contractors. A spacious built-up facility is provided specifically for dining and refreshments for both staff and students. The Boys and girls section is demarcated so is the staff section to provide relaxed environment while consuming food. Hygiene is constantly monitored via feed back to the Canteen committee. The students and staff have a variety of food available both ‘a la carte’ and ‘table dhôte’ or platter. They also have the choice of specialist kiosks.

Additionally the institute runs the “**Annaprasadam Scheme**”, a social initiative to promote “sharing/ giving food” concept amongst GRIET members. The scheme started with providing ‘free lunch’ for 5 persons and has grown with voluntary contributions from staff members to provide free meals to up to 200 persons by noon. Volunteers from both students and staff apart from 2 cooks from support staff prepare homely meals and also help in self-service

8.1.3 Electricity, power backup, telecom facility, drinking water, and security (4) Institute Marks : 4.00

(Instruction: Specify the details of installed capacity, quality, availability, etc.)

a) Electricity

Description	Qty
Transformers	2

Description	Qty
Diesel Generator Sets: 250 KVA -1 No. 160 KVA -1 No.	2
UPS 10 KVA	1
UPS 5KVA	6
Solar power systems 10 KVA	1
Solar power systems 100 KVA	1

c) Telecom Facility

Description	Qty
Tata Indicom (Land lines)	10
Mobiles	10

d) Drinking Water

Description	Qty
R.O. Plant with a capacity of 3000 litres per hour	1
Tanker (12 KL) to convey	1
Mineral Water coolers with purifiers	30

e) Security

Description	Total
Security staff	35
Supervisors	3

8.2 Organisation, Governance, and Transparency (10) — Total Marks : 10.00

8.2.1 Governing body, administrative setup, and functions of various bodies (2) — Institute Marks : 2.00

(Instruction: List the governing, senate, and all other academic and administrative bodies; their memberships, functions, and responsibilities; frequency of the meetings; and attendance therein, in a tabular form. A few sample minutes of the meetings and action taken reports should be annexed.)

Committee	Chair	Members			
Governing Body	President Dr. Gokaraju Ganga Raju	Management	Sri G.V.K. Ranga Raju	Vice-President	1. To set and monitor the organization's mission, purpose, direction, priorities and strategies within the boundaries of the organizational policies and bye-laws. 2. To approve the institution of new programmes of study, leading to the award of Degrees and or Diplomas based on the recommendations of the Academic Council. 3. To develop policies that allows the organization to serve well all its stakeholders. 4. To monitor the organization's programmes and services by influencing decisions and finances. 5. To institute scholarships, fellowships, studentships, medals, prizes and certificates. 6. To monitor development, the direction and growth of the institute and issue directions and recommendations. 7. To perform such other functions and institute committees, as may be necessary and deemed fit for the proper development and fulfill the objectives of the institute. 8. To approve appointments made by the Appointment/Selection Committee. **Committee Scheduled Meetings:** Once in Three months
			Sri G. Rama Raju	Member	
			Smt A. Vani	Member	
			Prof P S Raju	Member	
		Teachers of the Institute	Dr. S. V. Jayaram Kumar	Member	
			Dr. S. Rama Murthy	Member	
		Educationist/ Industrialist	Prof. V S Raju	Member	
			Sri V Rajanna	Member	
		AICTE Nominee	Mr. S. K. Jena	Member	
		UGC Nominee	Dr. S. Devaneshan	Member	
		State Government Nominee	Dr. S. Narsing Rao	Member	
		University Nominee	Dr. A. Damodaram	Member	
		Principal of Institute	Dr. Jandhyala N Murthy	Member-Secretary	
		1. Heads of Departments. 2. Four faculty members other than the Heads of Departments representing the various categories (by rotation and seniority).			1. To exercise general supervision over the academic work of the institute, to give directions regarding method(s) of instruction, evaluation, research and improvements in academic standards. 2. To scrutinize and approve the proposals of the Board of Studies related to courses of study, academic regulations, curricula, syllabi, their objectives and outcomes and modifications, instructional and evaluation

Academic Council	Principal	repute, one person from the industry and engineering related to the activities of the institute, who are not in the service of the institute and nominated by the Governing Body. 4. Three nominees of the parent university 5. A faculty member nominated by the Principal of the institute to act as Member Secretary.	3. To make regulations regarding the admission of students to different programs of study. 4. To recommend to the Governing Body the proposals of institution for new programs of study. 5. To recommend to the Governing Body, institution of scholarships, studentships, fellowships, prizes and medals, and to frame regulations for the award of the same. 6. To advise the Governing Body on suggestion(s) pertaining to academic affairs made by it. 7. To perform such other functions as may be assigned by the Governing Body. **Committee Scheduled Meetings:** Two time a years
Board of Studies	Chairman Board of Studies	1. Programme Coordinators of the Department. 2. All teaching faculty of each course/ specialization offered. 3. Module coordinators. 4. Two external experts in the course concerned and nominated by the Academic Council. 5. One expert to be nominated by the Vice-chancellor from a panel of six recommended by Principal of the institute. 6. Not more than two persons to be co-opted for their expert knowledge including those belonging to the concerned profession or industry. 7. One post-graduate meritorious alumni nominated by the Principal. 8. The Chairman Board of Studies may with the approval of the Principal of the Institute co-opt: a. Experts from outside the institute whenever special courses of studies are to be formulated. b. Other members of the staff of the same faculty.	1. To prepare, frame and modify the syllabus for the various courses keeping in view the Programme objectives of the programme. 2. Evaluates programme effectiveness and proposes continuous improvement. 3. To suggest panel of names for appointment of examiners; and coordinate research, teaching, extension and other academic activities in the programme / institute. 4. To suggest new methodologies for innovative teaching and evaluation techniques and tools. 5. To review implementation of institutional quality assurance in the department for improving programme. 6. Guiding in evolving POs and COs based on assessment. **Committee Scheduled Meetings:** As and when necessary
Finance Committee	Principal	1. One person nominated by the Governing Body of the institute for a period of two years. 2. Two senior-most faculty member of the institute to be nominated in rotation by the principal for two years. 3. Administrative Officer (Finance).	1. To review the financial affairs of the Institute and report it to the Governing body. 2. To consider budget estimates relating to the grant received/receivable from funding agencies, and income from fees, etc. collected for the activities to undertake the scheme of autonomy; 3. To prepare Annual Budget of the institution and Audited accounts for all the incomes and expenditures. 4. To review the audit reports and making recommendations. 5. To contribute to the preparation of the draft budget and recommending their approval to the Governing Body. **Committees Scheduled Meetings**: Once a Year
Selection Committee	Chairman of Governing Body or his nominee	1. Principal / Director of the institute. 2. Two nominees of the Vice Chancellor of the affiliating University. 3. Two subject experts 4. Head of the concerned programme of Professor Cadre.	1. To prepare a detailed list of vacant posts in all the programmes of the institute based on consultations with the Institute development committee, the HOD's of various programmes and guidelines from various agencies like UGC, AICTE, Parent University and the State Government. 2. To oversee notification, publication and scrutiny of the applications received before scheduling the tests, interviews and demo lectures. 3. To involve in the pro-active recruitment periodically of high quality faculty with exceptional qualifications from India or overseas. 4. To facilitate highly qualified personnel from both industry and R & D institutions as adjunct or visiting faculty for short durations to undertake teaching / research assignments. **Committee Scheduled Meetings:** Two time a year
		1. Senior Administrative Officer	1. Development of quality benchmarks/parameters for various academic and administrative activities of the institution and carry out the gap analysis for GRIET. 2. 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 carrying out periodic check of course outcome attainment and action taken from each faculty and its mapping on to POs, PEOs. 3. Monitor the action taken by departments on feedback response from students, parents and other stakeholders on quality-related institutional processes. 4. Dissemination of information on various quality

