1 Vision, Mission and Programme Educational Objectives (100)

1.1 Vision and Mission (5)

1.1.1 State the Vision and Mission of the institute and department (1)

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

Institute

VISION

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

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

Department of Civil Engineering

VISION

To become a pioneering centre in civil engineering.

MISSION

- To produce well qualified and talented engineers by imparting quality education.
- To enhance the skills of entrepreneurship, innovativeness, management and life-long learning in young engineers.
- To inculcate professional ethics and make socially responsible engineers.

1.1.2 Indicate how and where the Vision and Mission are published and disseminated (2)

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

Every effort is made to ensure the Vision and Mission is communicated effectively to all stakeholders namely students, faculty, parents, industry, alumni and management.

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

Print Media: College Diary, College Brochures

Electronic Media: College/Departmental Website, Display Monitors

Display Boards: Flexi-Boards, Permanent Wooden Boards

Direct Communication: Orientation Programmes to freshers/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)

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 programmes.
2. Feedback from all stakeholders are considered
3. Departmental Advisory Board (DAB)/Departmental Development and Monitoring Committee (DDMC) makes the draft.
4. These proposals are ratified by the Governing Body.

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

1.2 Programme Educational Objectives (15)

1.2.1 Describe the Programme Educational Objectives (PEOs) (2)

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

This programme is meant to prepare our students to professionally thrive and to lead. During their progression:

PEO 1: Graduates of the programme will be successful in technical and professional career.
PEO 2: Graduates of the programme will have proficiency in execution of real time Civil Engineering projects.
PEO 3: Graduates of the programme will continue to engage in life-long learning with ethical and social responsibility.

1.2.2 State how and where the PEOs are published and disseminated (2)

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

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

Presently PEOs 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.

1.2.3 List the stakeholders of the programme (1)

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

The Stake holders for the programme are

1. Students
2. Employer
3. Faculty
4. Parents
5. Alumni
6. Management
7. Professional bodies

Students: Students seek quality environment at the Institute which includes good infrastructure, qualified faculty and conducive 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 students help 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 contribute for Organizational and societal growth. Industry also sees institutions as a complementary asset to their R&D. They being one of the direct beneficiary, 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 programme and establishing the PEOs / POs. The consistency of the programme 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.

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)

(Describe the process that periodically documents and demonstrates that the PEOs are based on the needs of the programmer'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 programme based on their professional experiences.

Alumni faculty interaction: **Alumni will be regularly interacting 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 Institution of Engineers, CII, CREDAI, ICI, IGS, IRC, IWWA, 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 Programme 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 programme 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: Program 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.

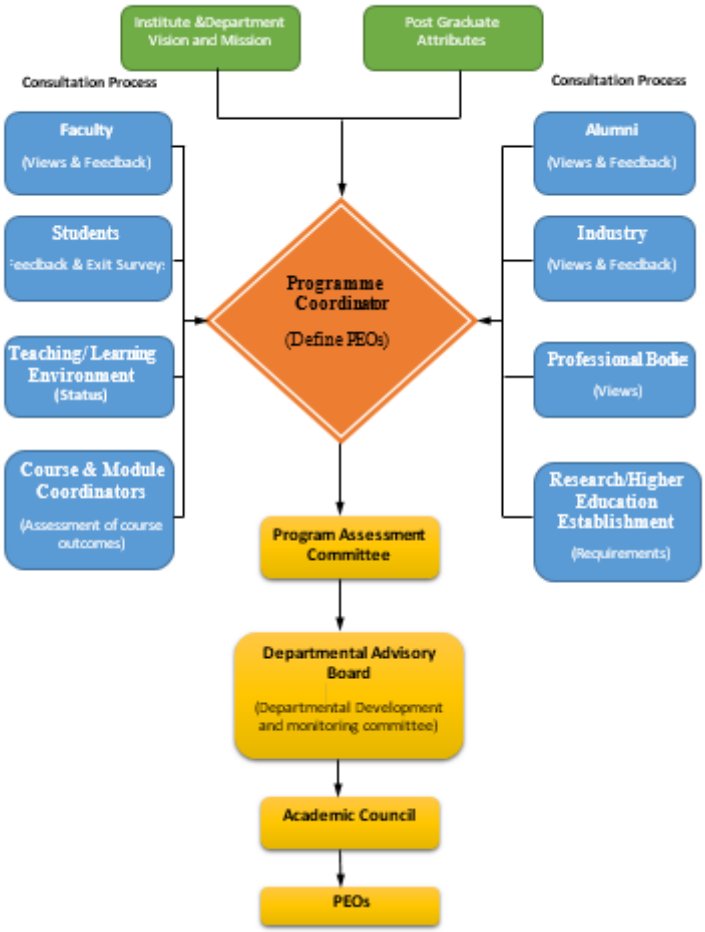

Figure 2: The process of establishing PEOs

1.2.5 Establish consistency of the PEOs with the Mission of the institute (5)

(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 Civil 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 Civil 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 Deaprtment		
	Quality Education	Entrepreneurial, Managerial and life -long learning Skills	Professional ethics and socially responsible
Graduates of the programme will be successful in technical and professional career.	X	X	X
Graduates of the programme will have proficiency in execution of real time Civil Engineering projects	X	X	--
Graduates of the programme will continue to engage in life-long learning with ethical and social responsibility	--	X	X

1.3 Achievement of Programme Educational Objectives (30)

1.3.1 Justify the academic factors involved in achievement of the PEOs (15)

(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 programme components.

Course Component	PEOs	Curriculum Content (% of total number of credits of the program)	Credits
Mathematics	1,2 & 3	8%	16
Basic Sciences	2,3	6%	12
HSS	2, 3	9%	18
Computing	2,3	4.5%	9
Professional Core	1, 2, 3	72.5%	145

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 programmes and Major Projects.
4. By conducting continuing education and professional development programmes 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.

1.3.2 Explain how administrative system helps in ensuring the Achievement of the PEOs (15)

(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. **Programme Coordinator:** Interacts and maintains liaison with key stakeholders like students, faculty and administration. He 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. Programme Assessment Committee
3. Board of Studies
4. Departmental Advisory Board (Departmental Development and Monitoring Committee)
5. Academic Council

Committee	Chair	Members	Responsibilities
Class Coordinators Committee (CCC)	Respective Classcoordinator	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. (A sample of copy is annexed)
Programme Assessment Committee (PAC)	Programme Coordinator	1.Module coordinators. 2.Faculty of a particular course. 3.Class coordinators.	1.To monitor feedbacks from stake holders and taking action there after on academic matters. 2. To monitor assessment and attainment of COs, POs and PEOs. 3. Evaluate Programme 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, Programme coordinator, Module coordinators, and external stakeholders in facilitating PEOs. **Committee Scheduled meetings:** Two times a semester or as and when needed. (A sample of copy is annexed)
Board of Studies	Chairman Board of Studies	1.Programme coordinators of the department 2.All teaching faculty	1.To prepare, frame and modify the syllabus for various courses keeping in view the Program Objectives of the Programme.

		of each course/ specialization offered. 3. Module coordinator 4.Two external experts in the programme 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.	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 assessement. **Committee Scheduled meetings:** As and when necessary. (A sample of copy is annexed)
Departmental Development and Monitoring Committee	Head of the Department	1.All faculty are members- one among them will act as Secretary. 2.Members may be co-	1. To formalize the departmental Vision and Mission. 2. To plan and monitor the growth of programmes of the department. 3. Develops and recommends new or

(DDMC) (Departmental Advisory Board)		opted from other programmes, University and industry as per requirement	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. (A sample of copy is annexed)
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 programmes 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. (A sample of copy is annexed)

1.4 Assessment of the Achievement of Programme Educational Objectives (40)

1.4.1 Indicate tools and processes used in assessment of the attainment of the PEOs (25)

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;

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 programme

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.

S.NO	Method	Assessment Tool	Description
1	Direct	Oral & Written	Objective, subjective, theory, practical, seminar

		Exams	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 programme

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
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)

File Name
Meetings
Surveys
Result Analysis

We have introduced the Outcome Based Education system in full spirit in GRIET recently. 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 placement drives with more intake	Returned for subsequent placement drives	Reluctant to come for placement drives	Returned for subsequent 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	60-80% graduates are satisfied with	Below 60% graduates are satisfied with	Above 90% graduates are satisfied with

		their curriculum	their curriculum	their curriculum	their curriculum
PEO 2	Alumni Survey	Above 60% graduates are in Civil Engineering Profession working in large teams	40-60% graduates are in Civil Engineering Profession working in large teams	Below 40% graduates are in Civil Engineering Profession working in large teams	Above 65% are in Civil 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 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)

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

We have introduced the Outcome Based Education system recently. 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. The curriculum is developed based on these PEOs and uses 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 programme.

For Redefining PEOs, exit students survey, professional bodies view, alumni survey, employer survey and feedback are collected by the Programme Coordinator. These are reviewed and redefined PEOs are drafted by Programme Assessment Committee. The same is finalized by DAB (DDMC). Then the proposed PEOs are ratified by Academic Council.

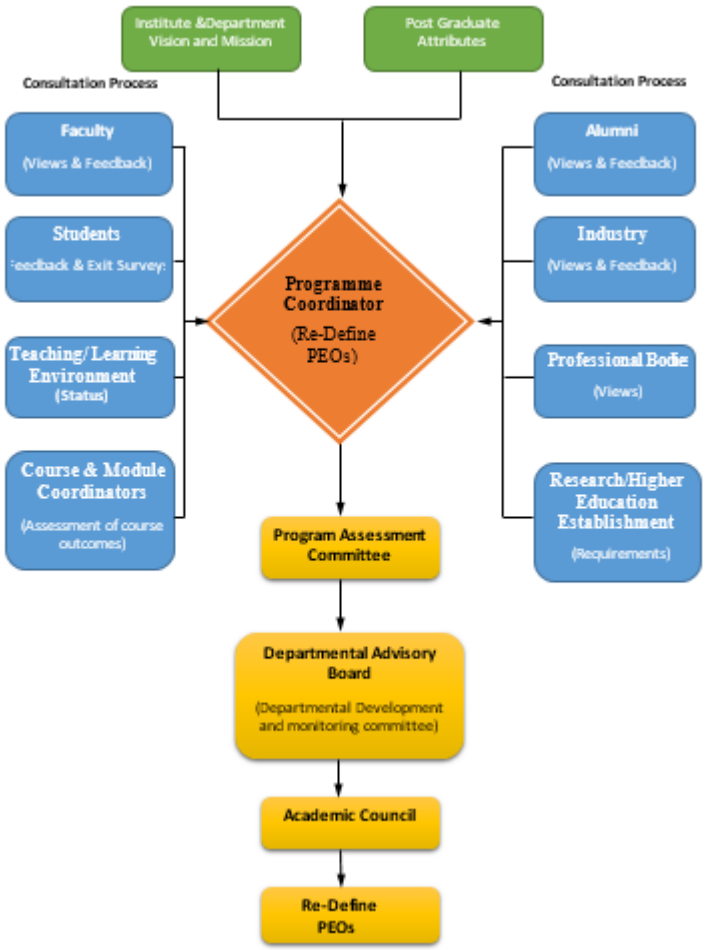

Figure 3: Redefining of Programme Educational Objectives

2. Programme Outcomes (225)

2.1 Definition and Validation of Course Outcomes and Programme Outcomes (30)

2.1.1 List the Course Outcomes (COs) and Programme Outcomes (POs) (2)

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

List of Course Outcomes

Course Outcomes of I Year B. Tech Civil Engineering

Code	Subject	Course Outcomes
I Year I Semester		
GR14A1001	**Linear Algebra and Single Variable Calculus**	1. Ability to identify linearity and linear systems, which lie at the core level of many engineering concepts.
		2. Ability to apply the theorems in differential calculus, which form the stepping stones to a broader subject called approximation theory.
		3. Ability to relate commonly occurring natural phenomenon using mathematical symbols and acquire preliminary skills to predict their behavior.
		4. Ability to apply the concepts of matrix rank to analyze linear algebraic systems.
		5. Ability to compute eigen values and vectors for engineering applications.
		6. Ability to describe linear dynamical systems.
		7. Ability to model and solve 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 knowledge 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 knowledge 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 execution of civil engineering projects.
		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 drawing & structural drawing
GR14A1018	**Basic Electrical Engineering**	1. Ability to understand 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 understand basic principles involved in electrical engineering concepts
		5. Ability to apply practical methods of basic house wiring.

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.
GR14A1026	**IT Workshop**	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 professional ethics for all engineering application.
		3. Ability to install different software.
		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.
GR14A1030	**Engineering Chemistry Lab**	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.
		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 Semester		
GR14A1003	**Transform Calculus and Fourier Series**	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.
		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 knowledge of multiple integrals in solving problems in vector fields.
GR14A1004	**Numerical Methods**	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.
		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.
GR14A1006	**Physics for Engineers**	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.
		4. Ability to differentiate properties and applications of various materials.
		5. Ability to extend the knowledge 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.
GR14A1005	**English**	1. Ability to improve the English Language proficiency with an emphasis on LSRW skills.
		2. Ability to study the academic subjects with better understanding.
		3. Ability to develop and read a wide range of text and understand 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.
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 knowledge 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 knowledge 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 the students with a solid foundation in physics laboratory required to solve engineering problems.
		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.