Internal Quality Assurance Committee (IQAC)	Chairperson: Principal	2. Administrative Officer 3. Faculty Members from all branches -7 4. Management Member-1 5. Student Members- 2 6. External Members- 2 (Industry and University) 7. Senior Professor Coordinator -1	5. Organization of inter and intra institutional workshops, seminars on quality related themes and promotion of quality circles. 6. Documentation of the various programmes/activities leading to quality improvement. 7. Acting as a nodal agency of the Institution for coordinating quality-related activities, including adoption and dissemination of best practices, in tune with the institution strategic plan and goals by various departments. 8. Development and maintenance of institutional database through MIS for the purpose of maintaining /enhancing the institutional quality. 9. Development of Quality Culture in the institution. 10. Preparation of the Annual Quality Assurance Report (AQAR) and submit to NAAC. **Committee Scheduled Meetings:** Two times a year or as and when needed.
Institutional Development Monitoring Committee (IDMC)	Principal-IDMC Coordinator	1. Heads of all Departments/ Programme coordinators. 2. Two external members, 3. The administrative officer, 4. Two deans/senior Professors. 5. Student Representative from UG and PG programmes.	1. Principle Planning Body 2. Monitoring of Institute performance by Top Down-Bottom Up approach. 3. Monitors the attainment of Mission and Vision of Institute. 4. Evaluation of Departmental Mission and Vision, Programme specific POs and PEOs. 5. Taking suggestions from all stake holders and its subcommittees -Academic Affairs Committee, Departmental Development and Monitoring Committee, Class Coordinators Committee. 6. To provide the developmental and application of quality benchmarks/ parameters for the various academic and administrative activities of the institution. 7. To monitor promotion, implementation and continuous improvement of innovations in Curriculum, Co-curricular and Extra-curricular activities and facilities of the institution. 8. To advice and recommend the General Body and the academic council on any matter, that is considered necessary for the fulfillment of the objectives of the institute for consideration and approval. 9. To promote synergetic relationship with the industry and society, and promote Research and Consultancy. **Committee Scheduled Meetings:** Once in three months
Academic Affairs Committee	Dean Academic Affairs	1. Deans of the institute 2. HODs of all the programmes.	1. To monitor and review academic activities as per academic calendar. 2. To monitor programme adherence of course work as per framed time tables. 3. To monitor attendance and implement promotional policy based on attendance and credits. 4. To generate student data required for Student Information System (SIS). **Committee Scheduled Meetings:** Once in three months or as and when needed
Departmental Development and Monitoring Committee (DDMC)	Head of the Department	1. All faculty are members- one among them will act as Secretary, 2. Members may be co-opted from other programmes, University, industry and key stake holders as per requirement	1. To formalize the departmental vision and mission. 2. Deliberates on the report of Programme Assessment Committee (PAC) and future issues. 3. To plan and monitor the growth of programmes of the department. 4. Develops and recommends new or revised PEOs 5. To ensure infrastructure, support facilities and activities to ensure for attainment of PEOs. **Committee Scheduled Meetings:** Two times a semester or as and when needed.
Programme Assessment Committee	Programme Coordinator	1. Module Coordinators 2. Faculty of a particular course 3. Class Coordinators	1. To monitor feed backs from stake holders and taking action thereafter on academic matters 2. To monitor assessment and attainment of COs, POs and PEOs. 3. Evaluate Programme effectiveness and propose necessary changes for continuous improvement. 4. Motivate faculty and students to attend workshops, developing projects, working models, paper publications and research. 5. Interacts with Students, faculties, Programme

			holders in facilitating PEOs. 6. The report is submitted to the Department Development & Monitoring Committee **Committee Scheduled Meetings:** Once a semester or as and when needed.
Class Coordinating Committee (CCC)	Respective Class Coordinator	1. Faculty of a particular course 2. Student representatives.	1. To tap the suggestions of the students, to enhance teaching-learning process. 2. To monitor and improve the relations and shortfalls between academics and teaching environment. 3. Review of activities related to attainment of course outcomes **Committee Scheduled Meetings:** Two times a semester or as and when needed.
Research committee	Dean R&D	1. Five Staff members with R &D /Industry experience nominated by the Principal of the institute	1. To encourage faculty from each programme to submit research projects for extra-mural funding. 2. To screen, modify and submit the projects to funding agencies. 3. To promote tie-up with industry and other reputed universities. 4. To monitor the progress of the sanctioned projects, consultancy, patents and tie-ups. 5. To initiate industry-institute interaction for promoting new projects. 6. To guide and counsel, conduct courses on Entrepreneurship. **Committee Scheduled Meetings:** Two times a year or as and when needed.
Institute Coordinators Committee (ICC)	Dean Student Affairs	1. Coordinators of Extra- curricular Groups, Student Clubs and Faculty In-charge for college diary and The Physical Director	1. Prepare college diary for the academic year 2. Monitor the progress of events as per diary 3. Collect and act on feedback of extra-curricular and beyond curricular activities for overall development of students. **Committee Scheduled Meetings:** Two times a year or as and when needed.

8.2.2 Defined rules, procedures, recruitment, and promotional policies, etc (2) Institute Marks : 2.00

(Instruction: List the published rules, policies, and procedures; year of publications; and state the extent of awareness among the employees/students. Also comment on its availability on Internet, etc.)

Policy:

The institution is constantly upgrading its quality of education and increasing the intake. To match changes in existing staff strength (both Teaching & Non-teaching), the human resources are constantly upgraded through fresh recruitments on biannual basis, also during emergencies/exigencies to meet the academic schedule. The institution recruits once in May / June and in Nov / Dec of the academic year.

Following acts and rules are adopted as guidelines for procedures, recruitments, promotional policies, code of conduct issued from time to time by the regulatory bodies:

- Rules for Affiliation by Jawaharlal Nehru Technological University Hyderabad 2011-12
- AICTE Norms
- UGC Norms for autonomous college 2012-2017
- Rules and Bye laws of Society

Recruitment Procedure:

Teaching Staff:

Cadre Structure for Teaching Staff:

(a) Director

(b) Principal

(c) Dean -Professor / Associate Professor

(e) Assistant Professors / Lecturer (Selection Grade)

(f) Senior Lecturer / Senior Librarian

(g) Lecturer / Librarian / Director of Physical Education

(h) Teaching Assistants

Qualifications:

Faculty has been recruited based on the qualifications prescribed by the AICTE from time to time. Additionally JNTUH-FET, UGC-CSIR NET, PhD, and Post graduates with Industry Experience are preferred.

For the top administrative position of the Principal, apart from the guidelines given by the AICTE and JNTUH, administrative experience and ratification by the University is taken into consideration.

Mode of Selection of Teaching Staff:

Direct recruitment to all cadres is based strictly on merit. Invariably in almost all cases, the following procedure is followed:

(a) Advertisements are issued in leading newspapers.

(b) Applications are scrutinized on the fourth day after the last day for receipt of application.

(c) A Selection Committee is constituted as per Affiliating University and AICTE norms.