Course Outcomes of II Year B. Tech Civil Engineering

Code	**Subject**	**Course Outcomes**
II Year I Semester		
GR11A2001	**Building materials & construction & planning**	1. Ability to apply knowledge of science and engineering for eco-friendly construction.
		2. Ability to recognize to control cost of construction.
		3. Ability to identify to create awareness about green building practice.
		4. Ability to compare the estimate costs for labor, materials, and equipment for a construction project using industry-standard software and procedures.
		5. Ability to recognize to work in a team environment to analyze existing building types, develop a list of programmatic requirements, sketch a schematic design, and use this information to develop drawings and models sufficient to present a competent architectural design solution.
		6. Ability to discuss the fundamental knowledge of the systems and processes

		used to construct the built environment, including an understanding of industry terminology.
		7. Ability to apply knowledge of science and engineering for eco-friendly construction.
GR11A2036	**Electrical Technology**	1. Ability to learn how to develop and employ circuit models for elementary electronic components.
		2. Ability to define ac and dc circuits solving.
		3. Ability to find role of electrical machinery in simple & complex applications.
		4. Ability to demonstrate the designing and conducting experiments, to analyze and interpret data, and also provides the ability to visualize and work on laboratory and multidisciplinary tasks.
		5. Ability to measure the fundamental electrical quantities.
GR11A2004	**Strength of Materials – I**	1. Ability to determine the stresses, strains, elastic constants such as modulus of elasticity, modulus of rigidity, Poisson's ratio and bulk density. And also to determine the strain energy for various types of loading.
		2. Ability to generate the shear force, bending moment diagrams and identify the point of contra flexure for different types of beams such as cantilever, simple supports and fixed beams etc. with different loading.
		3. Ability to formulate the bending equation and shear equation to calculate the bending stresses and shear stresses for the different sections of the structural members.
		4. Ability to evaluate the slope and deflection of different beams for the different end conditions and loading by using different methods such as double integration and moment area method etc.
		5. Ability to analyze the principal and tangential stresses in the different planes by using analytical and graphical methods.
		6. Ability to uutilize appropriate materials in design considering engineering properties, sustainability.
		7. Ability to perform engineering work in accordance with ethical and economic constraints related to the design of

		structures.
GR11A2005	**Surveying**	1. Ability to apply basic mathematical and science knowledge to understand and solve engineering problems.
		2. Ability to utilize software tools in G.P.S applications.
		3. Ability to draw a plan and setting out the frame work in the field.
		4. Ability to recognize the scope for entrepreneurship.
		5. Ability to function as a member of a survey party in completing the assigned field work
		6. Ability to illustrate the need for licensed surveyors to establish positioning information for property and structures
		7. Ability to illustrate the need for accurate and thorough note taking in field work to serve as a legal record
GR11A2003	**Fluid Mechanics**	1. Ability to list the various the properties of fluids. Knowledge to apply the principle of hydro static law and Pascal's laws.
		2. Ability to compute the fluid pressure in different manometers and analysing usage in complex industrial processes.
		3. Ability to assess the performance of notch, orifice, and mouth piece discharges. Recognize and formulate problems that are amenable to weirs for practical design.
		4. Ability to articulate importance of extensive research in fluid mechanics, related Hydrodynamic flows, hydro kinematics.
		5. Ability to design the pipe networking application in irrigation and water distributions system.
		6. Ability to identify different fluid equations in static and dynamic conditions, fluid boundary layer, laminar and turbulent flow.
		7. Ability to analyze the role of fluid flows in a weirs, pipes lines, notches, orifices and mouthpieces can handle social and global needs.
GR11A2007	**Fluid Mechanics Lab**	1. Ability to express the principle properties of fluids viscosity, surface tension etc. and their type of flows at static condition. Able to calculate the fluid pressure at different condition, friction losses.

		2. Ability to design diameter, length require of a pipe in networking. An ability to find the role of fluid flows in a weirs, pipes and identifying the laminar and turbulent flows for that require simple and complex applications can handle social and global needs.
		3. Ability to calculate discharges through orifice, mouth piece and weirs useful for practical design
		4. Ability to articulate importance of extensive research in fluid mechanics, Hydrodynamic flows, static storage studies, aero dynamic studies etc.
		5. Ability to design the real time application in irrigation and water distributions system. Able to calculate frictional losses in pipe and able to analyze the boundary layers influence in real time.
		6. Ability to calculate the pipe line design (length diameter) and trace out laminar and turbulent flows for municipal water distribution system.
		7. Ability to recognize the value of water current in rivers, canal and drains etc.
GR11A2008	**Surveying Lab – I**	1. Ability to identify conventional surveying tools such as chain/tape, compass, plane table, level in the field of civil engineering applications such as structural plotting and highway profiling.
		2. Ability to take accurate measurements, field booking, plotting and the effects of small angular errors. Adjustment of errors can be understood.
		3. Ability to plan a survey appropriately with the skill to understand the surroundings.
		4. Ability to function as a member of a survey party in completing the assigned field work.
		5. Ability to measure differences in elevation, draw and utilize contour plots, and calculate volumes for earthwork.
		6. Ability to design the road profile by Longitudinal and cross section levelling.
		7. Ability to plot traverses or sides of building and determine the location of points present on field on a piece of paper.
GR11A2006	**Computer Aided Drafting**	1. Ability to recollect and perform basic sketching techniques will improve.

	of Building Lab	2. An ability to draw orthographic projections and sections.
		3. Ability to use architectural and engineering skills will increase.
		4. An ability to produce engineered drawings.
		5. An ability to interpret with office practice and standards.
		6. Ability to pass the Certification Exams.
		7. Ability to demonstrate knowledge of current industry standards and codes.
II Year II Semester		
GR11A2010	**Probabilities & Statistics**	1. Ability to define probability and interpret probability by modeling sample spaces.
		2. Ability to construct the probability distribution of a random variable, based on a real-world situation, and to use it to compute expectation and variance.
		3. Ability to evaluate random processes which occur in engineering application governed by binomial, Poisson, exponential, normal, and uniform distributions.
		4. Ability to define descriptive statistics and statistical inference.
		5. Ability to discuss compute regression equations for data to make predictions.
		6. Ability to acquire the skill of using queuing techniques in the field of engineering.
		7. Ability to express Stationary and Ergodic process.
GR11A2011	**Strength of Materials – II**	1. Ability to define stresses in thin and thick cylinders under pressures, show stress distribution diagrams.
		2. Ability to list the various stress in cylinders, and define Lame's theorems
		3. Ability to differentiate between closed and open coiled helical springs
		4. Ability to evaluate the buckling/failure load for axially loaded and eccentrically loaded columns.
		5. Ability to identify function of slenderness ratio in axially loaded columns.
		6. Ability to explain the effect of equivalent length in long columns various end conditions.
		7. Ability to state the torsional strength of structural members and also to design them to resist a given torque.
GR11A2009	**Hydraulics and**	1. Ability to express the properties in open

	Hydraulic Machinery	channel flows. Define chezy, manning Bazins equations. design most efficient channel section.
		2. Ability to identify, formulate and analyze by drawing the different types of surface profile in open channel, predict the types of channel slopes.
		3. Ability to compare types of fluid flows in open channel and compute problems on specific energy.
		4. Ability to design and analyse of centrifugal pumps Assess the performance of pump by computing work done, power and efficiencies.
		5. Ability to design Kaplan, Franicis, Pelton wheel turbines in hydel plants. Evaluate the work done, power and efficiency of Hydraulics Machinery.
		6. Ability to predict the force exerted on different types of vanes on moving and stationary condition. Evaluate work done, power and efficiency.
		7. Ability to apply knowledge of models and proto type in complex applications that can handle social and global needs.
GR11A2071	**Managerial Economics and 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 explain various market structures, types of competition and pricing types.
		5. Ability to describe characteristic features of forms of Business Organization and changing Business Environment in Post-Liberalization scenario.
		6. Ability to describe about Capital types and Working Capital Requirements, Capital Budgeting like ARR, NPV, and PAYBACK method.
		7. Ability to explain the accounting, double Entry Book Keeping, Preparing Journal, Ledger, Trading Account, P&L Account, Balance sheet and analysis of Financial Ratios

GR11A2012	**Structural Analysis**	1. Ability to determine deflections of beams and trusses using energy methods.
		2. Ability to analyze three and two hinged, circular and parabolic structure.
		3. Ability to analyze indeterminate beams of 1st degree statically indeterminate using force method for Propped cantilever beams.
		4. Ability to analyze indeterminate beams of 2nd and 3rd degree statically indeterminate beams using Clappeyorn's three moment theorem.
		5. Ability to apply the Slope deflection, Moment distribution and Kani's methods to analyze statically indeterminate structures.
		6. Ability to analyze the statically determinate and indeterminate structures using rolling load method.
		7. Ability to analyze the statically determinate and indeterminate structures using influence line method.
GR11A2014	**Strength of Materials Lab**	1. Ability to determine the important mechanical properties of materials
		2. Ability to identify the stiffness of an elastic isotropic material
		3. Ability to evaluate the theorem in engineering mechanics.
		4. Ability to measure any substance's resistance to uniform compression.
		5. Ability to resistance of various materials against abrasion.
		6. Ability to design structures with the knowledge of stresses.
		7. Ability to identify the resistance of any material against high force or shock over a short time period.
GR11A2013	**Hydraulics and Hydraulic Machinery Lab**	1. Ability to express the principle properties different types of flows in open channel flows.
		2. Ability to find the role of fluid flows in open channels and identifying the critical and subcritical, super critical flows by that require simple and complex applications can handle.
		3. Ability to articulate importance of extensive research in Hydraulics and Hydraulics Machinery.
		4. Ability to design the real time application in calculating the turbine efficiencies and power

		calculations.
		5. Ability to calculate the pipe line design (length diameter) and trace out laminar and turbulent flows for municipal water distribution system.
		6. Ability to recognize the value of water current in rivers, canal and drains etc.
		7. Ability to interpret the innovate techniques.
GR11A2015	**Surveying Lab – II**	1. Ability to indicate the need for accurate and thorough note taking in field work to serve as a legal record.
		2. Ability to find the knowledge on modern survey equipment like theodolite, tachometry and total station to measure angles and distances.
		3. Ability to express the principles and operation of the total station.
		4. Ability to measure differences in elevation and calculate volumes for earthwork.
		5. Ability to assess knowledge of mathematics, science, and engineering to understand the measurement techniques and equipment used in land surveying.
		6. Ability to calculate elevation differences using trigonometric leveling and corrections for curvature and refraction.
		7. Ability to calculate area, volume, angles, distances, column marking and close a traverse using total station.

Course Outcomes of III Year B. Tech Civil Engineering

Code	Subject	Course Outcomes
III Year I Semester		
GR11A3029	**Concrete Technology**	1. Ability to list the grades of cement, the types of cement and the types of different admixtures.
		2. Ability to classify the types and the physical properties of aggregates.
		3. Ability to classify the physical properties of fresh and hardened concrete and also about the manufacturing of concrete.
		4. Ability to estimate the creep and shrinkage of concrete and how to conduct the different

		tests such as compression and tension etc. on hardened concrete.
		5. Ability to design the mix proportions for the specific work for required strength and workability with available materials at work place.
		6. Ability to distinguish the special concretes like Self compacting concrete, Fibre reinforced concrete, Polymer concrete and Light weight concrete etc.
		7. Ability to assess on development of high strength and high performance concrete.
GR11A3037	Design of Reinforced Concrete Structures	1. Ability to design the reinforced concrete structures with an acceptable probability and performing satisfactorily during their intended life by using Limit state method.
		2. Ability to design the reinforced concrete structures which sustain all loads and deform within the limits.
		3. Ability to design the reinforced concrete structures which are durable by properly detailing the reinforcement.
		4. Ability to design the reinforced concrete BEAMS for the given loads and moments.
		5. Ability to design the reinforced concrete columns for the given loads and moments.
		6. Ability to design the reinforced concrete footings for the given loads.
		7. Ability to design the reinforced concrete slabs, stairs and canopy for the given loads and moments.
GR11A3055	**Geotechnical Engineering – I**	1. Ability to identify basic Engineering properties of soil and relate them with Civil Engineering practices
		2. Ability to evaluate various experiments to determine the geotechnical properties of soil.
		3. Ability to identify, formulate and solve various problems in geotechnical engineering.
		4. Ability to analyse the mechanism and behavior of soil under various field situations
		5. Ability to identify field equipment used in improving soil properties
		6. Ability to articulate importance of extensive research in geotechnical engineering
		7. Ability to analyze soil mechanics for development of construction sites both

		technically and economically.
GR11A3097	**Water Resources Engineering - I**	1. Ability to measure, estimate and process rainfall data, runoff data, evaporation data, evapotranspiration data and infiltration data.
		2. Ability to develop in a region, direct runoff hydrograph, unit hydrograph, S-Curve hydrograph and synthetic unit hydrograph.
		3. Ability to calculate the discharge of radial flow to wells in a region of confined and unconfined aquifers by determining the aquifer parameters by field tests and pumping tests.
		4. Ability to design a suitable irrigation method depending on soil, water and plant conditions on the field
		5. Ability to develop irrigation schedules and irrigation efficiencies for farmers on the field.
		6. Ability to design irrigation canals by Kennedy's theory, Lacey's theory and IS standards.
		7. Ability to calculate design discharge by SCS Curve Number Method and analyze the regional flood frequency, Measure and estimate stream flow by methods of stream gauging in a watershed.
GR11A3002	**Advanced Structural Analysis**	1. Ability to calculate the degree of static and kinematic indeterminacies of a given structure such as beams, truss and frames.
		2. Ability to determine the final end moments in indeterminate beams and frames using Slope deflection, Moment distribution and Kani's methods
		3. Ability to construct BMDs for beams and frames using Slope deflection, Moment distribution and Kani's methods
		4. Ability to determine the final end moments in portal and gable frames with sway using Slope deflection and Moment distribution methods.
		5. Ability to analyse the indeterminate beams and frames by stiffness matrix method
		6. Ability to analyse the indeterminate beams and frames by flexibility matrix methods

		7. Ability to estimate the bending moments and axial forces in multistory frames using approximate methods of analysis
GR11A3030	**Concrete Technology Lab**	1. Ability to identify the suitable materials used for concrete for particular purpose
		2. Ability to gauge the quality control of concrete
		3. Ability to identify, describe and carry out the main laboratory tests relevant to the use of concrete on site.
		4. Ability to recognise the theoretical concepts learned in the courses concrete technology and building materials and construction planning.
		5. Ability to design normal concrete mixes.
		6. Ability to predict properties of different materials used for the construction.
		7. Ability to interpret the properties in tern to design or invent the new materials.
GR11A3056	**Geotechnical Engineering 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.
GR11A2073	**Advanced English Communication Skills Lab**	1. Ability to explore and utilize different forms of communication to convey one's ideas in various professional contexts.
		2. Ability to engineer self-presentation and socializing.
		3. Ability to train to crack various international online exams like GRE, TOEFEL and IELTS.
		4. Ability to learn various forms of Technical Writing for effective professional documentation.
		5. Ability to design and build various behavioral aspects in relation to problem

		solving.
		6. Ability to gain expertise to share opinions and express views precisely.
III Year II Semester		
GR11A3038	**Design of steel structures**	1. Ability to identify materials involved in the manufacture of steel and various methods of making steel.
		2. Ability to identify different types of connections used in the connections of different elements of steel structures.
		3. Ability to design steel tension members for the given loads.
		4. Ability to design compression members for the given loads and moments.
		5. Ability to design the steel eccentric connections for the given loads and moments
		6. Ability to examine plastic analysis of structures.
		7. Ability to recognize design methodologies and the concept of codes.
GR11A3050	**Environmental Engineering**	1. Ability to design and implement a drinking water supply system for a residential community
		2. Ability to identify the cause of outbreak of epidemics and eradicate.
		3. Ability to setup drinking water supply and waste water collection system for a town.
		4. Ability to identify safe disposal methods for wastewater
		5. Ability to design suitable treatment for wastewater.
		6. Ability to identify suitable sources of water for a public water supply system.
		7. Ability to resolve all operational and maintenance issues of water supply and sanitary engineering.
GR11A3098	**Water Resources Engineering - II**	1. Ability to estimate and calculate the inflow, outflows from the reservoir as well its capacity by using mass curve techniques.
		2. Ability to design and analyze the different types and components of various dams pertaining to corresponding boundary conditions.
		3. Ability to interpret performance, safety and stability of the gravity dam
		4. Ability to calculate flow through the earthen dams and also corresponding remedial

		measures to prevent more seepage through dams, various irrigation structures.
		5. Ability to design various diversion head works by using Blighs and Khoslas theory
		6. Ability to assess the efficiency of performance of any component of hydraulic structure like a weir, barrage, CD work, etc.
		7. Ability to indicate the different types of irrigation structures along with their designs and analysis by using different evaluation methods.
GR11A3048	**Engineering Geology**	1. Ability to recognize the importance of geology from civil engineering point of view.
		2. Ability to find the physical properties of minerals and their role for common rock forming.
		3. Ability to distinguish features of igneous, sedimentary and metamorphic rocks.
		4. Ability to distinguish various geological structures.
		5. Ability to analyse the failures of dams, reservoirs and tunnels due to geological reasons.
		6. Ability to indicate importance of ground water, subsurface flows, water tables.
		7. Ability to discuss about the rocks, minerals and geological structures that can be used for civil engineering point of view.
GR11A3093	**Transportation Engineering**	1. Ability to apply basic science principles in estimating stopping and passing sight distance requirements
		2. Ability to compare factors influencing road vehicle performance characteristics and design.
		3. Ability to review the level of service for selected road segments.
		4. Ability to organize the basic traffic signal phasing and timing plan.
		5. Ability to recognize the importance of horizontal and vertical alignment of the highway
		6. Ability to illustrate the basic traffic stream parameters and models, traffic flow models, and queuing theory.
		7. Ability to present a systems approach where the interaction of humans and the vehicles and their impact on the society and transportation.