(d) Call letters for interviews are sent to eligible candidates, specifying place, date and time of interview.

(e) Selection Committee decides and recommends the candidates.

(f) Letters of appointment are issued to selected candidates.

Sometimes depending on emergency / exigency of the situation, adhoc appointments are made on contract basis for specified periods.

Non-Teaching Staff:

Cadre Structure for Non-Teaching Staff:

(a) Office

- Administrative Officer
- Office Superintendent
- Senior Assistant
- Junior Assistant
- Record Assistant/ Data Entry Operator
- Attender

(b) Labs (other than computer Labs)

- Lab Assistant
- Lab Technician (Diploma)
- Lab Attender (SSC/Inter/ITI)

(c) Computer Labs

- System Administrator
- Programmer
- Lab Assistant
- Lab Technician

Qualifications:

Mode of Selection for Non – Teaching Staff:

All positions are advertised in the news papers or notified in the local notice boards. After scrutiny of applications received, a short listing is made by the GRES Secretary / Principal. Interview call letters are sent to eligible candidates to appear for a trade test and subsequent personal interview. The selection committee consists of some or all of the following:

(a) President / nominee of President of the society

(b) Principal

(c) Administrative Head

(d) HOD of concerned department

- All appointments (Teaching and Non-teaching staff) made after selection, are forwarded to the Chairman for approval and the governing body is notified.
- Management is a single term, used to collectively represent the society through resident of GRES also known as Chief Executive Officer (CEO), Vice President also known as Chief Operations Officer (COO).

Promotion Policy:

Teaching Staff:

- Career Advancement Scheme implemented strictly in accordance with AICTE Rules.
- Higher Posts such as Professor and Associate Professor are offered through selection procedure.

Non-Teaching Staff:

- Time Bound promotions given to Non-Teaching Staff.
- Promotion to higher post through selection procedure.

Awareness:

- The administrative rules and regulations covering all cadres of staff employed also all information relating to roles, powers and administration is mentioned with clarity in the Institutes Administrative Manual/ GRIET Manual.
- The rules and regulations cover general administration, recruitment of staff, service conditions, duties, promotion policies, increments, awards and disciplinary actions etc.
- Syllabus books containing current regulation and rules, Programme and course related information are made available for all students and staff, apart from its availability on the institute Web site www.griet.ac.in.
- Awareness of staff recruitment is made utilizing Newspaper and electronic media and widely broadcasted to attract fresh talents and skills.
- At the time of joining and through periodic departmental meetings and notices, awareness of rules and procedures is being maintained.
- The institute website publishes information on fresh vacancies and appointments for new posts.

The ‘College Diary’, gives the academic calendar and all activities (circular and beyond), and the same information is accessible on the institute web site

8.2.3 Decentralisation in working including delegation of financial power and grievance redressal system (3) Institute Marks : 3.00

(Instruction: List the names of the faculty members who are administrators/decision makers for various responsibilities. Specify the mechanism and composition of grievance redressal system, including faculty association, staff-union, if any.)

The management of the institute consists of a Governing Body with a panel of members as per norms of Society (GRES), nominees from industry, regulatory bodies such as UGC, AICTE, Affiliating University and the State Government.

I. **Decentralization in working**:

(i) Administration

- The Principal of the college is the head of the institution providing the required leadership to the institution and its system. The principal ensures that all provision of the university bye-laws, statutes and the regulations are observed. He convenes the meetings of the Advisory councils, the Academic council, Board of Studies, Finance committee, Institutional Development and Monitoring Committee, Selection Committee. He also oversees admission of students, recruitment of faculty, curricular co-curricular and extra-curricular activities, student feedback, internal and external assessments, financial implications, course contents.
- B.Tech I Year is monitored by Vice-Principal (I Year) while the B.Tech II, III and IV Year and PG Programmes are monitored by the respective Head of Departments.
- The faculty are actively engaged and involved in decision making process.
- Periodic meetings of HODs of all of the departments and also the intra-departmental meetings, convey and implement decisions taken by the committees and endorsed by management. Senior faculty members are represented in all committees by rotation to enhance administrative experience of all staff. This will help to refine and run the system of administration to continuously sustain, renew and enhance quality of the education by the institution.
- The Senior Administrative Officer oversees the non-academic aspects of Management of the institutes support systems including HR and is assisted by the Administrative Officer and Office Assistants who look after correspondence, admissions, HR, scholarships etc.

(ii) Examinations

- All the examination matters are dealt by Dean of Examinations (DOE) assisted the Controller of Examinations (CE) and by five Assistant Controllers of Examination (ACEs). The duties are delegated to the ACEs to assist the DOE in smooth functioning of both conduct and evaluation of examinations, publishing of result and maintaining records.

(iii) Departments

- HODs through their departmental committees and coordinators, administer each department's activity.
- Various annual activities, professional bodies and clubs are organized through their respective coordinators. The activities are grouped as given below:

(a) Academic Activities

S.No	Academic Activity
1	Ist Year B.Tech (All Branches)
2	M.Tech Programme
3	B.Tech (CCC)
4	TASK
5	EDP Cell
6	Technology Cell
7	College Diary
8	College Web Page
9	GRIP
10	Faculty Club
11	Women Development Cell
12	FSW
13	GRIET Alumni Association
14	Gaming Club
15	Robotic Club

(b) Co-Curricular & Extra-Curricular Activities

S No.	Activity
1	Annual Day
2	Graduation Day
3	NSS
4	Pragnya
5	Pulse
6	Quizzicals
7	Reflections
8	Rhythms
9	Scientific Forestep
10	Souvenir
11	Spices
12	Spirals
13	Sports & Games
14	x-Kernel

(c) Other Committees

S No	Committee
1	Canteen
2	Editorial
3	Library
4	Public Relations
5	Time Table
6	Transport
7	e-Resources

(d) Professional Bodies

S No.	Professional Bodies
1	CSI
2	IEEE
3	ISTE
4	SAE
5	SME
6	ICI
7	IEI
8	IETE
9	HMA
10	AIMS
11	TIE
12	BMSI
13	CII
14	CREAM

II. Delegation of Financial Power

(i) Director / Principal

Director / Principal is delegated with financial powers up to a maximum of Rs. 200,000/- for purchase and unplanned up to Rs. 50,000/-

(a) To authorize purchase of consumables for laboratories over and above the powers of the Head of the Departments.

(b) To permit reimbursement of traveling and other expenses for official purposes within the permitted limit to be decided by the CEO.

(c) To entertain guests.

(d) To sponsor faculty / staff for any academic and co-curricular activities as per norms.

(e) To authorize any other expenses he may deem essential.

The Principal may in case of any contingency obtain oral permission from the CEO, if the expenditure to be incurred exceeds his powers and get ratified by the CEO along with required receipts.

(ii) Heads of Departments:

The HODs are delegated with powers up to Rs.25,000/- for sanctioned work and Rs.10,000/- for unplanned work

(a) To make urgent consumable purchases for Lab.

(b) To meet small non-recurring expenses.

(c) To incur any other expense deemed necessary.