GR11A3043	**Disaster Management and Mitigation**	1. Ability to identify different problems by various disasters and to predict solutions.
		2. Ability to develop strategies to decrease economic loss by relating with previous disaster data
		3. Ability to help in applying engineering technology to give a solution to mitigate loss caused due to disasters.
		4. Ability to illustrate science and geology to understand the problems.
		5. Ability to express councils present globally for the evaluation and mitigation of disasters.
		6. Ability to identify latest technologies to resolve problems due to disasters.
		7. Ability to extend various research programs
GR11A3021	**Bridge Engineering**	1. Ability to illustrate conceptual design for short, medium and long span bridges
		2. Ability to analyse structural behavior of different longitudinal and transverse bridge types
		3. Ability to design bearings, joints, piers and abutments.
		4. Ability to compare composite and slab deck bridges.
		5. Ability to evaluate life-cycle costs of bridges.
		6. Ability to recognize the importance of different loadings that are acting on bridges.
		7. Ability to demonstrate sizing of bridge elements, i.e. develop a clear understanding of conceptual design.
GR11A3049	**Engineering Geology Lab**	1. Ability to identify various minerals and their properties.
		2. Ability to identify various rocks and their properties.
		3. Ability to prepare and interpret various maps of geological structures like faults, folds, beds and unconformities.
		4. Ability to resolve some simple structural Geology.
		5. Ability to understand the importance of geological structure for any constructions.
		6. Ability to demonstrate the effect of water tables under any civil structures.
		7. Ability to understand how various rocks and minerals used in the industries.
GR11A3051	**Environmental**	1. Ability to measure physical properties of

	Engineering Lab	surface and subsurface water.
		2. Ability to measure biological properties of surface and subsurface water.
		3. Ability to measure chemical properties of surface and subsurface water.
		4. Ability to innovate techniques to improve surface water quality.
		5. Ability to recognize to improve skills in water analysis.
		6. Ability to identify social responsibility to eradicate water borne diseases.
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 extend the industrial practices being followed in both design and analysis.
		6. Ability to differentiate various codes/standards followed in industry.
		7. Ability to recognize the organizational structure of an industry.

Course Outcomes of IV Year B. Tech Civil Engineering

Code	Subject	Course Outcomes
IV Year I Semester		
GR11A 4046	**Geotechnical Engineering – II**	1. Ability to list the various soil exploration techniques and interpret the resulting soil profiles.
		2. Ability to analyze slope stability and design of earth retaining walls.
		3. Ability to apply bearing capacity equations for shallow and deep foundations and to evaluate rate of settlement.
		4. Ability to choose a suitable foundation based on soil properties for various soils.
		5. Ability to identify and solve foundation related engineering problems.
		6. Ability to estimate pile and pile group capacity for any kind of soil including group efficiency and negative friction.

		7. Ability to explain the functions and design criteria of well foundations.
GR11A 4040	**Estimating & Costing**	1. Ability to express the cost management discipline and process.
		2. Ability to recognize potential pitfalls and understand avoidance strategies.
		3. Ability to use a cost management estimation and control plan.
		4. Ability to recognize the process and importance of cost estimation, cost budgeting and cost control.
		5. Ability to describe some problems often encountered in collecting data for cost estimation.
		6. Ability to estimate correctly the quantity of steel and form work.
		7. Ability to interpret the process and importance of valuation of buildings and other structures.
GR11A 4100	**Remote Sensing & GIS**	1. Ability to describe the fundamental concepts of Geographic Information Science and Technology.
		2. Ability to demonstrate proficiency in the basic functions of geospatial software.
		3. Ability to demonstrate awareness of fundamental remote sensing and spatial analysis techniques.
		4. Ability to demonstrate basic proficiency in map creation and design principles, including thematic map display, employment of map projections, and cartographic design.
		5. Ability to demonstrate proficiency in the creation and acquisition of spatial data.
		6. Ability to analyze and understand various topo maps.
		7. Ability to apply Remote sensing knowledge for various civil engineering applications.
GR11A 4048	**Ground Water Development & Management**	1. Ability to enumerate the porosity, specific yield and specific retention of aquifer.
		2. Ability to calculate the storage coefficient and transmissivity of aquifers and to derive differential equation governing groundwater flow in three dimensions in Cartesian and Polar coordinates.
		3. Ability to examine the pumping test data in steady and unsteady groundwater flow towards a well in confined and unconfined aquifers using Dupuit's and Theim's equations.
		4. Ability to appraise surface and subsurface methods of exploration of investigation of groundwater.
		5. Ability to assess the methods of recharge of groundwater using GIS and Remote sensing.
		6. Ability to compile dynamics of saline water intrusion and to manage the groundwater basin.

		7. Ability to synthesize the overall concepts and procedures necessary for the development and management of ground water resources.
GR11A 4093	**Prestressed Concrete**	1. Ability to identify the general mechanical behavior of prestressed concrete.
		2. Ability to analyze transfer and development length as well as prestress losses.
		3. Ability to design calculations to predict service behaviour of prestressed concrete structures, accounting for the time-dependent effects of concrete creep and shrinkage.
		4. Ability to design of the ultimate strength of prestressed concrete structures.
		5. Ability to analyze of prestressed concrete structures to satisfy relevant Design Standards.
		6. Ability to establish with the prestressed concrete fabrication and construction process.
		7. Ability to apply knowledge of prestressed concrete models and sections in complex applications that can handle social and global needs.
GR11A 4081	**Optimization techniques in Civil Engineering**	1. Ability to formulate mathematical models for the problems in Civil Engineering.
		2. Ability to define major limitations and capabilities of deterministic operations research modeling to relate with industry or government.
		3. Ability to analyze problems using linear programming and other mathematical programming algorithms
		4. Ability to deal with real world problems of Network analysis, Project Management, for optimal solutions in civil engineering
		5. Ability to classify different techniques to solve Non-Linear Programming Problems
		6. Ability to use search techniques methods, which are based on iterative methods, to find optimal solutions of Non-Linear Programming Problems which helps in understanding multistage decision problems.
		7. Ability to discuss different Software application for optimization techniques to validate existing methods.
GR11A 4059	**Irrigation Design & Drawing**	1. Ability to identify the importance of various irrigation & Hydraulic structures.
		2. Ability to determine the applicability of various structures to be proposed at the site.
		3. Ability to calculate the various components of hydraulic structures for the given data.
		4. Ability to design hydraulic structures at any scale.

		5. Ability to analyze the various hydraulic structures like Canal regulator, under tunnel etc.
		6. Ability to design and draw the hydraulic structures using Q-CAD tool
		7. Ability to evaluate different types of hydraulic structures, their design and drawings using various drafting tools
GR11A 4042	**Finite Elements Methods**	1. Ability to identify mathematical model for solution of common engineering problems.
		2. Ability to formulate simple problems into finite elements.
		3. Ability to define basic aspects of finite element technology, including domain discretization, polynomial interpolation, application of boundary conditions, assembly of global arrays, and solution of the resulting algebraic systems
		4. Ability to compare the solutions obtained from finite element analyses
		5. Ability to formulate finite element analysis equation
		6. Ability to evaluate finite element software to solve engineering problems in Solid mechanics, fluid mechanics and heat transfer.
		7. Ability to solve element matrix equation by different methods by applying basic laws in mechanics and integration by parts.
GR11A 4128	**Water Resources system Planning & Management**	1. Ability to enumerate the fundamental concepts systems, optimization techniques, objective function and constraints.
		2. Ability to calculate the applicability of Linear Programming models in various different fields.
		3. Ability to examine the concept of Belman's Principle for both forward and backward recursive dynamic programming.
		4. Ability to appraise the concepts of simulation in Water Resources Engineering.
		5. Ability to assess the concepts of cost benefit analysis in Water Resources Economics and Management.
		6. Ability to compile different types of the systems, optimization techniques and the concept of simulation.
		7. Ability to synthesize different system planning techniques and their simulation methods in the strategic management of Water resources available.
GR11A 4047	**Ground Improvement Techniques**	1. Ability to identify dewatering technique for the field related problems.
		2. Ability to discuss grouting methods in civil engineering applications.

		3. Ability to assess the field problems related to problematic soils by adopting various ground improvement techniques
		4. Ability to differentiate reinforced earth retaining structures
		5. Ability to classify various techniques for stabilization more technically and economically by using geotextiles.
		6. Ability to recognize the suitability and practicability required for various ground improvement methods.
		7. Ability to assess the importance of extensive research in various ground improvement techniques.
GR11A 4050	**Highway Materials Lab**	1. Ability to discuss the required properties of road aggregate and bitumen.
		2. Ability to estimate the feasibility of materials.
		3. Ability to clarify, how to improve the quality of materials used for highway.
		4. Ability to conduct different test to be conducted on highway materials and to assess the quality of the road materials.
		5. Ability to illustrate to design the bituminous mix.
		6. Ability to classify able to select materials with properties those comply with state and national specifications.
		7. Ability to compare the test results
GR11A 4101	**Remote Sensing & GIS Lab**	1. Ability to describe the fundamental concepts of Geographic Information Science and Technology.
		2. Ability to demonstrate proficiency in the basic functions of geospatial software.
		3. Ability to find awareness of fundamental remote sensing and spatial analysis techniques.
		4. Ability to evaluate basic proficiency in map creation and design principles, including thematic map display, employment of map projections, and cartographic design.
		5. Ability to analyze proficiency in the creation and acquisition of spatial data.
		6. Ability to recognize the topo maps prepared by survey of India.
		7. Ability to determine the overlaying of different maps in GIS.
IV Year II Semester		
GR11A 4020	**Construction Technology & Project Management**	1. Ability to assemble and use various construction schedules to manage a construction project
		2. Ability to identify different construction methods and its application based on the field requirements

		3. Ability to associate with various construction equipment used in the construction site
		4. Ability to apply probability, statistics, and decision analysis in project planning, quality systems and safety management of construction activity.
		5. Ability to prepare Cost Estimates and documentation and relate with various types of constructions
		6. Ability to express contract, tenders and bidding practice in constructions
		7. Ability to infer with Construction Law and Arbitration to solve legal problems in constructions
GR11A 4002	**Advanced Structural Design**	1. Ability to analyze the different loads on Trusses and their Components
		2. Ability to design of Industrial Roof Trusses and their Components.
		3. Ability to design Gantry Girder.
		4. Ability to design Steel Bridges.
		5. Ability to design Steel Water Tanks.
		6. Ability to design Plate Girder.
		7. Ability to identify and resolve the various problems related to Steel Structures.
GR11A 4003	**Airport, Docs & Harbour Engineering**	1. Ability to identify and describe the components of waterway and airway transportation vehicles.
		2. Ability to compare various alternative structures of docks and airports.
		3. Ability to interpret planning and design principles of some of the components of waterway and airway transportation.
		4. Ability to describe different imaginary surfaces in airport.
		5. Ability to analyze the characteristics of Aircraft.
		6. Ability to record and reproduce of data to draw wind rose diagrams.
		7. Ability to evaluate the length of runway based on different design parameters.
GR11A 4129	**Water Shed Management**	1. Ability to examine and recommend principles for protection, management, and monitoring watersheds.
		2. Ability to explain measure, monitor, and assess watershed health in other regional streams.
		3. Ability to demonstrate and develop suitable restoration work plans.
		4. Ability to illustrate broad-based theories and applications in the watershed management field to solve problems and address issues in the profession.
		5. Ability to evaluate the sediment delivery risk level for erosion problem areas.

		6. Ability to explain the physical and biological processes of watersheds.
		7. Ability to discuss different types of the management systems.
GR11A 4039	**Environmental Impact Assessment**	1. Ability to identify elements of community and environment likely to be affected by the proposed developments.
		2. Ability to identify the negative impacts and propose the provision of infrastructure or mitigation measures.
		3. Ability to develop current EIA methods and the techniques.
		4. Ability to develop current assessment methods, environmental monitoring systems and legislation.
		5. Ability to assess process of environmental impact modelling and prediction as a design tool.
		6. Ability to interact with experts of other fields to assess the impact.
		7. Ability to present EIA report in a way understandable by everyone.
GR11A 3068	**Management Science**	1. Ability to impart Knowledge on Management its functions, styles importance and various theories of Taylor, Maslow, McGregor and Hertzberg.
		2. Ability to explain the concept of Departmentation, Decentralization, Organizational Structure like Line, Staff, Committee, Matrix, Lean, Flat their merits and demerits.
		3. Ability to define and describe various plant layouts, methods of Production, method study & work measurement with X chart, R chart, C chart etc.
		4. Ability to describe and explain the significance of Inventory control, SCM, Marketing and its mix and channels of Distribution.
		5. Ability to describe concept of HRM, functions of HR manager, Recruitment, Selection, Training, Placement, Salary administration, Appraisal and Grievance Handling.
		6. Ability to perform project management and its techniques like PERT,CPM, critical path and project crashing
		7. Ability to explain the importance of strategic management, corporate planning, SWOT Analysis and concepts like JIT, TQM, Six Sigma, CMM, ERP, BPO, Kaizen, Benchmarking and Balanced Score Card.
GR11A 4082	**Pavement Analysis & Design**	1. Ability to illustrate highway design methods, constraints and controlling factors.
		2. Ability to use road software tools for the design and maintenance of pavements.

		3. Ability to apply the design standards in designing principal elements of the highway.
		4. Ability to collect necessary information like volume and axle load data to design flexible and rigid pavements.
		5. Ability to predict the resource constraints and allows to utilize the available materials in a sustainable way.
		6. Ability to examine the basic parameter of traffic engineering and the methods which helps to estimate those parameters.
		7. Ability to recognize the major failure modes of flexible and rigid pavement and helps in maintaining them properly.
GR11A 4116	**STAAD Lab**	1. Ability to analyze and design the various types of Beams for the different loads.
		2. Ability to analyze and design a 2D frame of Multi-Storied Building.
		3. Ability to analyze and design a 3D frame of Multi-Storied Building.
		4. Ability to analyze and design a RCC Over Head tank
		5. Ability to analyze and design the different types of Steel Trusses
		6. Ability to analyze and design a Steel Tower with arms on both sides
		7. Ability to analyze and design a Steel Deck Bridge
GR11A 4110	**Seminar**	1. Ability to prepare a technical report.
		2. Ability to demonstrate the fundamentals.
		3. Ability to develop technical skills.
		4. Ability to prepare for technical presentation in the conferences.
		5. Ability to develop presentation skills including preparation of audio visual aids.
		6. Ability to find public speaking skills and listening comprehension.
GR11A 4018	**Comprehensive Viva**	1. Ability to assess knowledge in the subject and the project.
		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 improve communication.
		7. Ability to validate the knowledge gained through years of study.
GR11A 4097	**Project Work**	1. Ability to interpret ideas and thoughts into practice in a project.
		2. Ability to analyze the gap between theoretical and

		practical knowledge.
		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.

Programme Outcomes

Based on the Program Educational Objectives of Civil Engineering department, students will achieve the following specific **Programe Outcomes**

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

b. Ability to analyse problem and interpret the data.

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

d. Ability to identify, formulate, analyse and interpret data to solve Civil Engineering problems.
e. Ability to use modern engineering tools such as CAD and GIS for the Civil Engineering practice.
f. Ability to understand the impact of engineering solutions in a global, economic and societal context.
g. Ability to understand the effect of Civil 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 Civil Engineering projects.
l. Ability to recognize the need for and an ability to engage in life-long learning.

2.1.2 State how and where the POs are published and disseminated (3)

(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)

(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 programme assessment committee formulates the programme 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 programme outcomes are approved by Academic council. The process is presented in the flow chart given below.

Graduate Attributes

Programme Educational Objectives

Consultation

Faculty
(Views & Feedback)

Students
Feedback & Exit Surveys

Consultation

Alumni
(Views & Feedback)

Industry
(Views & Feedback)

Programme Coordinator
(Define POs)

Teaching/ Learning Environment (Status)

Professional Bodies
(Views)

Course & Module Coordinators
(Assessment of course outcomes)

Program Assessment Committee

Research/Higher Education Establishment
(Requirement)

Departmental Advisory Board
(Departmental Development and monitoring committee)

Academic Council

POs

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)

(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

Programme 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											
Problem Analysis		X										
Design/Development of Solutions			X									
Conduct investigations of complex problems				X								
Modern Tool Usage					X							
The engineer and society						X						
Environment and Sustainability							X					
Ethics								X				
Individual and Teamwork									X			
Communication										X		

Project Management and Finance											X	
Life Long Learning												X

2.1.5 Establish the correlation between the POs and the PEOs (10)

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

Program Educational Objective(PEO)	Program Outcomes(PO)
PEO 1: Graduates of the programme will be successful in technical and professional career.	a. Ability to apply knowledge of mathematics, science and fundamentals of Civil Engineering. b. Ability to analyse problem and interpret the data. i. Abili ty 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 Civil Engineering projects.
PEO 2: Graduates of the programme will have proficiency in execution of real time Civil Engineering projects.	c. Ability to design a system component, or process to meet desired needs in Civil Engineering within realistic constraints. d. Ability to identify, formulate, analyse and interpret data to solve Civil Engineering problems. e. Ability to use modern engineering tools such as CAD and GIS for the Civil Engineering practice. g. Ability to understand the effect of Civil 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 Civil Engineering projects.
PEO 3: Graduates of the programme will continue to engage in life-long learning with ethical and social responsibility.	f. Ability to understand the impact of engineering solutions in a global, economic and societal context. h. Ability to understand professional and ethical responsibility. l. Ability to recognize the need for and an ability to engage in life-long learning.

Mapping of Programme Educational Objectives with Programme Outcomes

Programme Educational Objectives		Programme Outcomes											
		a	b	C	d	e	f	g	h	i	j	k	l
PEO1	Graduates of the programme will be successful in technical and professional career.	H	H							M	M	H	
PEO2	Graduates of the programme will have proficiency in solving real time Civil Engineering projects.			H	H	M		H		M		M	
PEO3	Graduates of the programme will continue to engage in life-long learning with ethical and social responsibility.						H		H				H

2.2 Attainment of Programme Outcomes (40)

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

(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 Civil Engineering

Code	Subject	Course Outcomes	Programme Outcomes											
			a	b	c	d	e	f	g	h	i	j	k	l
I Year I Semester														
GR14A1001	**Linear Algebra and Single Variable Calculus**	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								M
		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								M
		Ability to compute eigen values and vectors for engineering applications.	H	M	M	M								M
		Ability to describe linear dynamical systems.	H	M	M	M								M
		Ability to model and solve linear dynamical systems.	H	M	M	M								M
GR14A1002	**Advanced Calculus**	Ability to construct a curve using its geometrical properties.	H	M	M	M								M
		Ability to visualize multivariable functions in the context of function optimization.	H	M	M	M								M
		Ability to calculate integrals in 2-D and 3-D.	H	M	M	M								M

		Ability to apply and to estimate characteristics of vector fields.	H	M	M	M								M
		Ability to apply the knowledge of curve tracing and geometry to precisely estimate areas and volumes.	H	M	M	M								M
		Ability to find optional values of functions with and without constraints.	H	M	M	M								M
		Ability to apply the knowledge of multiple integrals in solving problems in vector fields.	H	M	M	M								M
GR14A1008	**Engineering Chemistry**	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			M			H			M		
		Ability to describe impurities present in water, boiler troubles, removal of impurities.			H	M		M			M			
		Ability to develop 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						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						M
		Ability to perform basic sketching techniques of engineering components.	M	H	M	M		M						M
		Ability to draw orthographic projections and isometric projections of given engineering components.		H	M									M
		Ability to practice increasingly use of architectural and engineering scales.		H	M									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									M
GR14A1018	**Basic Electrical Engineering**	Ability to understand basics of Electrical Engineering and practical implementation of Electrical fundamentals.	M	H		M								M
		Ability to apply various applications of commonly used electric machinery.	M		H	M								
		Ability to perform numerical solutions to fundamental electrical engineering.		H	M		M							
		Ability to understand basic principles involved in electrical engineering	H	M	M									

		concepts												
		Ability to apply practical methods of basic house wiring.			H	M		M						
GR14A1012	**Engineering Mechanics - STATICS**	Ability to recollect the basic physical concepts of statics.	H		M					M				M
		Ability to discriminate the static behavior of the mechanical components under loading.		M		H			M	M				M
		Ability to apply the concepts of centroid, MI and product of Inertia in solving the practical problems under static behavior.	H			M				M				M
		Ability to apply the concepts of mass moment of Inertia in solving the practical problems under static behavior.	H			M				M				M
		Ability to analyse the truss applications.		H	M	M				M				M
		Ability to analyse the principle of virtual work to static problems.		H	M	M				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			M	M			H		
		Ability to find the importance of the formality in communication.			M	M			M			H		
		Ability to equip with critical thinking, writing, listening and acquires the ability to work in teams.	M	M	M	M		M				H		
		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			M			H	M			H	M	

		formal social and professional situations.												
		Ability to meet the requirements of corporate communication.		M	M		M		M			H		M
		Ability to make use of them in their respective professional fields.		M	M		M		M			H		M
GR14A1026	**IT Workshop**	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 application.	M	H			H			M			M	
		Ability to install different software.	M	M	H		M				M			
		Ability to implement hardware and software in troubleshooting software related problems.	M	M		H	M							
		Ability to explore the internet for information extraction and other innovative applications.	M	M	H		M				M			
		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			
		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						M	M		
		Ability to measure the strength of an acid present in secondary batteries.						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		
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								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
		Ability to differentiate between ODE and PDE and acquire the skill of finding analytical solutions of such equations.	H	M	M	M								M
		Ability to calculate definite integral values using Beta and Gamma Functions.	H	M	M	M								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								M
		Ability to solve problems on function optimization with and without constraints.	H	M	M	M								M
		Ability to apply the	H	M	M	M								M

		knowledge of multiple integrals in solving problems in vector fields.												
GR14A1004	**Numerical Methods**	Ability to explain the distinction between analytical and approximate solutions arising in mathematics.	H	H	M	M								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.	M	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								M
		Ability to solve problems related to cubic spline fitting and approximation of functions using B-splines and least squares.	H	M	M	M								M
		Ability to develop the skill of finding approximate solutions to problems arising in linear differential equations.	H	M	M	M								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	M								
		Ability to describe the basic concepts of Acoustics and acoustic quietinicy	M	H	M	M		M						
		Ability to associate with the latest developments in	M	H	H	M								M

		physics like lasers.												
		Ability to differentiate properties and applications of various materials.	M	H	M	M								
		Ability to extend the knowledge about nanotechnology.	H	M	M	M								
		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 communication through fiber optics.	M	H	M	M								M
GR14A1005	**English**	Ability to improve the English Language proficiency with an emphasis on LSRW skills.			M				M	M		H	M	
		Ability to study the academic subjects with better understanding.			M	M		M				H		
		Ability to develop and read a wide range of text and understand 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			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
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				M			M	M		M
		Ability to use the programming concepts, c-	M	M							M	M		M

		library and generate code for a given problem.												
		Ability to apply sorting and searching algorithms for real time scenario.	M	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							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 dynamic behavior.	H	M		M				M				M
		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				M				M
		Ability to assess the concepts of vibrations to the rigid bodies associated with dynamic behaviour.	H	M		M				M				M
GR14A1025	**Engineering Worksh**	Ability to design and model different prototypes in the carpentry trade such			H		M		M				M	

	op	as Cross lap joint, Dove tail joint.												
		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	M					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 knowledge and to imply it in a practical manner with respect to analyze various circuits and its components.	H	H							M			
		Ability to analyze the behavior of various materials for its optimum utilization.	H	M	M									
		Ability to assess various communication	H	M	M	M								

		mechanisms and their usage in a practical manner.												
		Ability to draw the relevance between theoretical knowledge and behavior of magnetic materials and their applications.	H	M	M						M			
		Ability describe the characteristics and the behavior of various dielectric materials and their usage in daily life.	H	M	M									
		Ability to provide the students with 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								
GR14A1028	**Computer Programming and data structures Lab**	Ability to practice algorithms to solve real world problems.	M	H				M			M			M
		Ability to analyze and resolve a given problem.	H	M				M			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										M
		Ability to compute the basic operations of stacks and queues.	M	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 Civil Engineering

Code	Subject	Course Outcomes	Programme Outcomes											
			a	b	c	d	e	f	g	h	i	j	k	l
II Year I Semester														
GR11A2001	**Building materials & construction & planning**	8. Ability to apply knowledge of science and engineering for eco-friendly construction.	H							M			M	
		Ability to recognize to control cost of construction.			M		M			M				M
		Ability to identify to create awareness about green building practice.			M			M		M			M	
		Ability to compare the estimate costs for labor, materials, and equipment for a construction project using industry-standard software and procedures.	H	M		M								
		Ability to recognize to work in a team environment to analyze existing building types, develop a list of programmatic requirements, sketch a	M				H					M		

		schematic design, and use this information to develop drawings and models sufficient to present a competent architectural design solution.													
		Ability to discuss the fundamental knowledge of the systems and processes used to construct the built environment, including an understanding of industry terminology.		H		M									M
		Ability to apply knowledge of science and engineering for eco-friendly construction				H	M	M	M						
GR11A2036	**Electrical Technology**	Ability to learn how to develop and employ circuit models for elementary electronic components.	H	M		M									
		Ability to define ac and dc circuits solving.	H	M		M									
		Ability to find role of electrical machinery in simple & complex applications.	H		M			M							
		Ability to demonstrate the	M	H	M	M									

		designing and conducting experiments, to analyze and interpret data, and also provides the ability to visualize and work on laboratory and multidisciplinary tasks.												
		Ability to measure the fundamental electrical quantities.	H	M		M								M
GR11A2004	**Strength of Materials – I**	Ability to determine the stresses, strains, elastic constants such as modulus of elasticity, modulus of rigidity, Poisson's ratio and bulk density. And also to determine the strain energy for various types of loading.	H	M	M	M			M					
		Ability to generate the shear force, bending moment diagrams and identify the point of contra flexure for different types of beams such as cantilever, simple supports and fixed beams etc. with different	H		M	M			M					

		loading.												
		Ability to formulate the bending equation and shear equation to calculate the bending stresses and shear stresses for the different sections of the structural members.	H		M	M			M					M
		Ability to evaluate the slope and deflection of different beams for the different end conditions and loading by using different methods such as double integration and moment area method etc.	H		M	M			M					M
		Ability to analyze the principal and tangential stresses in the different planes by using analytical and graphical methods.	H	M	M	M			M					M
		Ability to uutilize appropriate materials in design considering engineering properties, sustainability.	M		M	M			H					M
		Ability to	H		M	M			M	M		M	M	

		perform engineering work in accordance with ethical and economic constraints related to the design of structures.												
GR11A2005	**Surveying**	Ability to apply basic mathematical and science knowledge to understand and solve engineering problems.	H			M				M				M
		Ability to utilize software tools in G.P.S applications.		M			H				M			M
		Ability to draw a plan and setting out the frame work in the field.	M	H				M	M					
		Ability to recognize the scope for entrepreneurship .		M						M			H	M
		Ability to function as a member of a survey party in completing the assigned field work			M	M				M	H	M		
		Ability to illustrate the need for licensed surveyors to establish positioning information for property and	M		H	M		M				M	M	M

		structures												
		Ability to illustrate the need for accurate and thorough note taking in field work to serve as a legal record			M	H		M				M		
GR11A2003	**Fluid Mechanics**	Ability to list the various the properties of fluids. Knowledge to apply the principle of hydro static law and Pascal's laws.	H	M	M	M								
		Ability to compute the fluid pressure in different manometers and analysing usage in complex industrial processes.	H	M	M	M								
		Ability to assess the performance of notch, orifice, and mouth piece discharges. Recognize and formulate problems that are amenable to weirs for practical design.	H	M	M	M						M		
		Ability to articulate importance of extensive research in fluid mechanics, related Hydrodynamic flows, hydro	H	M	M	M				M				

		kinematics.												
		Ability to design the pipe networking application in irrigation and water distributions system.	H	M	M	M			M			M		
		Ability to identify different fluid equations in static and dynamic conditions, fluid boundary layer, laminar and turbulent flow.	H	M	M	M								
		Ability to analyze the role of fluid flows in a weirs, pipes lines, notches, orifices and mouthpieces can handle social and global needs.	H	H	M	H							M	
GR11A2007	**Fluid Mechanics Lab**	Ability to express the principle properties of fluids viscosity, surface tension etc. and their type of flows at static condition. Able to calculate the fluid pressure at different condition, friction losses.		H		H			M				H	
		Ability to design diameter, length require of a pipe in networking. An ability to find	H	M				M			M	M		

		the role of fluid flows in a weirs, pipes and identifying the laminar and turbulent flows for that require simple and complex applications can handle social and global needs.												
		Ability to calculate discharges through orifice, mouth piece and weirs useful for practical design	M		H				M			M		M
		Ability to articulate importance of extensive research in fluid mechanics, Hydrodynamic flows, static storage studies, aero dynamic studies etc.			H		M							
		Ability to design the real time application in irrigation and water distributions system. Able to calculate frictional losses in pipe and able to analyze the boundary layers influence in real time.		M	H			M						
		Ability to calculate the pipe line design (length diameter)			H		M				M			

		and trace out laminar and turbulent flows for municipal water distribution system.												
		Ability to recognize the value of water current in rivers, canal and drains etc.	M	M			M						H	
GR11A2008	**Surveying Lab – I**	Ability to identify conventional surveying tools such as chain/tape, compass, plane table, level in the field of civil engineering applications such as structural plotting and highway profiling.	M	M	H					M	M			
		Ability to take accurate measurements, field booking, plotting and the effects of small angular errors. Adjustment of errors can be understood.	M	H		M			M					
		Ability to plan a survey appropriately with the skill to understand the surroundings.	M		H				M		M			
		Ability to function as a member of a survey party in		M		H						M		

		completing the assigned field work.												
		Ability to measure differences in elevation, draw and utilize contour plots, and calculate volumes for earthwork.	M	H	M						M	M		
		Ability to design the road profile by Longitudinal and cross section levelling.	M	H		M		M			M	M	M	
		Ability to plot traverses or sides of building and determine the location of points present on field on a piece of paper.			H	M					M	M		
GR11A2006	**Computer Aided Drafting of Building Lab**	Ability to recollect and perform basic sketching techniques will improve.	H	M		M					M			
		An ability to draw orthographic projections and sections.	H		M		M		M		M			M
		Ability to use architectural and engineering skills will increase.	H	M	M		M	M			M			
		An ability to produce engineered drawings.	H			M			M					
		An ability to interpret with office practice	H		M	M					M			M

		and standards.												
		Ability to pass the CertificationExams.	H							M	M			
		Ability to demonstrate knowledge of current industry standards and codes.	H			M		M			M			M
II Year II Semester														
GR11A2010	**Probabilities & Statistics**	Ability to define probability and interpret probability by modeling sample spaces.	H			M				M				M
		Ability to construct the probability distribution of a random variable, based on a real-world situation, and to use it to compute expectation and variance.	H		M			M						M
		Ability to evaluate random processes which occur in engineering application governed by binomial, Poisson, exponential, normal, and uniform distributions.	H			M				M				M
		Ability to define descriptive statistics and statistical inference.	H		M			M						M