Utilization of financial powers for each of the assessment years:

Delegation of Financial Powers

S.No	Account Head	Delegated Amount	Utilization			
			CFY	CFYm1	CFYm2	CFYm3
1	Director /Principal	₹. 2,00,000	4,44,925	95,429	Nil	35,000
2	Head of Department / Programme	₹. 25,000	*			

(*to be filled in from HODs accounts)

III. Grievance Redressal Cell

All grievances of staff and students are to be redressed expeditiously, and each member is a key stakeholder of the organization. Any grievance reported verbally or written will be appropriately dealt with by the concerned Head of the Department. However, the aggrieved, if so desires or feels that his/her grievance is not redressed satisfactorily, can approach the Grievance Redressal Cell for Redressal. The composition of Cell is as follows:

Chairman

- Vice President, Governing Body

Members

- Director
- Principal
- Dean Student Affairs
- Dean Faculty Development
- Dean Discipline

The Grievance Redressal cell delegates to three other sub committees to deal with specific complaints, which are described as follows:

(i) Discipline Committee

The main role of discipline cell is to address the complaints from Student and Staff.

Self-discipline is primarily desirable, and all members in the institutions environment are expected to adhere to rules and regulations in an ideal situation. Any aberrations in this regard are to be referred to the Discipline Committee, who should dispose of the case expeditiously. All discipline matters of students and matters related to Teaching and non-Teaching staff are to be referred to Discipline Committee, consisting of:

Chairman

- Dean Discipline

Members

- Dean Student Affairs
- Physical Director
- Two faculty Members nominated by the Principal

Co-opted

- HOD of concerned member staff/student
- Student member/Non-teaching staff member

(ii) Anti-ragging Committee

Ragging involves an act by senior students in baiting or bullying new students. Though a Universal phenomena, it often takes a malignant form wherein the newcomers may be subjected to psychological or physical discomfort or harassment.

To prevent and deter such incidents in Higher Educational Institutions, the Government of India has taken serious view on the cases of ragging. The other effective steps taken by the Government include notification of anti-ragging regulations by regulatory authorities viz. All Indian Council for Technical Education (AICTE) and University Grants Commission (UGC) vide F.1-16/2009(CPP-II) dated 21 October 2009. The media campaign started by Government since 2009 through print, audio/visual has created awareness throughout the country is reiterated every year.

Anti-ragging Committee members are as below:

- Principal
- Dean Discipline
- Circle Inspector of Police of Local Police Station
- Dean Student Affairs
- Dean Academic Affairs
- Physical Director
- Senior Administrative Officer
- Students Members –One from each Programme

GRIET follows the notification strictly and implements to protect its academic atmosphere from being marred by the acts of ragging. GRIET follows a three pronged approach of “Awareness, Avoidance & Action”. All direct approaches of talking to students in addition to using various media to make aware of the bad effects and strict punishments if indulged in. Under Avoidance it has instituted Anti Ragging squads under the Anti Ragging Committee to prevent ragging at the time of joining and continues the monitoring through the first year session. It also procedurally segregates Instructions, Travel and Canteen timings respectively. Any cases of ragging observed are to be referred to Disciplinary Committee for appropriate action. The students/parents are required to submit anti-ragging related

(iii) Anti Sexual Harassment Cell

The Honorable Supreme Court in the case of Vishaka and Others Vs State of Rajasthan and Others (JT1997 (7) SC 384), has laid down guidelines and norms to be observed to prevent sexual harassment of working women. These are ingrained in the Government of India CCS Conduct Rules [Rule 3 (1) (iii)] in the light of misconduct which attracts appropriate disciplinary action at work place and where ever such conduct amounts to a specific offence under IPC the concerned authorities can initiate appropriate action under the law. Being a private academic institution GRIET is also within the purview of the law and its jurisdiction as UGC in its notification F.No.14-4/ 2012 (CPP-II) of December 2012 has formulated regulations in the letter (Para 1.1 and 1.2, which also applies to institutions recognized under Clause (f) of Section 2 of UGC act 1956).

At GRIET, the Principal has constituted the Anti Sexual Harassment Cell for prevention of sexual harassment in the campus, and the cell is empowered to deal with cases concerning sexual harassment of women staff and students and hence will function as a sub-committee of the institute.

The list of members and terms of references are given below:-

1. Chairperson
2. Faculty members from all departments
3. Senior Administrative Office
4. Co-opted Members
    i. Social Activist
    ii. Student Representative
    iii. Non-teaching Staff Representative

Functions:

- To deal appropriately with reported cases of sexual harassment, abuse or discrimination, and initiate action against particular grievances in respect of unfair treatment due to gender bias.
- The Anti Sexual Harassment Cell is responsible for initiating the necessary process of inquest on receipt of complaint from the dean Discipline.
- In case of the complaint is against any staff member of the committee then the Principal shall nominate appropriate Chair or member for the enquiry.
- The Anti Sexual Harassment Cell arbitrates sexual harassment cases, complete with provisions to recommend suitable punishment of the guilty to the Grievance Cell for further action.
- The guidelines have provisions depending on the different degrees of fault or offence-Minor, Moderate or Major, there are different degrees of “punishment” to deal with such offences

Tools to respond to offences include (1) Communication of the standard, (2) Disapproval, (3) Verbal warning, (4) Written warning, (5) Suspension/ Rustication of the guilty parties, (6) Termination of employment, in order to protect complainants from victimization.

- The guidelines followed are meant to act as a deterrent, and that this cell can be effective only influence suitable attitudinal change.

IV. Women’s Development Cell

The activity of WDC addresses problems of women employees and empowerment of women.

(i) History & Inception

The JNT University Hyderabad, makes it mandatory for all affiliated colleges to have a Women’s Development Cell and gives guidelines to the college establishment relating to functioning of gender issues cells (2001). Following in the footsteps of the JNT University, Gokaraju Rangaraju Institute of Engineering & Technology also has established a Women’s Development Cell.

(ii) Scope

The Women’s Development Cell of GRIET purports to conduct activities for the students, teachers and administrative / supporting staff of the college at 3 levels- Apex, College and Departmental levels. Activities at the Institutional Apex, level will aim at the community at large, the focus being on providing community interaction and meaningful humanitarian experience to students and teachers. It will also interact with governmental social bodies that address women’s issue such as sexual harassment — verbal or physical in nature.

(iii) Objectives

- Create awareness on equal opportunity for women that will ultimately lead to improved attitude and behavior.
- To raise awareness vide lectures/ workshops for GRIET women students and staff members on different aspects of women’s welfare.
- Bring about attitudinal and behavioral change in adolescent youth of the female gender.
- To discuss and suggest methods to promote gender amity amongst all GRIET women employees and students.
- Conduct programmers for ladies to empower them physically, emotionally, mentally and financially.
- To educate the women students to break out of social impediments and to convince them to come forward with problems and complaints.
- Provide a harassment free working atmosphere, by identifying and fixing responsibility on the concerned persons for ensuring equal treatment of and participation by women in all areas.
- To consider any other matter on women’s issues referred to the cell.

(iv) Constitution of the Women’s Development Cell:

1. Coordinator Lady Faculty

Dean Faculty Development

Dean Student Affairs

Senior Lady Faculty

3. Co-opted members

Lady Faculty

Female Student

(v) Programmes/Activities:

In order to achieve the stated goals, the following programmers will be conducted / celebrated.

March 8 - Women's Day

April 7 - Health Day

Lectures will be organized, as per convenient timings, on adolescent health issues, women's professional problems, women's domestic / personal problems due to work-place pressures, and gender discrimination at different levels. Competitions such as Quiz, Debates and, Elocution competitions will be held besides activities of interest to ladies such as Rangoli, Mehendi, and Cooking etc.