		Ability to discuss compute regression equations for data to make predictions.	H	M		M				M				M
		8. Ability to acquire the skill of using queuing techniques in the field of engineering.	H		M			M						M
		Ability to express Stationary and Ergodic process.	H	M		M				M				M
GR11A2011	**Strength of Materials – II**	Ability to define stresses in thin and thick cylinders under pressures, show stress distribution diagrams.	H	M		M								
		Ability to list the various stress in cylinders, and define Lame's theorems	H	M		M						M		
		Ability to differentiate between closed and open coiled helical springs	H		M									
		Ability to evaluate the buckling/failure load for axially loaded and eccentrically loaded columns.	H	M										M
		Ability to identify function of slenderness ratio in axially loaded columns.	H		M		M							M
		Ability to	H		M			M			M			

		explain the effect of equivalent length in long columns various end conditions.												
		Ability to state the torsional strength of structural members and also to design them to resist a given torque.	H		M			M	M					M
GR11A2009	**Hydraulics and Hydraulic Machinery**	Ability to express the properties in open channel flows. Define chezy, manning Bazins equations. design most efficient channel section.	H	M	M	M			M				M	
		Ability to identify, formulate and analyze by drawing the different types of surface profile in open channel, predict the types of channel slopes.	H	M	M	M			M				H	
		Ability to compare types of fluid flows in open channel and compute problems on specific energy.	H	M	M	M							H	
		Ability to design and analyse of centrifugal pumps Assess the performance	H	M	M			M				M	H	

		of pump by computing work done, power and efficiencies.												
		Ability to design Kaplan, Francis, Pelton wheel turbines in hydel plants. Evaluate the work done, power and efficiency of Hydraulics Machinery.	H	M	M			M	M			M	H	
		Ability to predict the force exerted on different types of vanes on moving and stationary condition. Evaluate work done, power and efficiency.	H	M	M			M				M	H	
		Ability to apply knowledge of models and proto type in complex applications that can handle social and global needs.	H	M	M			M				M	H	
GR11A2071	**Managerial Economics and Financial Analysis**	Ability to discuss on economics, demand and its determinants, exceptions, elasticity and forecasting.	M	H				M		M	M		M	
		Ability to explain the production function, the concept of Economies of	M	M				M		M	M		M	

		Scale, ISOCOSTS, ISOQUANS.												
		Ability to infer various costs, production and calculating Break Even Point.	M	M				M		M	M		H	
		Ability to explain various market structures, types of competition and pricing types.	M	M				M		M	M		H	
		Ability to describe characteristic features of forms of Business Organization and changing Business Environment in Post-Liberalization scenario.	M	M				M		M	M		H	
		Ability to describe about Capital types and Working Capital Requirements, Capital Budgeting like ARR, NPV, and PAYBACK method.	M					M		M	M		H	
		Ability to explain the accounting, double Entry Book Keeping, Preparing Journal, Ledger, Trading Account, P&L	M	M				M		M			H	

		Account, Balance sheet and analysis of Financial Ratios												
GR11A2012	**Structural Analysis**	Ability to determine deflections of beams and trusses using energy methods.	H	M	M		M							M
		Ability to analyze three and two hinged, circular and parabolic structure.	H	M	M		M							
		Ability to analyze indeterminate beams of 1st degree statically indeterminate using force method for Propped cantilever beams.	H	M	M		M							
		Ability to analyze indeterminate beams of 2nd and 3rd degree statically indeterminate beams using Clappeyorn's three moment theorem.	H	M	M		M							
		Ability to apply the Slope deflection, Moment distribution and Kani's methods to analyze statically indeterminate structures.	H	M			M							

		Ability to analyze the statically determinate and indeterminate structures using rolling load method.	H	M			M								
		Ability to analyze the statically determinate and indeterminate structures using influence line method.	H	M			M								
GR11A2014	**Strength of Materials Lab**	Ability to determine the important mechanical properties of materials	H		M				M			M		M	
		Ability to identify the stiffness of an elastic isotropic material	H		M	M			M			M	M		
		Ability to evaluate the theorem in engineering mechanics.	H			M			M				M		
		Ability to measure any substance's resistance to uniform compression.	M		H	M			M			M	M		
		Ability to resistance of various materials against abrasion.	H		M	M			M				M		
		Ability to design structures with the knowledge of stresses.	M		H	M							M		
		Ability to identify the	H		M	M			M				M		

		resistance of any material against high force or shock over a short time period.												
GR11A2013	**Hydraulics and Hydraulic Machinery Lab**	Ability to express the principle properties different types of flows in open channel flows.	M		H		M				M			
		Ability to find the role of fluid flows in open channels and identifying the critical and subcritical, super critical flows by that require simple and complex applications can handle.		H			M					M		
		Ability to articulate importance of extensive research in Hydraulics and Hydraulics Machinery.		H				M					M	M
		Ability to design the real time application in calculating the turbine efficiencies and power calculations.	M	H										M
		Ability to calculate the pipe line design (length diameter) and trace out laminar and turbulent	M		H				M			M		M

		flows for municipal water distribution system.												
		Ability to recognize the value of water current in rivers, canal and drains etc.	M	H		M				M			M	
		Ability to interpret the innovate techniques.	M		H		M		M			M		
GR11A2015	**Surveying Lab – II**	Ability to indicate the need for accurate and thorough note taking in field work to serve as a legal record.	H	M	M	M								M
		Ability to find the knowledge on modern survey equipment like theodolite, tachometry and total station to measure angles and distances.	H	M			M						M	
		Ability to express the principles and operation of the total station.	H	M			M	M					M	
		Ability to measure differences in elevation and calculate volumes for earthwork.	H	M	M		M	M		M		M		
		Ability to assess knowledge of mathematics, science, and engineering to	H	M		M	M			M		M		

		understand the measurement techniques and equipment used in land surveying.												
		Ability to calculate elevation differences using trigonometric leveling and corrections for curvature and refraction.	H	M	M		M					H		
		Ability to calculate area, volume, angles, distances, column marking and close a traverse using total station.	H	M			M			M		M	M	

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

Code	Subject	Course Outcomes	Programme Outcomes											
			a	b	c	d	e	f	g	h	i	j	k	l
III Year I Semester														
GR11A3029	**Concrete Technology**	Ability to list the grades of cement, the types of cement and the types of different admixtures.	H	M			M	M		M				
		Ability to classify the types and the physical properties of aggregates.		H			M	M		M				
		Ability to classify the physical properties of		H	M			M		M				

		fresh and hardened concrete and also about the manufacturing of concrete.												
		Ability to estimate the creep and shrinkage of concrete and how to conduct the different tests such as compression and tension etc. on hardened concrete.	H	M			M	M						
		Ability to design the mix proportions for the specific work for required strength and workability with available materials at work place.	M	M	H									M
		Ability to distinguish the special concretes like Self compacting concrete, Fibre reinforced concrete, Polymer concrete and Light weight concrete etc.		H	M		M			M				M
		Ability to assess on development of high strength and high performance concrete.	M	H	M		M	M						M
GR11A3037	**Design of Reinforced**	Ability to design the reinforced	H		M	M				M				M

	Concrete Structures	concrete structures with an acceptable probability and performing satisfactorily during their intended life by using Limit state method.												
		Ability to design the reinforced concrete structures which sustain all loads and deform within the limits.	M	H	M									M
		Ability to design the reinforced concrete structures which are durable by properly detailing the reinforcement.	H	M	M	M								M
		Ability to design the reinforced concrete BEAMS for the given loads and moments.	M	M	H				M	M				M
		Ability to design the reinforced concrete columns for the given loads and moments.	M	M	H				M	M				M
		Ability to design the reinforced concrete footings for the given loads.		M	H				M	M				M
		Ability to design the reinforced concrete slabs, stairs and canopy for the given loads and		M	H				M	M				M

		moments.												
GR11A3055	**Geotechnical Engineering – I**	Ability to identify basic Engineering properties of soil and relate them with Civil Engineering practices	H	M	M							M		
		Ability to evaluate various experiments to determine the geotechnical properties of soil.	M	H					M					M
		Ability to identify, formulate and solve various problems in geotechnical engineering.	M	H		H								
		Ability to analyse the mechanism and behavior of soil under various field situations		H	M				M					M
		Ability to identify field equipment used in improving soil properties		M	H				M					M
		Ability to articulate importance of extensive research in geotechnical engineering	M			M		M					M	H
		Ability to analyze soil mechanics for development of construction sites both technically and			H	M		M	M			M		

		economically.												
GR11A3097	**Water Resources Engineering - I**	Ability to measure, estimate and process rainfall data, runoff data, evaporation data, evapotranspiration data and infiltration data.	M	M	H									
		Ability to develop in a region, direct runoff hydrograph, unit hydrograph, S-Curve hydrograph and synthetic unit hydrograph.	M		H	M								
		Ability to calculate the discharge of radial flow to wells in a region of confined and unconfined aquifers by determining the aquifer parameters by field tests and pumping tests.	M		H	M								
		Ability to design a suitable irrigation method depending on soil, water and plant conditions on the field		M	M			H						
		Ability to develop irrigation schedules and irrigation efficiencies for		M	M		M	H						

		farmers on the field.												
		Ability to design irrigation canals by Kennedy's theory, Lacey's theory and IS standards.	M	M	H	M								
		Ability to calculate design discharge by SCS Curve Number Method and analyze the regional flood frequency, Measure and estimate stream flow by methods of stream gauging in a watershed.	M	M	H	M								
GR11A3002	**Advanced Structural Analysis**	Ability to calculate the degree of static and kinematic indeterminacies of a given structure such as beams, truss and frames.	M	H		M	M							
		Ability to determine the final end moments in indeterminate beams and frames using Slope deflection, Moment distribution and Kani's methods	M	H		M	M							M
		Ability to construct BMDs for beams and frames using Slope deflection, Moment	M	H		M	M					M		

		distribution and Kani's methods												
		Ability to determine the final end moments in portal and gable frames with sway using Slope deflection and Moment distribution methods.	M	H		M	M					M		
		Ability to analyse the indeterminate beams and frames by stiffness matrix method	M	H		M								M
		Ability to analyse the indeterminate beams and frames by flexibility matrix methods	M	H		M								M
		Ability to estimate the bending moments and axial forces in multistory frames using approximate methods of analysis	M	H		M								M
GR11A3030	**Concrete Technology Lab**	Ability to identify the suitable materials used for concrete for particular purpose			H									
		Ability to gauge the quality control of concrete		M		H		M						

		Ability to identify, describe and carry out the main laboratory tests relevant to the use of concrete on site.										M	M	
		Ability to recognise the theoretical concepts learned in the courses concrete technology and building materials and construction planning.	M	H										
		Ability to design normal concrete mixes.			M	H							M	
		Ability to predict properties of different materials used for the construction.			M	H			M				M	
		Ability to interpret the properties in tern to design or invent the new materials.		M	M	H		M	M					
GR11A3056	**Geotechnical Engineering 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	M	H		M				M				

		applications.												
		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 geotechnical properties.	M	H		M				M	M	M		
GR11A2073	**Advanced English Communication Skills Lab**	Ability to explore and utilize different forms of communication to convey one's ideas in various professional contexts.		M	M	M					H			M
		Ability to engineer self-presentation and socializing.				M		M			M	H		M
		Ability to train to crack various international online exams like GRE, TOEFEL and IELTS.										H		
		Ability to learn various forms of Technical Writing for effective		M		M	M					H		

		professional documentation.												
		Ability to design and build various behavioral aspects in relation to problem solving.		M	M	M		M				H		
		Ability to gain expertise to share opinions and express views precisely.		M		M				M		H		
III Year II Semester														
GR11A3038	**Design of steel structures**	Ability to identify materials involved in the manufacture of steel and various methods of making steel.	H		M	M				M				M
		Ability to identify different types of connections used in the connections of different elements of steel structures.	H		M	M				M				M
		Ability to design steel tension members for the given loads.	M	M	H			M	M				M	M
		Ability to design compression members for the given loads and moments.	M	M	H	H		M	M				M	M
		Ability to design the steel eccentric connections for the given loads and moments	M		H	H		M	M				M	M

		Ability to examine plastic analysis of structures.	H		M	M								M
		Ability to recognize design methodologies and the concept of codes.	H		M	M								M
GR11A3050	**Environmental Engineering**	Ability to design and implement a drinking water supply system for a residential community	M		H			M					M	
		Ability to identify the cause of outbreak of epidemics and eradicate.		H				M		M				M
		Ability to setup drinking water supply and waste water collection system for a town.	H		M	M	M							
		Ability to identify safe disposal methods for wastewater	M	M	H	M		M						
		Ability to design suitable treatment for wastewater.			H		M	M	M					
		Ability to identify suitable sources of water for a public water supply system.		H	M		M						M	
		Ability to resolve all operational and maintenance issues of water		M		H	M							M

		supply and sanitary engineering.												
GR11A3098	**Water Resources Engineering - II**	Ability to estimate and calculate the inflow, outflows from the reservoir as well its capacity by using mass curve techniques.	M		H				M		M			
		Ability to design and analyze the different types and components of various dams pertaining to corresponding boundary conditions.	M	M	H						M			
		Ability to interpret performance, safety and stability of the gravity dam	M	M	H						H			M
		Ability to calculate flow through the earthen dams and also corresponding remedial measures to prevent more seepage through dams, various irrigation structures.	M	H	M		M							
		Ability to design various diversion head works by using Blighs and Khoslas theory	M	M	H		M							
		Ability to assess		M	H					H	H	M		

		the efficiency of performance of any component of hydraulic structure like a weir, barrage, CD work, etc.												
		Ability to indicate the different types of irrigation structures along with their designs and analysis by using different evaluation methods.		M	H	M	M					M	M	
GR11A3048	**Engineering Geology**	Ability to recognize the importance of geology from civil engineering point of view.	H	M				M						M
		Ability to find the physical properties of minerals and their role for common rock forming.	H	M	M	M		M				M		M
		Ability to distinguish features of igneous, sedimentary and metamorphic rocks.	H	M	M	M		M				M		M
		Ability to distinguish various geological structures.	H	M	M	M		M				M		M
		Ability to analyse the failures of dams, reservoirs and tunnels due to	H			M		M						M

		geological reasons.												
		Ability to indicate importance of ground water, subsurface flows, water tables.	H			M		M	M					M
		Ability to discuss about the rocks, minerals and geological structures that can be used for civil engineering point of view.	H			M		M			M			M
GR11A3093	**Transportation Engineering**	Ability to apply basic science principles in estimating stopping and passing sight distance requirements	H			M								H
		Ability to compare factors influencing road vehicle performance characteristics and design.			M				M				H	
		Ability to review the level of service for selected road segments.			M				M			H		
		Ability to organize the basic traffic signal phasing and timing plan.			H		M	M						
		Ability to recognize the importance of horizontal and vertical alignment of the		H			M					H		

		highway												
		Ability to illustrate the basic traffic stream parameters and models, traffic flow models, and queuing theory.	M			H	M							M
		Ability to present a systems approach where the interaction of humans and the vehicles and their impact on the society and transportation.		M		H		M						
GR11A3043	**Disaster Management and Mitigation**	Ability to identify different problems by various disasters and to predict solutions.	H	M	M			M			M			
		Ability to develop strategies to decrease economic loss by relating with previous disaster data		M	M			H	M					
		Ability to help in applying engineering technology to give a solution to mitigate loss caused due to disasters.			M	H		M	M				M	
		Ability to illustrate science and geology to understand the problems.	H	M		M		M						
		Ability to						H	M	M		M		M

		express councils present globally for the evaluation and mitigation of disasters.												
		Ability to identify latest technologies to resolve problems due to disasters.				M	H	M					M	
		Ability to extend various research programs	M			M		H	M					
GR11A3021	**Bridge Engineering**	Ability to illustrate conceptual design for short, medium and long span bridges	M		H									
		Ability to analyse structural behavior of different longitudinal and transverse bridge types		H				M						
		Ability to design bearings, joints, piers and abutments.		H	M									
		Ability to compare composite and slab deck bridges.			M	H							M	
		Ability to evaluate life-cycle costs of bridges.	H			M							M	M
		Ability to recognize the importance of different loadings that are acting on	H			M					M			

		bridges.												
		Ability to demonstrate sizing of bridge elements, i.e. develop a clear understanding of conceptual design.		H		M			H					M
GR11A3049	**Engineering Geology Lab**	Ability to identify various minerals and their properties.		M	M	H			M			M		M
		Ability to identify various rocks and their properties.		H	M				M			M		
		Ability to prepare and interpret various maps of geological structures like faults, folds, beds and unconformities.		M	H			M						
		Ability to resolve some simple structural Geology.		M	H			M	H					
		Ability to understand the importance of geological structure for any constructions.		H	M		M	M						
		Ability to demonstrate the effect of water tables under any civil structures.		H	M		M			M		M		
		Ability to understand how various rocks and minerals used in the industries.		H		M	M					M		
GR11A3051	**Environmental**	Ability to	H	M		M					M			M

	Engineering Lab	measure physical properties of surface and subsurface water.												
		Ability to measure biological properties of surface and subsurface water.	H	M		M					M			M
		Ability to measure chemical properties of surface and subsurface water.	H	M		M					M			M
		Ability to innovate techniques to improve surface water quality.	H	M										M
		Ability to recognize to improve skills in water analysis.		H				M		M				
		Ability to identify social responsibility to eradicate water borne diseases.			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		M			M					H		

		report and present in the seminars/ conferences.												
		Ability to develop small scale models and present in the workshops and seminars.		M	H	M		M			M			
		Ability to extend the industrial practices being followed in both design and analysis.		H	M	M			M					
		Ability to differentiate various codes/standards followed in industry.	H					M	M					
		Ability to recognize the organizational structure of an industry.		M		H				M				M

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

Code	Subject	Course Outcomes	Programme Outcomes											
			a	b	c	d	e	f	g	h	i	j	k	L
IV Year I Semester														
GR11A4046	**Geotechnical Engineering – II**	Ability to list the various soil exploration techniques and interpret the resulting soil profiles.	M	H		M					M			
		Ability to analyze slope stability and design of earth retaining walls.	M	H		M		M						
		Ability to apply	H	M		M				M		M		

		bearing capacity equations for shallow and deep foundations and to evaluate rate of settlement.												
		Ability to choose a suitable foundation based on soil properties for various soils.		M		H						H		M
		Ability to identify and solve foundation related engineering problems.	M	H		M		M						
		Ability to estimate pile and pile group capacity for any kind of soil including group efficiency and negative friction.	H	M		M								M
		Ability to explain the functions and design criteria of well foundations.	M		H			M		M				M
GR11A4040	**Estimating & Costing**	Ability to express the cost management discipline and process.	H	M	M					M				
		Ability to recognize potential pitfalls and understand avoidance strategies.	M	M	M	H								
		Ability to use a cost management estimation and control plan.	M	M	M	H				M				
		Ability to recognize the process and importance of cost estimation, cost budgeting and cost control.	M	M	M	H				M				
		Ability to describe	M	M	M	H				M				

		some problems often encountered in collecting data for cost estimation.												
		Ability to estimate correctly the quantity of steel and form work.	M	M	M	H				M				
		Ability to interpret the process and importance of valuation of buildings and other structures.	M	M	M	H				M				
GR11A4100	**Remote Sensing & GIS**	Ability to describe the fundamental concepts of Geographic Information Science and Technology.		H	M	M			M				M	
		Ability to demonstrate proficiency in the basic functions of geospatial software.		H	M		M				M			
		Ability to demonstrate awareness of fundamental remote sensing and spatial analysis techniques.		M	H		M			M				M
		Ability to demonstrate basic proficiency in map creation and design principles, including thematic map display, employment of map projections, and cartographic design.		M	H				M		M			M
		Ability to demonstrate proficiency in the creation and acquisition of spatial data.		H	M				M	M	M			
		Ability to analyze			M		H	M		M				

		and understand various topo maps.												
		Ability to apply Remote sensing knowledge for various civil engineering applications.		M		H	M			M		M		
GR11A4048	**Ground Water Development & Management**	Ability to enumerate the porosity, specific yield and specific retention of aquifer.	H	M	M		M							
		Ability to calculate the storage coefficient and transmissivity of aquifers and to derive differential equation governing groundwater flow in three dimensions in Cartesian and Polar coordinates.		H	M		M	M						
		Ability to examine the pumping test data in steady and unsteady groundwater flow towards a well in confined and unconfined aquifers using Dupuit's and Theim's equations.		M	H		M	M					M	
		Ability to appraise surface and subsurface methods of exploration of investigation of groundwater.	H	M			M	M						
		Ability to assess the methods of recharge of groundwater using GIS and Remote sensing.	M	M	H		M							
		Ability to compile dynamics of saline water intrusion and	H		M		M	M				M		

		to manage the groundwater basin.												
		Ability to synthesize the overall concepts and procedures necessary for the development and management of ground water resources.	H		M	M					M		M	M
GR11A4093	**Prestressed Concrete**	Ability to identify the general mechanical behavior of prestressed concrete.	**M**	H		M	M							
		Ability to analyze transfer and development length as well as prestress losses.		H			M					M		
		Ability to design calculations to predict service behaviour of prestressed concrete structures, accounting for the time-dependent effects of concrete creep and shrinkage.	M		H					M				
		Ability to design of the ultimate strength of prestressed concrete structures.	M		H		M	M				M		
		Ability to analyze of prestressed concrete structures to satisfy relevant Design Standards.	M	H			M						M	M
		Ability to establish with the prestressed concrete fabrication and construction process.			H									

		Ability to apply knowledge of prestressed concrete models and sections in complex applications that can handle social and global needs.	M	M	M	H								
GR11A4081	**Optimization techniques in Civil Engineering**	Ability to formulate mathematical models for the problems in Civil Engineering.	H	M	M	M								
		Ability to define major limitations and capabilities of deterministic operations research modeling to relate with industry or government.	M			H		M						
		Ability to analyze problems using linear programming and other mathematical programming algorithms	H	M		M							M	
		Ability to deal with real world problems of Network analysis, Project Management, for optimal solutions in civil engineering	H		M			M	M					
		Ability to classify different techniques to solve Non-Linear Programming Problems	M	M		H			M					
		Ability to use search techniques methods, which are based on iterative methods, to find optimal solutions of Non-Linear	H	M		M			M					

		Programming Problems which helps in understanding multistage decision problems.												
		Ability to discuss different Software application for optimization techniques to validate existing methods.	M			M	H	M					M	
GR11A4059	**Irrigation Design & Drawing**	Ability to identify the importance of various irrigation & Hydraulic structures.			H	M		H	M					
		Ability to determine the applicability of various structures to be proposed at the site.	M		H	M					M			
		Ability to calculate the various components of hydraulic structures for the given data.	M	M	H									
		Ability to design hydraulic structures at any scale.	M	M	H		M							
		Ability to analyze the various hydraulic structures like Canal regulator, under tunnel etc.		M	H									
		Ability to design and draw the hydraulic structures using Q-CAD tool	M		M		H			M				
		Ability to evaluate different types of hydraulic structures, their design and drawings using various drafting tools		M	M		H			M				M
GR11A4042	**Finite**	Ability to identify	H			M					M			

	Elements Methods	mathematical model for solution of common engineering problems.												
		Ability to formulate simple problems into finite elements.	M		M	H					M			
		Ability to define basic aspects of finite element technology, including domain discretization, polynomial interpolation, application of boundary conditions, assembly of global arrays, and solution of the resulting algebraic systems		M		H			M					
		Ability to compare the solutions obtained from finite element analyses	H	M				M						
		Ability to formulate finite element analysis equation	M	H							M			M
		Ability to evaluate finite element software to solve engineering problems in Solid mechanics, fluid mechanics and heat transfer.	M	H		M	M							
		Ability to solve element matrix equation by different methods by applying basic laws in mechanics and integration by parts.	H			M					M			
GR11A4128	**Water Resources**	Ability to enumerate the	H		M	M			M					M

	system Planning & Management	fundamental concepts systems, optimization techniques, objective function and constraints.												
		Ability to alculate the applicability of Linear Programming models in various different fields.	M	H	M	M					M			
		Ability to examine the concept of Belman's Principle for both forward and backward recursive dynamic programming.	M	H	M									M
		Ability to appraise the concepts of simulation in Water Resources Engineering.	M	H	M		M							M
		Ability to assess the concepts of cost benefit analysis in Water Resources Economics and Management.	M	H	M									M
		Ability to compile different types of the systems, optimization techniques and the concept of simulation.		H	M		M	M					M	M
		Ability to synthesize different system planning techniques and their simulation methods in the strategic management of Water resources available.	M	H				M				M		
GR11A4047	**Ground Improvement**	Ability to identify dewatering	H		M									M

	Techniques	technique for the field related problems.												
		Ability to discuss grouting methods in civil engineering applications.	M	H		M								M
		Ability to assess the field problems related to problematic soils by adopting various ground improvement techniques	M	H		M								M
		Ability to differentiate reinforced earth retaining structures	M	H	M	M								M
		Ability to classify various techniques for stabilization more technically and economically by using geotextiles.	M	H		M		M	M					
		Ability to recognize the suitability and practicability required for various ground improvement methods.	M	H		M		M	M					M
		Ability to assess the importance of extensive research in various ground improvement techniques.	M		H	M						M		M
GR11A4050	**Highway Materials Lab**	Ability to discuss the required properties of road aggregate and bitumen.	M	M		M		M		H				
		Ability to estimate the feasibility of materials.		M	M	H								
		Ability to clarify,				H					M			

		how to improve the quality of materials used for highway.												
		Ability to conduct different test to be conducted on highway materials and to assess the quality of the road materials.	M	H	M									
		Ability to illustrate to design the bituminous mix.	M	H		M					M			
		Ability to classify able to select materials with properties those comply with state and national specifications.	H			M		M					M	
		Ability to compare the test results	H	M		M								
GR11A4101	**Remote Sensing & GIS Lab**	Ability to describe the fundamental concepts of Geographic Information Science and Technology.		H		M		M				M		
		Ability to demonstrate proficiency in the basic functions of geospatial software.	H		M	M		M						
		Ability to find awareness of fundamental remote sensing and spatial analysis techniques.	H	M		M		M						M
		Ability to evaluate basic proficiency in map creation and design principles, including thematic map display, employment of map projections, and cartographic design.	H		M		M			M				
		Ability to analyze		M		H		M					M	

		proficiency in the creation and acquisition of spatial data.												
		Ability to recognize the topo maps prepared by survey of India.	H		M			M						
		Ability to determine the overlaying of different maps in GIS.		H			M		M					M
IV Year II Semester														
GR11A4020	**Construction Technology & Project Management**	Ability to assemble and use various construction schedules to manage a construction project	M	M	H	M							M	
		Ability to identify different construction methods and its application based on the field requirements		M		H		M			M		M	
		Ability to associate with various construction equipment used in the construction site				H					M			
		Ability to apply probability, statistics, and decision analysis in project planning, quality systems and safety management of construction activity.	H	M	M								M	
		Ability to prepare Cost Estimates and documentation and relate with various types of constructions			M	M						M	M	M
		Ability to express			M	H			M				M	

		contract, tenders and bidding practice in constructions												
		Ability to infer with Construction Law and Arbitration to solve legal problems in constructions			M			M		H		M	M	
GR11A4002	**Advanced Structural Design**	Ability to analyze the different loads on Trusses and their Components	H	M	M	M	M			M				
		Ability to design of Industrial Roof Trusses and their Components.	H	M	M		M			M				
		Ability to design Gantry Girder.	H	M	M		M			M				
		Ability to design Steel Bridges.	M	H	M		M			M				
		Ability to design Steel Water Tanks.	M	H	M		M			M				
		Ability to design Plate Girder.	M	H		M	M			M				
		Ability to identify and resolve the various problems related to Steel Structures.	M	H		M	M			M				
GR11A4003	**Airport, Docs & Harbour Engineering**	Ability to identify and describe the components of waterway and airway transportation vehicles.		M	H			M						
		Ability to compare various alternative structures of docks and airports.			H				M		M			
		Ability to interpret planning and design principles of some of the components of waterway and airway	M			H							M	

		transportation.												
		Ability to describe different imaginary surfaces in airport.	H	M			M							
		Ability to analyze the characteristics of Aircraft.	H		M	M								
		Ability to record and reproduce of data to draw wind rose diagrams.	M	M					M		H			
		Ability to evaluate the length of runway based on different design parameters.	H		M								M	
GR11A4129	**Water Shed Management**	Ability to examine and recommend principles for protection, management, and monitoring watersheds.	H				M	M						
		Ability to explain measure, monitor, and assess watershed health in other regional streams.	M			H			M	M				
		Ability to demonstrate and develop suitable restoration work plans.	M			H		M						
		Ability to illustrate broad-based theories and applications in the watershed management field to solve problems and address issues in the profession.	M					M						
		Ability to evaluate the sediment delivery risk level for erosion problem areas.	M		H		M							