V. Malpractice Prevention Committee:

A Malpractice Prevention Committee shall be constituted to examine and punish the students who indulge in malpractice/behave in an undisciplined way in examinations as per the punishment guidelines approved by the Academic Council.

Composition

- The Principal
- Controller of Examinations of the college
- Observer/ Invigilator
- Subject Expert (case/offence dependent)

Head of Department of concerned candidate

8.2.4 Transparency and availability of correct/unambiguous information (3) Institute Marks : 3.00

(Instruction: Availability and dissemination of information through the Internet. Information provisioning in accordance with the Right to Information Act, 2005).

- Personal information, qualifications, professional skills and experience are taken from new recruits at the time of joining and used to leverage the strengths of the departments and the institute.
- The data of all staff are periodically collected and updated, the teaching faculty information is uploaded on the college web site.
- The administrative rules and regulations covering all cadre of staff employed is mentioned with clarity in the GRIET Manual which is updated. This manual is available with all the administrative heads as well as Head of Departments. Transparency is maintained relating to rules followed which include general administration, recruitment of staff, service conditions, duties, promotion policies, increments and awards and disciplinary actions.
- Recruitment and interview of all staff is done by issuing advertisements in leading local and national News papers and on college web site.
- The Selection Committee chaired by the Chairman, Governing Body or his nominee , the Principal, subject experts, Head of Departments and nominee of affiliating university form the constituent members and the recruitment and the short listed candidates are intimated by telephone and e mail.
- Recruited teaching faculty are interviewed and ratified by the University Ratification Committee and the result is intimated.
- All activities at the institute are recorded and posted on the institute web site.
- Periodic meetings of the Governing Body, Academic Council, Board of Studies are recorded as minutes of the meeting and the decisions and ratifications are handed down to the department levels. The departments in turn intimate the faculty members during the Departmental meetings. All administrative meetings held are recorded for transparency in order to maintain unambiguity.
- Mobile phone Short Messaging Service (SMS) are also effectively utilized to alert Students, staff, and other stake holders.
- All schedules are displayed on the Notice Boards, College Diary and the Web site. The College Diary gives the academic calendar and all activities (curricular and beyond) and the same can be accessed through the college web site.
- The Academic Regulations and Syllabus give transparency in implementing academic plans and gives information on the current regulations in force and its rules, credits , courses, attendance, examination etc. this information is available on the college web site.
- All relevant documents of the administrative and academic processes are displayed and available for inspections by several regulatory bodies such as the Affiliating University Task Force, State Government Task Force/ Committee, AICTE, NAAC, UGC and NBA teams. It is also available for corporate entities who recruit students, such as TCS, Infosys etc.
- The mandatory disclosure presented on the website provides all the academic details including the academic regulations and syllabus
- There are notice boards in all the blocks through which information is made available to the staff and students and very significant circulars are sent to the classrooms.

8.3 Budget Allocation, Utilisation, and Public Accounting (10) Total Marks : 10.00

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

Item	Budgeted in 2015-2016	Expenses in 2015-2016	Expenses in 2014-2015	Expenses in 2013-2014
Infrastructure built-up	55000000	63030000	5149000	4864000
Library	5000000	3228000	3790000	4131000
Laboratory equipment	35750000	27512000	28591000	11512000
Laboratory consumables	3900000	2465000	1311000	1049000
Teaching and non-teaching staff salary	248000000	251567000	192349000	153681000
R&D	3305000	6037000	1800000	1655000
Training and Travel	6500000	4969000	1356000	1017000
Maintanence and Spares	25100000	2329000	5484000	6524000
Other Equipments	29000000	17167000	13603000	14587000
Others	42500000	51332000	67279000	53944000
Total	454055000	429636000	320712000	252964000

8.3.1 Adequacy of budget allocation (4) Institute Marks : 4.00

(Instruction: Here the institution needs to justify that the budget allocated over the years was adequate.)

GRIET follows the process of distributing the available financial resources to departments in a manner consistent with our institute's vision, mission, long-term goals which is transparent to stakeholders. The allocation model is updated annually and will continue to serve as the allocation instrument. Keeping in view that no budgeting process is perfect and that ideally there would be more funds to allocate, the goals of the process are to:

- Recognize the importance of staff to our long term success
- Encourage areas to focus on outputs directly related to our strategic plan
- Improve instructional and support facilities to make the learning environment vibrant
- Increase Research and Development

The institute allocates the available resources to the departments based on the forecasted requirements of the departments keeping the curricular and beyond curricular activities, R&D, Library, Transport, Welfare and Maintenance. It is the responsibility of the Departmental Development and Monitoring Committee (DDMC) to ensure the allocated resources are expended as per their forecasted plans. The emphasis will be to increase quality of academic inputs delivered and positively contribute to the institute in terms of development of new technologies, methods and practices

8.3.2 Utilisation of allocated funds (5) Institute Marks : 5.00

(Instruction: Here the institution needs to state how the budget was utilised during the last three years.)

- The respective academic and supportive units are informed on allocation of funds under various heads. At the department level, the DDMC decides the utilization for the financial year's allocated funds following the purchase procedures.
- Purchases are done up to the level of allocated funds, however under some special priority considerations, the purchases can go beyond the allocated funds which will be later ratified by the Governing Body. Delegation of financial powers done to keep the autonomy of the departments and reduce time delays.
- Regular auditing and inventory checks keep the mechanism free from over or unjust spending.

8.3.3 Availability of the audited statements on the institute's website (1) Institute Marks : 1.00

(Instruction: Here the institution needs to state whether the audited statements are available on its website.)

YES, the Audited statements are available on GRIET website www.griet.ac.in

8.4 Programme Specific Budget Allocation, Utilisation (10) Total Marks : 10.00

Summary of budget for the CFY and the actual expenditure incurred in the CFYm1 and CFYm2 (exclusively for this programme in the department):

Items	Budgeted in 2015-2016	Actual Expenses in 2015-2016	Budgeted in 2014-2015	Actual Expenses in 2014-2015	Budgeted in 2013-2014	Actual Expenses in 2013-2014
Laboratory equipment	3000000	3084000	3000000	3084000	2000000	920000
Software	650000	430000	600000	716000	200000	85000
R&D	200000	274000	200000	202000	500000	214000
Laboratory consumables	500000	230000	450000	170000	300000	154000
Maintenance and spares	30000003000000	3701000	2700000	2775000	1000000	769000
Training and Travel	1000000	676000	650000	175000	300000	120000
Miscellaneous expenses for academic activities	900000	1266000	950000	943000	500000	436000
Total	30000009250000	9661000	8550000	8065000	4800000	2698000

8.4.1 Adequacy of budget allocation (5) Institute Marks : 5.00

(Instruction: Here the institution needs to justify that the budget allocated over the years was adequate.)

The process of analyzing the adequacy of budget allocation involves the analysis of information pertaining to each item of the budget with respect to the priorities

1. Improvement in the quality of education.
2. Development of infrastructure including classrooms, teaching aids and student facilities in classroom.
3. Research and Development.
4. Addition of latest Laboratory equipment.
5. Addition of resources in the Library.

In this regard, by comparing the priorities set out with the allocations made, it can be informed that the items included are in line with the policies and long term goals of the institution.

(**to be quoted as below as per expenditure under various heads of the programme vis-a-vis preceding years)

For, **example**, the budget in the year 2015-16, half of the budget amount was allocated towards the laboratory equipment. This was due to improvement of laboratories to enhance the technical skills.