		Ability to explain the physical and biological processes of watersheds.	M		M	M								
		Ability to discuss different types of the management systems.		M	M	H	M						M	M
GR11A4039	**Environmental Impact Assessment**	Ability to identify elements of community and environment likely to be affected by the proposed developments.	M			H		M	M			H		
		Ability to identify the negative impacts and propose the provision of infrastructure or mitigation measures.			M	H			M	M				M
		Ability to develop current EIA methods and the techniques.	M	H				M						
		Ability to develop current assessment methods, environmental monitoring systems and legislation.	M				M		H					M
		Ability to assess process of environmental impact modelling and prediction as a design tool.	M	M			H			H				
		Ability to interact with experts of other fields to assess the impact.									M	M	H	
		Ability to present EIA report in a way understandable by everyone.				H	M				M	M		
GR11A3068	**Management Science**	Ability to impart Knowledge on		M		M		M			M		H	

		Management its functions, styles importance and various theories of Taylor, Maslow, McGregor and Hertzberg.												
		Ability to explain the concept of Departmentation, Decentralization, Organizational Structure like Line, Staff, Committee, Matrix, Lean, Flat their merits and demerits.	M	M		M					M		H	
		Ability to define and describe various plant layouts, methods of Production, method study & work measurement with X chart, R chart, C chart etc.	M	H		M					M		H	
		Ability to describe and explain the significance of Inventory control, SCM, Marketing and its mix and channels of Distribution.	M	M	M						M		H	
		Ability to describe concept of HRM, functions of HR manager, Recruitment, Selection, Training, Placement, Salary administration, Appraisal and Grievance Handling.		M	M						M		H	
		Ability to perform project management and its techniques	M		M	M					M		H	

		like PERT,CPM, critical path and project crashing												
		Ability to explain the importance of strategic management, corporate planning, SWOT Analysis and concepts like JIT, TQM, Six Sigma, CMM, ERP, BPO, Kaizen, Benchmarking and Balanced Score Card.	M	M									H	
GR11A4082	**Pavement Analysis & Design**	Ability to illustrate highway design methods, constraints and controlling factors.		M	H			M						
		Ability to use road software tools for the design and maintenance of pavements.			H	M				M			M	
		Ability to apply the design standards in designing principal elements of the highway.			H		H				M			
		Ability to collect necessary information like volume and axle load data to design flexible and rigid pavements.		M		H							M	
		Ability to predict the resource constraints and allows to utilize the available materials in a sustainable way.			H			M			M	M		
		Ability to examine the basic parameter of traffic	M	M		H								

		engineering and the methods which helps to estimate those parameters.												
		Ability to recognize the major failure modes of flexible and rigid pavement and helps in maintaining them properly.				H			M				M	
GR11A4116	**STAAD Lab**	Ability to analyze and design the various types of Beams for the different loads.	M	H	M	M	M							
		Ability to analyze and design a 2D frame of Multi-Storied Building.	M	H	M	M	M							
		Ability to analyze and design a 3D frame of Multi-Storied Building.	M	H	M	M	M							
		Ability to analyze and design a RCC Over Head tank	M	M	H	M	M							
		Ability to analyze and design the different types of Steel Trusses	M	M	H	M	M							
		Ability to analyze and design a Steel Tower with arms on both sides	M	M	H	M	M							
		Ability to analyze and design a Steel Deck Bridge	M	M	H	M	M							
GR11A4110	**Seminar**	Ability to prepare a technical report.		M		M					M	H		
		Ability to demonstrate the fundamentals.	H	M	M	M								
		Ability to develop technical skills.	H		M	M								
		Ability to prepare for technical presentation in the				M	M					H		

		conferences.												
		Ability to develop presentation skills including preparation of audio visual aids.					M			M		H		
		Ability to find public speaking skills and listening comprehension.		M						M		H		
GR11A4018	**Comprehensive Viva**	Ability to assess knowledge in the subject and the project.	H	M	M	M								
		Ability to practice technically.		H	M	M								
		Ability to integrate technical question through all the years of study.		H	M	M								
		Ability to express and communicate.					M			M		H		
		Ability to evaluate technical confidence.		H	M	M								
		Ability to improve communication.					M					H		
		Ability to validate the knowledge gained through years of study.		M	H	M								
GR11A4097	**Project Work**	Ability to interpret ideas and thoughts into practice in a project.	M	H	H	M								
		Ability to analyze the gap between theoretical and practical knowledge.	M	H	M			M						
		Ability to compose technical presentation in the conference.							M	M	M	H		
		Ability to develop organizational skills and team work.						M		M	H	M		
		Ability to debate for					M			M	H	H		

		technical discussions.												
		Ability to prepare for publishing papers in journals.		H	H	H	M			M	M	H		
		Ability to propose for the patent rights for the projects.		M	M			M						

M: Medium H: High

2.2.2 Explain how modes of delivery of courses help in attainment of the POs (10)

(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 programmes. 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	Programme 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)

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

Course assessment is done through internal and external exams and indirectly through student feedback and student end of year survey. Performance of the student in the examinations, seminars, projects etc indicates the level of attainment of knowledge and POs

Assessment Tools		
Delivery Methods	**Student feedback**	**Student end of year survey**
Lectures/Presentation	Satisfactory	Satisfactory
Guest Lecturers/Expert Lecturers	Satisfactory	Satisfactory
Seminars/Workshops	Satisfactory	Satisfactory
Project Work	Satisfactory	Satisfactory
Road Shows	Satisfactory	Satisfactory
Mentoring and Counseling	Satisfactory	Satisfactory
Educational/Industrial Tours	Satisfactory	Satisfactory
Certification Courses	Satisfactory	Satisfactory
Research Projects	Satisfactory	Satisfactory
e-Resources	Satisfactory	Satisfactory

Satisfactory - in point scale of 5; 3 and above is satisfactory

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

(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.

All labs in the Programme are designed as per the curriculum requirements as well as to attain Programme Educational Objectives (PEOs) with the help of Program Outcomes (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
GR11A2003:Fluid Mechanics	GR11A2007:Fluid Mechanics Lab
GR11A2009:Hydraulics and Hydraulic Machinery	GR11A2013:Hydraulics and Hydraulic Machines Lab
GR11A2005: Surveying	GR11A2008: Surveying Lab – I
	GR11A2015: Surveying Lab - II
GR11A2001: Building Materials, construction & planning	GR11A2006:Computer aided drafting of building Lab
GR11A2004: Strength of Materials I	GR11A2014: Strength of Materials lab
GR11A2011: Strength of Materials II	
GR11A3029: Concrete Technology	GR11A3030: Concrete Technology Lab
GR11A3055: Geotechnical Engineering	GR11A3056: Geotechnical Engineering Lab
GR11A3048: Engineering Geology	GR11A3049: Engineering Geology Lab
GR11A3050: Environmental Engineering	GR11A3051: Environmental Engineering Lab
GR11A4100: Remote sensing and GIS	GR11A4101: Remote sensing and GIS Lab
GR11A3093: Transportation Engineering	GR11A4050: Highway materials Lab
GR11A2012: Structural Analysis	GR11A4116: STAAD Lab

Description of Laboratories

Computer programming and data structures lab is exclusively used, with an area of 160 Sq.m, and it accommodates 65 students and sufficient exercises are conducted. It is equipped with computers, printers and software. Qualified faculty, staff with good condition of computer lab equipment has created an ambience for learning. In this lab students learn programming with C language and data structure through number of laboratory experiments. Find Fibonacci series, find prime numbers, find sum/multiplication, sorting, roots of

quadratic equation, tower of Hanoi etc. In this lab students learn how to use various tools for engineering applications.

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.

Fluid Mechanics and Hydraulic Machinery lab is exclusively used, with an area of 400 Sq.mt, and it accommodates 36 students and sufficient exercises are conducted. Equipment like impact jet apparatus, Venturimeter, orifice notches, Bernoulli's equipment, pipe flow

analysis apparatus have been installed for studying flow velocities. Reciprocating and centrifugal pumps are installed to study their performance and characteristics. Pelton turbine and Francis turbine, Kaplan turbine are installed for studying the various operational characteristics like efficiency, run away speeds. The exercises will be very useful for performance analysis of critical equipment like hydel power plants, turbines and pumps.

Surveying lab is exclusively used, with an area of 106 Sq.mt, and it accommodates 36 students and sufficient exercises are conducted. Surveying lab is provided with all the equipment required for conducting land survey from basic chain survey to Total Station. Students will practice use of leveling instruments, compass, Theodolite, plane table, Tacheometer, Total Station etc. They will gain experience in taking field measurements and overcoming the obstacles in taking the measurements. Students learn presentation, interpolation and use of data collected in surveying.

Strength of Materials lab is exclusively used, with an area of 282 Sq.mt, and it accommodates 36 students and sufficient exercises are conducted. Material properties such as, tensile strength, hardness, impact strength, shear strength etc are experimentally measured using 200-tonne compression test, torsion, impact, Brinell and Rockwell Hardness testing machines. A 100 & 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 construction of structures. The students gain knowledge for determination of mechanical properties of materials and failure analysis.

Engineering Geology lab is exclusively used, with an area of 113 Sq.mt, and it accommodates 36 students and sufficient exercises are conducted. The lab has more than 200 specimens/sample minerals for the study of their physical properties. Also, more than 200 specimens of rocks are available for the study of their structures and textures. A microscope is available to study internal properties of the minerals.

Geotechnical Engineering lab is exclusively used, with an area of 282 Sq.mt. It accommodates 36 students and sufficient exercises are conducted. In this lab student will gain knowledge about testing various basic and engineering properties of soils. The lab is

equipped to test the soils for their basic properties like consistency limits, field and lab density, grain size analysis etc. Also engineering properties like permeability, consolidation, shear strength, unconfined compression, Tri-axial test, CBR, etc can also be tested which is essential to understand and to analyse the behavior of soils.

Highway Materials lab is equipped with all the equipment necessary for testing the quality of highway materials like aggregate, bitumen etc. It can accommodate 36 students with an area of 114 Sq.mt. Students will gain experience in testing the properties of materials like, resistance to abrasion, resistance against impact, ductility etc and assessing the suitability of materials.

Environmental Engineering lab is exclusively used, with an area of 114 Sq.mt, and it accommodates 36 students and sufficient exercises are conducted. In this lab student will gain knowledge of testing quality of water and wastewater. The lab is equipped with latest digital electronic equipment which directly give the concentration of certain parameters and glassware and chemicals necessary for manual assessment. A weather monitoring station is also available for the students.

Concrete Technology lab is exclusively used, with an area of 167.7 Sq.mt, and it accommodates 36 students and sufficient exercises are conducted. Lab has all the equipment necessary for testing the materials of concrete, freshly prepared concrete and hardened concrete. Students get the knowledge of testing of cement, sand and coarse aggregate. They also experience the testing of qualities of fresh concrete like workability, compaction factor etc. They also get exposed to test the properties of hardened concrete such as Compressive strength, tensile strength etc. Lab is equipped with 200tonne capacity compression testing machine, pan mixer, tilting drum mixer, Vee bee consistometer etc. The lab is equipped with Non-destructive testing equipment such as ultrasonic pulse velocity tester and Schmidt's hammer.

Computer lab is exclusively used, with 68 desktops loaded with ubuntu and 30 laptops loaded with Windows. The lab is established in an area of 226 Sq.mt. Students can practice drafting packages (CAD), structural analysis software (STAAD) and GIS software (QGIS). They will gain knowledge of finite element methods, optimization and other design software. They will have complete understanding of Computer graphics, computer aided geometry design, optimization, finite element method, structural analysis & Auto CAD. The knowledge of engineering software will be useful for design, modeling of engineering structures. The knowledge gained by using various types of software will enable the students to give best engineering solutions for any problem-solving situation.

Laboratory tasks towards the attainment of Programme Outcomes

Laboratory tasks	Type	Programme Outcomes
GR14A1024: Business Communication and soft skills		
Introduction to the sounds of English - Vowels, Diphthongs & Consonants	Demonstration	i, j, f
Situational Dialogues/Role-play	Demonstration	i, j, f
'Just A Minute' Sessions (JAM)	Demonstration	i, j, f
Describing Objects/Situations/People	Demonstration	i, j, f
Information Transfer	Demonstration	i, j, f
Debate	Demonstration	i, j, f
Telephone Skills	Demonstration	i, j, f
Giving Directions	Demonstration	i, j, f
GR14A1026: IT Workshop		
PC Hardware	Demonstration	c, l
Internet & World Wide Web	Demonstration	c, e
Productivity tools	Demonstration	b, c, e
Hardware Troubleshooting	Demonstration	c, l
Software Troubleshooting	Demonstration	c ,e
Orientation & Connectivity Boot Camp	Demonstration	c, e
Web Browsers, Surfing the Web	Demonstration	c, l
Search Engines & Netiquette	Demonstration	b, e, l
Cyber Hygiene	Demonstration	c, e
Productivity Tools	Demonstration	c, l
GR14A1030: Engineering Chemistry Lab		
Conductometry	Demonstration	a, b, f