Another substantial spending amount was for building infrastructure making GRIET one of the leading institutions having state of the art infrastructure. Institutional infrastructure is the key and the base to provide quality environment, similarly emphasis is given towards development of laboratory equipment and resources.

R&D is the next key area where major funds are allocated for projects, patents and tie-ups.

A good emphasis is given on training both teaching and non-teaching staff by conducting FDP's and workshops in the college and also encouraging staff to attend FDP's, workshops and conferences outside the institution with sufficient funds. Hence it can be interpreted that the allocated funds are very much in line with the priorities set out by the institution.

8.4.2 Utilisation of allocated funds (5) Institute Marks : 5.00

(Instruction: Here the institution needs to state how the budget was utilised during the last three years.)

The allocated funds act as guideline towards making purchase of lab equipment, programme conduction, training activities and other miscellaneous needs. The department conducts regular meeting to see that the allocated funds are properly utilized vis-à-vis the projection and plans.

The allocated funds are utilized as per the priorities set at the department level. The emphasis is on increasing quality of academic inputs delivered and positively contributes to the Institute in terms of development of new technologies, methods and practices.

For example, in the year 2015-16, the institute increased spending by 31% over last expenditure on infrastructure, books and periodicals, laboratory equipment, recruitment of quality faculty, training of senior faculty members. Emphasis is given on training both teaching and non-teaching staff by conducting FDP's and workshops in the college and also encouraging staff to attend FDP's, workshops and conferences outside the institution with sufficient funds. Hence it can be interpreted that the allocated funds are very much in line with the priorities set out by the institution. This is for continuous improvement of quality literature for teaching and laboratories and to enhance the teaching and technical skills as an investment towards teaching and learning process. The increase in expenditure is observed compared to the preceding years.

GRIET management is a forerunner in terms of providing the best and updated infrastructural facilities to its staff and students and also in facilitating funds for the purpose of improving quality of teaching and research. Departments make optimum utilization of this attitude and policy of the management by utilizing the funds allocated by spending it in lines with the mission and objectives.

8.5 Library (20) Total Marks : 20.00

8.5.1 Library space and ambience, timings and usage, availability of a qualified librarian and other staff, library automation, online access, networking, etc (5) Institute Marks : 5.00

(Instruction: Provide information on the following items).

• Library Services	Yes
• Carpet area of library (in m2)	1670
• Reading space (in m2)	1355
• Number of seats in reading space	300
• Number of users (issue book) per day	200
• Number of users (reading space) per day	300
• Timings: During working day, weekend, and vacation	8 AM to 8 PM
• Number of library staff	08
• Number of library staff with degree in Library	04

• Management Computerisation for search, indexing, issue/return records Bar coding used

At present the Library Information Center uses in-house developed Library Management Software

The following Library services are present on Internet / Intranet.

Library Management Computerization for search, indexing, issue/ return records Bar coding used

At present the Library Information Center uses in-house developed Library Management Software with the following functions automated

- Circulation Section – Issue / Return using bar codes and code reader
- Information Retrieval Services

- Which includes searching of data and retrieval of data using various search options like title, author, subject, publisher etc.
- Recently barcoding of library holdings was taken up and successfully completed.

- **Library Services on internet / intranet, membership archives**

1. NPTEL (National Programme for Technology Enhanced Learning) lessons are procured and are available all over campus through intranet at link http://172.16.0.88 LocalG that can be accessed from any system with LAN connection. These lessons are stored at IBM server of library with capacity of 3TB.
2. DELNET (Developing Library Network): GRIET Library is a member of DELNET through which services such as Inter Library Loan (ILL) facility is available. Through this, a book or a document or a part of a document / article can be procured from any member library throughout India.

- **Links to E-Journals / Databases**

The following e-resources / online e-Journals Packages of various publishers can be accessed from any computer (with internet) connected to the campus LAN including Library. IP based access to the subscribed journals are provided through these resources.

1. IEEE ASPP - Transactions & Magazines (for CSE, ECE, EEE, IT Depts.) http://ieeexplore.ieee.org
2. ELSEVIER - Science Direct (for Engineering) http://www.sciencedirect.com
3. ASCE Digital library (for Civil Dept.) http://ascelibrary.org
4. ASME Digital Library Online : (for Mechanical Dept.) http://asmedl.org
5. Springer link: (for CSE, ECE, EEE, IT Depts.) http://springerlink.com/journals
6. McGraw-Hills Access Engineering (for Engineering) http://accessengineeringlibrary.com
7. J-Gate Engineering and Technology (JET) (for Engineering & Technology) http://jgateplus.com
8. ASTM Digital Library (for Engineering) http://enterprise.astm.org
9. J-Gate Social and Management Sciences (JSMS) (for Management Sciences) http://jgateplus.com
10. EBSCO-BSA (for Management Sciences) http://www.search.ebscohost.com

S.No	Package	No of Journals	Back files up to
1	IEEE-ASPP	145	2000
2	ASCE	34	1983
3	McGraw Hill	Access Engineering-274 titles	All
4	Springer-EEE,ECE,CSE	149 (Titles Collection)	1997
5	ASME	26	2000
6	J-Gate (E & T)	1700	2001
7	Elsevier-Science Direct	275(Engineering & Computer Sci.)	2000
8	ASTM	Digital Library	complete
9	J-Gate Management Science	2000	2001
10	EBSCO-BSA	1102 titles	

8.5.2 Titles and volumes per title (4) Institute Marks : 4.00

Year	Number Of New Titles Added	Number Of New Editions Added	Number Of New Volumes Added
2013-2014	655	475	4764
2014-2015	395	230	1572
2015-2016	830	265	5600

8.5.3 Scholarly journal subscription (3) Institute Marks : 3.00

Year	No. of Technical Magazines/Periodicals	No. of Total Technical Journals subscribed		Scholarly Journal Titles(in originals, reprints)
		In Hardcopy	In Softcopy	
2015-2016	249	249	6849	6849
2014-2015	293	293	6849	6849

2013-2014	300	300	300	300
2012-2013	300	300	8412	300

8.5.4 Digital Library (3) Institute Marks : 3.00

• Digital Library Services	Yes
• Availability of digital library contents (If available, then mention number of courses, number of e-books, etc. Availability of an exclusive server)	YES; 260 NPTEL
• Availability of an exclusive server	YES
• Availability over Intranet/Internet	YES
• Availability of exclusive space/room	YES
• Number of users per day	200

8.5.5 Library expenditure on books, magazines/journals, and miscellaneous contents (5) Institute Marks : 5.00

Year	Expenditure (in Rs.)				Comments, If Any
	Book	Magazines/Journals (for hard copy subscription)	Magazines/Journals (for soft copy subscription)	Misc. Contents	
2013-2014	1906000	600000	1620000	-	-
2014-2015	1513000	675000	2020000	200000	-
2015-2016	1692000	591000	2309000	-	-

8.6 Internet (5) Total Marks : 5.00

Institute Marks : 5.00

(Instruction: The institute may report the availability of Internet in the campus and its quality of service.)

• Internet Services	Yes
• Name of the Internet provider	AIRTEL
• Available bandwidth	65 Mbps
• Access speed	100 Mbps
• Availability of Internet in an exclusive lab	YES
• Availability in most computing labs	YES
• Availability in departments and other units	YES
• Availability in faculty rooms	YES
• Institute’s own e-mail facility to faculty/students	YES
• Security/privacy to e-mail/Internet users	YES

- The institute is currently subscribed with the service provider “Bharti – Airtel” for the internet services.
- Wi-Fi routers in all vantage points connecting all registered laptops in the departments and faculty rooms.
- The same network is used for institute’s intra-mail.
- The network is secure in that it has its own firewalls and anti-virus/worm programmes to protect vital institute information and database apart from confidential emails of all its users.

8.7 Safety Norms and Checks (5) Total Marks : 5.00

8.7.1 Checks for wiring and electrical installations for leakage and earthing (1) Institute Marks : 1.00

- Institute buildings are well designed with proper electrical installations.
- Special care is taken at the time of installation by using quality certified components in terms of wiring, switches, plugs and circuit breakers.
- Monthly maintenance is done which includes arrest of any leakage, working condition check for lighting conductor, earthing / grounding system checks and inspection of electrical installations for safety.

Separate Electrical Maintenance is monitored by the Maintenance & Safety Officer with a dedicated team to deal with routine and emergency maintenance.

8.7.2 Fire-fighting measurements: Effective safety arrangements with emergency / multiple exits and ventilation/exhausts in auditoriums and large classrooms/laboratories, fire-fighting equipment and training, availability of water, and such other facilities (1) Institute Marks : 1.00

- Institute buildings are designed with adequate light, ventilation, stairs, corridors, pathways, multiple / wide staircases and all round approach.
- Pathways, corridors and stairs are wide enough to handle emergencies.
- Large size class rooms, Seminar halls and laboratories have two exits.
- Laboratories handling chemicals have adequate ventilation and exhaust facilities.
- Fire extinguishers are provided at key points in all buildings.
- First Aid facility is available in all emergencies.
- Each building is being provided with automatic alarm system with water tanks and fire prevention system.

8.7.3 Safety of civil structure (1) Institute Marks : 1.00

- Buildings are well designed by expert architects and qualified structural engineers
- Quarterly inspection is carried out for the safety of civil structures
- Adequate maintenance is done by taking care of painting and white-wash, crack filling, water logging, and leakages

8.7.4 Handling of hazardous chemicals and such other activities (2) Institute Marks : 2.00

(Instruction: The institution may provide evidence that it is taking enough measures for the safety of the civil structures, fire, electrical installations, wiring, and safety of handling and disposal of hazardous substances. Moreover, the institution needs to show the effectiveness of the measures that it has developed to accomplish these tasks.)

- Safety precautions such as shoes, aprons, safety glasses are insisted upon for staff and students.
- Special drives are done to collect electronic wastage.
- Awareness of safety precautions for handling chemicals is done every semester

8.8 Counselling and Emergency Medical Care and First-aid (5) Total Marks : 5.00

8.8.1 Availability of counselling facility (1) Institute Marks : 1.00

(Instruction: The institution needs to report the availability of the facilities discussed here.)

- An experienced counselor Ms. Revathi Thuraga, life member of the International Association of Holistic Psychology (IAHP), is being consulted whenever needed
- Dean Career Guidance and Counseling, GRIET deals with students and parents by giving counseling and motivating them in all aspects.

8.8.2 Arrangement for emergency medical care (2) Institute Marks : 2.00

(Instruction: The institution needs to report the availability of the facilities discussed here.)

Medical facility within the Institution:

- A Qualified Medical Practitioner is available every day between 9:30 am-1.00 pm on the campus medical centre.
- He is being assisted by a qualified medical assistant and a lady assistant , who is available throughout the college working hours

Medical facility nearby:

- College is being situated at a distance of 4.5 km from busy KPHB (Kukatpally Housing Board) area. Even the connecting road called Nizampet Road is densely populated with all medical facilities doctors, clinics, pharmaceutics & diagnostic centres.
- Nearest Hospitals: Apollo- 2 km, Remedy Hospitals-4.5 km at KPHB (Multi Specialty Hospital with good emergency facilities)
- Many private practitioners of every specialty are available at 1.5 km.
- Number of ambulances within the Institution : **one**
- Facility in ambulances : **First Aid**
- Response-time in calling ambulance services from outside : **7-10mins**
- College has a fleet of 32 buses, LMVs which can be used to ferry people in emergency as and when needed.
- Remedy Hospitals Ambulances and 108 EMRI-State Ambulance facility situated at Kukatpally Police station which is at 4 km, have very good track record of response time in meeting the emergencies. The journey time is involved in response to any emergency calls which is around 7-10 mins.

8.8.3 Availability of first-aid unit (2) Institute Marks : 2.00

(Instruction: The institution needs to report the availability of the facilities discussed here.)

- College Medical centre provide first aid facility equipped with 4 beds, wheel chair, stretcher facility, consulting room with all emergency care and medical centre facility.

9 Continuous Improvement (75) **Total Marks : 63.45**

This criterion essentially evaluates the improvement of the different indices that have already been discussed in earlier sections.

9.1 Improvement in Success Index of Students (5) Total Marks : 4.47

Institute Marks : 4.47

From 4.1
a, b and c are the success indices which correspond to LYGm2, LYGm1 and LYG respectively
Assessment = (b-a) + (c-b) + (a+b+c)x(5/3)

Items	2011-2012(c)	2010-2011(b)	2009-2010(a)	Assessment
Success Index	0.92	0.83	0.95	4.47

9.2 Improvement in Academic Performance Index of Students (5) **Total Marks : 3.74**

Institute Marks : 3.74

From 4.2
a, b and c are calculated respectively for LYGm2, LYGm1 and LYG by dividing the API values, obtained from the criterion 4.2 by 10 . The maximum value of a, b, and c should not exceed one.
Assessment = (b-a) + (c-b) + (a+b+c)x(5/3)

Items	2011-2012(c)	2010-2011(b)	2009-2010(a)	Assessment
API	0.74	0.78	0.70	3.74

9.3 Improvement in Student-Teacher Ratio (5) **Total Marks : 4.56**

Institute Marks : 4.56

From 5.1
a, b and c are calculated respectively for CAYm2, CAYm1 and CAY by dividing the STR values, obtained from the criterion 5.1 by 20. The maximum value of a, b, and c should not exceed one.
Assessment = (b-a) + (c-b) + (a+b+c)x(5/3)

Items	2015-2016 (c)	2014-2015 (b)	2013-2014 (a)	Assessment
STR	0.78	1.01	1.20	4.56

9.4 Enhancement of Faculty Qualification Index (5) **Total Marks : 3.81**

Institute Marks : 3.81

From 5.3
a, b and c are calculated respectively for CAYm2, CAYm1 and CAY by dividing the FQI values, obtained from the criterion 5.3 by 10. The maximum value of a, b, and c should not exceed one.
Assessment = (b-a) + (c-b) + (a+b+c)x(5/3)

Items	2015-2016 (c)	2014-2015 (b)	2013-2014 (a)	Assessment
FQI	0.80	0.72	0.71	3.81

9.5 Improvement in Faculty Research Publications, R&D Work and Consultancy Work (10) **Total Marks : 1.87**

Institute Marks : 1.87

From 5.7 & 5.9
a, b and c are calculated respectively for CAYm2, CAYm1 and CAY by dividing the FRP and FRDC values, obtained from the criterion 5.7 and 5.9 by 20 . The maximum value of a, b, and c should not exceed one.
Assessment = (b-a) + (c-b) + (a+b+c)x(10/3)

Items	2015-2016 (c)	2014-2015 (b)	2013-2014 (a)	Assessment
FRP	0.26	0.40	0.32	3.33
FRDC	0.08	0.03	0.03	0.42

9.6 Continuing Education (10) **Total Marks : 10.00**

Institute Marks : 10.00

Module Description	Any Other Contributory Institute/Industry	Developed/Organized By	Duration	Resource Persons	Target Audience	Usage and Citation,etc
FDP on Guide to a passionate teacher	GRIET	Dr.N.Sateesh	7 days 29June-4th July 2015	Dr.Adapa Rama rao	Faculty	Improvement in teaching skills
FDP on Additive Manufacturing	GRIET	K.Prashanth Reddy	3 days 25-27 June 2014	Prof.Shiva Rama Krishna	Faculty	Advance technology in manufacturing for medical components etc
Low cost Refrigeration System	GRIET	B.Ch. Nooka Raju	4 Days 2015	B. Ch. Nooka Raju	Students	Introduction to New Technology in Refrigeration
Basic computational fluid dynamics	NIT,Allahabad	KSS Mohan	5days 23-27 June 2014	Prof.K.P.Shukla	Faculty	Advance technology in CFDetc
Additive generative Manufacturing Technologies	IIT,Hyderabad	Ch.Prashanthi	2 days 7-8 July 2014	Prof.Surya Kumar	Faculty	Advance technology in manufacturing for medical components etc
Future Tends in powder metallurgy and sintering	IIT, Hyderabad	Santhosh Salunkhe	2days 01-02 Nov 2014	Dr.Bharath Bhushan P	Faculty	Application powder metallurgy in manufacturing of mechanical componenets
Advance material characterization	IIT,Hyderabad	Ch.Bhandavi	2days 01-02	Dr.K.Bhanu Shanker Rao	Faculty	Materials for different

Two weeks ISTE work shop on Engineering Mechanics	GRIET, collaboration with IIT Bombay	Lade Jayahari	Two weeks 26/11/13 to 6/12/2013	Prof.S.Banerjee & Mandar Inamder	Faculty	Advance knowledge in Mechancs
Two weeks ISTE work shop on Engineering Mechanics	llaboration with IIT Bombay	B.Ch.Nooka Raju	Two weeks 26/11/13 to 6/12/2013	Prof.S.Banerjee & Mandar Inamder	Faculty	Advance knowledge in Mechanics
A workshop on Automobiles “Robotryst”	SAE-GRIET	US Jyothi	26-27 Sep 2014	Rajvinder Singh,IIT Delhi	B.Tech and M.Tech students	Practical applications
Udyata, Aproduct developed workshop, Animax	SME-GRIETv	A.Anitha laxmi	2-3 March 2015	Vishwesh Srinivasan, Jitendhar Bhai (SVP Laser Technologies Pvt Ltd.and Innovations	B.Tech and M.Tech student	Practical applications
Advanced COgnitive and other optimization techniques	JNTUH-Hyderabad	K.Prashanth /Reddy	2days 8-9th Jan 2016	Dr.M.Sreenivas Rao	Faculty	Practical applications optimization Techniques
International symposium on Plasticity and current application	University of Mary Land	Dr.L.Jayahari	7 days Jan 3-9,2016	Dr.Akhtar Khan	Research Scholars & Faculty	Research association
ICMAAE-2016	WASET-MELBOURNE	Dr.K Satyanarayana	2 days (Feb 4-5th 2016	Dr.Eldad Avital	Research Scholars & Faculty	Research association
ICSUE-2016	WASET-MELBOURNE	Dr. N Sateesh	2 days (Feb 4-5th 2016	Dr.Yan xing	Research Scholars & Faculty	Research association

9.7 New Facility Created (15) **Total Marks : 15.00**

Institute Marks : 15.00

Module Description	Any other contributory Inst. /Industry	Developed by	Duration of Development	Resource persons	Target Audience	Usages and citation etc.	PO’s
2015-16							
3D-Printer	---	**GRIET Students**	**8 months**	**Dr.L.Jayahari**	B.Tech and M.Tech students	**Conversion of CAD model to 3D models**	b,h,k l
I.C Engine plate CAM	-	**GRIET Students**	**8 months**	**Dr.N.Sateesh**	B.Tech and M.Tech students	**To reduce jerk in the automobiles**	a,h,k l
GFRP-Automobile Leaf Spring		**GRIET Students**	**8 months**	**Dr.N.Sateesh**	B.Tech and M.Tech students	**To increase strength to weight ratio**	c,b,h,k
2014-15							
Wind turbine	-	GRIET	6 months	B.Ch.Nookaraju	B.Tech and M.Tech students	Power development with natural air	a,b,h,k l
Multi storage Building weight lifter	-	GRIET	8 months	Dr. L.Jayhari	B.Tech and M.Tech students	Lift the components to an elevated heights and storage	c,d,,h,k
Critical heat flux apparatus	-	GRIET	6 months	K. Prashanth Reddy	B.Tech & M.Tech students	Finding the heat flux in hot fluid flowing through a pipe	b,h,k
Calibration of Rota meter	-	GRIET	6 months	A. Anitha Laxmi	B.Tech and M.Tech students	Finding flow rate of fluid or gas	b,h,k
Vibration measurement Transducer	-	GRIET	5 months	S. Ravi shekar	B.Tech and M.Tech students	Finding Frequency of Turbine/Compressor vanes	b,h,k
					B.Tech		

McLeod Pressure gauge	-	GRIET	6 months	A. Anitha Laxmi	and M.Tech students	measurement low pressure of gases.	b,h,k
Capacitive transducer	-	GRIET	5 months	S. Ravi shekar	B.Tech and M.Tech students	used to measure the thickness or density of non-conductive materials	b,h,k
Resistance thermometer	-	GRIET	6 months	Banu Teja	B.Tech and M.Tech students	Used to measure temperature by correlating the resistance of the RTD element with temperature.	b,h,k
2013-14							
Vapor absorption refrigeration system	-	GRIET	6 months	US Jyothi	B.Tech and M.Tech students	used for food storage in recreational vehicles.	b,h,k
Power tools in work shop	-	GRIET	4 months	Krishna Mohan	B.Tech and M.Tech students	Used for carpentry, sheet metal work	b,h,k
Pyrometer for temperature measurement	-	GRIET	3 months	Dr.K.Satyanarayana	B.Tech and M.Tech students	Measurement of temperature while machining	b h k
LS Dyna software	-	GRIET	15 days	Dr. Swadesh Kumar Singh	B.Tech and M.Tech students	Simulation of forming process	b,h,k
Presys software	-	GRIET	15 days	Dr. Swadesh Kumar Singh	M.Tech students	Simulation of forming process	b,h,k

9.8 Overall Improvements since last accreditation, if any, otherwise, since the commencement of the programme (20)

Total Marks : 20.00

Institute Marks : 20.00

Specify the overall improvement:

Specify the Strenghths/Weakness	Improvement Brought In	Contributed By	List the PO(s), which are strengthened	Comments, if any
2015-2016	Surface Roughness Tester,Tool Makers Microscope,ANSYS CFX software	GRIET	a.b,h,l	To encourage the scope of research activity
2014-2015	DELMIA & SIMULIA	GRIET	a,b,c,l	To encourage the scope of research activity
2013-2014	Lydyna and Abacus software	GRIET	a,b,c,l	To encourage the scope of research activity
2012-2013	Heat pipes experiment and ANSYS CFX software	AICTE	a,b,c,l	To encourage the scope of research activity in Thermal field