Potentiometry	Demonstration	a, b, f
Lubricants	Demonstration	a, b, f
Organic preparations	Demonstration	a, b, f
Complexometry	Demonstration	a, b, f
Permanganometry	Demonstration	a, b, f
GR14A1025: Engineering Workshop		
Carpentry	Engineering Practice	f, h, k
Fitting	Engineering Practice	f, h, k
Tin-Smithy and Development of jobs carried out and soldering.	Engineering Practice	f, h, k
House-Wiring	Engineering Practice	f, h, k
Black Smithy	Engineering Practice	f, h, k
Foundry	Engineering Practice	f, h, k
Welding	Engineering Practice	f, h, k
Plumbing	Engineering Practice	f, h, k
Power tools	Demonstration	f, h, k
GR14A1029: Engineering Physics Lab		
Measurements using multimeter.	Demonstration	a, e
Measurement of voltage and Frequency using CRO.	Demonstration	a, c
B-H curve.	Problem Analysis	c
Determination of Dielectric constant.	Problem Analysis	a
Energy gap of a semi-conductor	Problem Analysis	a, c
Study of magnetic field along the axis of a circular coil.	Problem Analysis	c
Study of Hall Voltage	Problem Analysis	a, c, l
Determination of carrier concentration and carrier mobility of a semiconductor.	Problem Analysis	a, c, e
Numerical Aperture of optical fiber.	Problem Analysis	c, e
Bending losses in optical fiber.	Problem Analysis	a
Air gap losses in optical fiber	Problem Analysis	a, c
Characteristics of LASER diode	Problem Analysis	a
GR14A1028: Computer Programming and data structures Lab		
Write a C program to find the sum of individual digits of a positive integer.	Problem Analysis	b, c, e, l
Fibonacci Sequence	Problem Analysis	b, c, e, l
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	b, c, e, l
Write a C program to calculate the following Sum: Sum=1-x2/2!+x4/4!-x6/6!+x8/8!-x10/10!	Problem Analysis	b, c, e, l
Write a C program to find the roots of a quadratic equation using if-else.	Problem Analysis	b, c, e, l
Write a C programs that use both recursive and non-recursive functions	Problem Analysis	b, c, e, l
To find the factorial of a given integer.	Problem Analysis	b, c, e, l
To find the GCD (greatest common divisor) of	Problem Analysis	b, c, e, l

two given integers.		
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	b, c, e, l
Write a C Program merging of two files in a single file	Problem Analysis	b, c, e, l
Write a C program to reverse the first n characters in a file.	Problem Analysis	b, c, e, l
Write a C Program to Sort a given list of integers using Bubble Sort Technique.	Problem Analysis	b, c, e, l
Write a C Program to Sort a given list of integers using Merge Sort Technique	Problem Analysis	b, c, e, l
Write a C Program to Sort a given list of integers using Quick Sort Technique	Problem Analysis	b, c, e, l
GR11A2007:Fluid Mechanics Lab		
Find the coefficient of discharges using different devices (Venturimeter, Orifice meter, Notches and Weirs)	Demonstration	b, d
Proving the Bernoulli's Theorem using Bernoulli's equipment	Demonstration	b, c
Find the Minor Losses using minor loss Equipment (Sudden Enlargement and Sudden Contraction)	Demonstration	c, d
Measurement of Friction Coefficient using Friction Equipment (Major loss equipment)	Demonstration	c, d
GR11A2008: Surveying Lab – I		
Introduction to different survey instruments	Demonstration	c, d, h, l
Chain Surveying (Open and Closed Traverse)	Problem Analysis	a, b, c, d
Chaining Across Obstacles	Problem Analysis	a, b, d
Survey of an area by compass and tape	Demonstration and Problem Analysis	a, b, c, d
Distance between two inaccessible points using Compass	Problem Analysis	a, b, c, d
Plane Table Surveying (Radiation, Traversing and Intersection)	Demonstration and Problem Analysis	a, b, c, d
Two Point and three point problems in plane table surveying	Problem Analysis	a, b, c, d
Simple, fly, differential Levelling	Problem Analysis	a, b, c, d, i
Exercise of L.S and C.S and Plotting	Design and Analysis	a, b, c, d, i
Two exercises on Contouring	Design and Analysis	a, b, c, d, i
GR11A2006: Computer Aided Drafting of Building Lab		
Basics of Different CAD Tools	Demonstration	b, d
CAD Software's	Demonstration	b, d
Drawing of basic Geometric Elements with Scale	Problem Analysis, Design	b, d, k
Drawing of Building Components with Scale	Problem Analysis,	b, e, k

	Design	
Drawing of Multi Storied Building plan, Section, Elevation.	Problem Analysis, Design	b, d, k
GR11A2014: Strength of Materials Lab		
The effect of tension in mild steel bars under loading	Problem Analysis and strength analysis	c, j
Resistance of various materials using hardness test.	Problem Analysis and strength analysis	c, j
Evaluate the modulus of rigidity in springs using spring test	Problem Analysis and strength analysis	d, j
Evaluate compressive stress of concrete ,wood etc.	Problem Analysis and strength analysis	c, d
Evaluation of the toughness and shear strength properties of material	Problem Analysis and strength analysis	c, d, j
Flexural strength of wood , steel and deflection of beam under loading	Problem Analysis and strength analysis	c, j
Twisting property of material and identify the shear strength.	Problem Analysis and strength analysis	c, d
GR11A2013: Hydraulics and Hydraulic Machinery Lab		
Find the coefficient of impacts using the Impact of Jet on Vanes	Demonstration	b, d
Find the Efficiency of pumps (Centrifugal Pump and Reciprocating Pump)	Demonstration	b, c
Find the Performance characteristics and maximum efficiency of Turbines (Kaplan Turbine and Francis Turbine)	Demonstration	b, c
Find the performance of Pelton Wheel turbine	Demonstration	b, d
GR11A2015: Surveying Lab – II		
Study of Theodolite	Demonstration	b, e, h
Measurement of Horizontal and vertical angles (Repetition and Reiteration)	Problem Analysis	b, h
Trigonometric levelling- Heights and distances problems	Problem Analysis	e, h
Heights and distance using Tacheometry	Demonstration and Problem Analysis	b, e
Curve setting by any two methods	Design and Analysis	b, e, h
Introduction to Total Station and operational procedure	Demonstration	e, h
Determine the area of traverse using total station	Design and Analysis	b, e

Column and foundation marking using Total Station	Design and Analysis	b, e, h
Distance, gradient, differential height between two inaccessible points using Total Station	Problem Analysis	b, e
GR11A3030: Concrete Technology Lab		
Testing the material properties used in Concrete	Analysis	b, c
Testing Compressive and Tensile Strengths of the Hardened Concrete	Strength Analysis	b, c, g
Finding out the water requirement for the Cement, Sand and Fresh Concrete to work easy.	Design and Analysis	b, g
GR11A3056: Geotechnical Engineering Lab		
Evaluate field density for different types of soils	Demonstration and analysis	a, d, i
Evaluate classification of soils	Demonstration and analysis	a, b, i
Evaluate consistency Limits	Demonstration and analysis	b, d, i
Evaluate permeability of soils	Demonstration and analysis	a, d, i
Evaluate degree of compaction	Demonstration and analysis	a, d
Evaluate shear strength of soils	Demonstration and analysis	b, d, i
Evaluate the rate of settlement due to primary Consolidation	Demonstration and analysis	a, b, d
Evaluate load penetration test values of subgrade for pavements	Demonstration and analysis	a, d
GR11A3049: Engineering Geology Lab		
Identify various minerals and their properties.	Demonstration	d, f
Identify various rocks and their properties.	Demonstration	e, f
Interpret various maps of geological structures like faults, folds, beds and unconformities.	Demonstration and Problem Analysis	d, f, g
Resolve some simple problems related to structural geology.	Problem Analysis	e, g
GR11A3051: Environmental Engineering Lab		
Measure physical properties of surface and subsurface water.	Demonstration	d, l
Measure chemical properties of surface and subsurface water.	Demonstration	c, d, l
Measure biological properties of surface and subsurface water.	Demonstration	d, g, l
GR11A4059: Irrigation Design & Drawing		
Design and Draw Surplus Weir	Design, Analysis & Drawing	f, g
Design and Draw Syphon Well Drop	Design, Analysis &	c, f

	Drawing	
Design and Draw Trapezoidal Notch Fall	Design, Analysis & Drawing	c, g
Design and Draw Tank sluice with tower head	Design, Analysis & Drawing	c, e, f
Design Sloping Glacis Weir	Design and Analysis	c, g
Design Canal Regulator	Design and Analysis	c, e
Design Under Tunnel	Design and Analysis	c, e, f
Design Type III Syphon Aqueduct	Design and Analysis	c, g
GR11A4050: Highway Materials Lab		
To find out the strength of aggregate	Demonstration and analysis	c, d
To find out consistency of bitumen	Demonstration and analysis	c, d
To find shape of aggregate suitable for highway construction	Demonstration and analysis	c, d, l
To find out softening point , fire and flash point	Demonstration	c, d, l
GR11A4101: Remote Sensing & GIS Lab		
Georeference of GIS Maps.	Demonstration	d, e, f
Digitization of GIS Maps.	Demonstration	d, f
Road network mapping in GIS Maps.	Demonstration	f, k
GR11A4116: STAAD Lab		
Design the various types of Beams for the different loads.	Analysis and Design	d, e, l
Design a 2D frame of Multi-Storied Building.	Analysis and Design	e, l
Design a 3D frame of Multi-Storied Building.	Analysis and Design	d, e, l
Design a RCC Over Head tank	Analysis and Design	d, e, l
Design the different types of Steel Trusses	Analysis and Design	d, e, l
Design a Steel Tower with arms on both sides	Analysis and Design	d, e, l
Design a Steel Deck Bridge	Analysis and Design	d, e, l

Mapping of Laboratories with Programme 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							

Fluid Mechanics Lab		x	x	x								
Surveying Lab - I		x	x	x					x			
Computer Aided Drafting of Building Lab		x		x	x						x	
Strength of Materials Lab			x	x						X		
Hydraulics and Hydraulic Machinery Lab		x	x	x								
Surveying Lab – II		x			x			x				
Concrete Technology Lab		x	x				x					
Geotechnical Engineering Lab	x	x		x					x			
Advanced English Communication skills Lab						x		x	x			
Engineering Geology Lab				x	x	x	x					
Environmental Engineering Lab			x	x			x					x
Irrigation Design & Drawing			x		x	x	x					
Highway Materials Lab			x	x								x
Remote Sensing & GIS Lab				x	x	x					x	
STAAD Lab				x	x							x

Project work towards the attainment of Programme Outcomes

Project Title	Type	PO
Design and analysis of shear walls using STAAD PRO.	Design	c, d, e
Water use efficiency studies and their improvement systems of Nagarjuna Sagar dam.	Study	b, c, f, g
Utilisation of different types of manufactured sand as fine aggregate in cement mortar.	Innovation experimentation	c, d, f

Design and analysis of multi storey building using STAAD PRO.	Design	c, d, e
Effect of water cement ratio on mechanical properties of self Compacting concrete (M70 grade) with GGBS and micro silica as Filler material.	Experimentation & analysis	b, c, f
Comparative study on properties of fibercrete and ecocrete with conventional concrete.	Experimentation & analysis	c, f
An experimental study on soil stabilization of clayey soils using copper slag.	Experimentation & analysis	b, c, g
Layout & estimation of water supply pipe line HMWS (Nizampet) to GRIET campus.	Design	b, c, f
Estimation and costing of two storeyed residential building.	Design	b, c, f
Studies on manufactured sand and granulated blast Furnace slag as substitute for fine aggregate in concrete.	Experimentation & analysis	b, c, d, f, g
Studies on artificial recharge of ground water in the campus of GRIET.	Experimentation & analysis	c, f, g
Cost effective construction techniques and housing.	Design and analysis	c, d, f
Study of Geopolymer concrete.	Experimentation and analysis	b, c, g
Manual analysis and design of multistoreyed office building.	Design and analysis	b, c
Study of mix design of self compacting concrete with OPC.	Design, experimentation and analysis	b, c
The effect of water cement ratio on workability and mechanical properties of high strength self-compacting concrete (M70 grade) with fly ash and micro silica as filler material/ comparison on estimation, costing and maintenance of traditional building and green building.	Design, experimentation and analysis	b, c
Study on compressive strength and workability of no fines concrete.	Experimentation and analysis	a, c
Study on compressive strength of concrete after replacing natural coarse aggregate with recycled concrete aggregates.	Design and prototype	a, b, g

Preparation of land use and land cover map by using GIS.	Modeling and analysis	b, c, d, e
Comparative study on strength characteristics of soil stabilized pavement by using geogrids.	Experimentation and analysis	b, c, d

2.3 Evaluation of the attainment of the Programme Outcomes (125)

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

Describe the assessment process that periodically documents and demonstrates the degree to which the Programme Outcomes are attained.

1. Undergraduate programme is for a 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	Efforts in collecting data and way of presentation in the form of report

			committee	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

Include information on (50):

a) Listing and description of the assessment processes used to gather the data upon which the evaluation of each the programme 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 Programme 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 programme 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 Programme 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.

CE Program Outcome	Assessment Evidence Source or Tool
a: Ability to apply knowledge of mathematics, science and fundamentals of Civil 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 Civil Engineering within realistic constraints.	Results and outcomes of courses like Structural analysis, Concrete Technology, Design of Reinforced structures etc. are analyzed.

d: Ability to identify, formulate, analyse and interpret data to solve Civil Engineering problems.	Results and outcomes of courses like Environmental Engineering, Geotechnical Engineering, Finite Element Methods, etc. are analyzed.
e: Ability to use modern engineering tools such as CAD and GIS for the Civil 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 Civil 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 Civil Engineering projects.	Results of the outcomes of courses like Management Science, Construction Technology 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 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
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)

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;
e) How the results are documented and maintained.

File Name
Sample Lab Course file
Sample Lab Course file
Surveys
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 Programme Coordinator and the BoS to recommend content delivery methods/course outcomes/ curriculum improvements as needed.

The expected level of attainment for each programme outcomes

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

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

GR11A1001-Mathematics – I GR11A1010-Mathematics – II GR11A1018-Mathematics – III GR11A1011-Engineering Chemistry GR11A1014-Engineering Chemistry Lab GR11A1022-Physics for Engineers GR11A1007-Engineering Physics Lab GR11A1021-Engineering Mechanics GR11A1003-Computer Programming & Data Structures GR11A1006-Computer Programming & Data Structures Lab GR11A1008-Engineering Workshop GR11A2010-Probability and Statistics GR11A2004-Strength of Materials – I GR11A2014-Strength of Materials Lab	Internal/external Evaluation/ Assignments/ /Lab activities	Course outcomes/ Rubrics	70%	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

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
GR11A1012- Engineering Graphics GR11A2011- Strength of Materials II GR11A2003- Fluid Mechanics GR11A2007- Fluid Mechanics Lab GR11A2005- Surveying GR11A2008- Surveying Lab-I GR11A3055- Geotechnical Engineering-I GR11A3056- Geotechnical Engineering Lab GR11A2001-Building Materials & Construction Planning GR11A3048- Engineering Geology GR11A3049- Engineering Geology Lab GR11A4018- Comprehensive viva	Internal/external Evaluation/ Assignments/ /Lab activities	Lab activity data/ Rubrics/ Course outcome	70%	3 years/ End of the semester
	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 Civil 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
GR11A2012-Structural Analysis GR11A2009-Hydraulics and Hydraulic Machinery GR11A2071-Hydraulics and Hydraulic Machinery Lab GR11A3002-Advanced Structural Analysis GR11A3029-Concrete Technology GR11A3030-Concrete Technology Lab GR11A3021-Bridge Engineering GR11A3037- Design of Reinforced Concrete Structures GR11A3038- Design of Steel Structures GR11A3098- Water resources Engineering-II GR11A4059-Irrigation Design & Drawing GR11A4002-Advanced Structural Design GR11A4082-Pavement Analysis & Design	Internal/external Evaluation/ Assignments/ /Lab activities	Lab activity data/ Rubrics/ Course outcome	65%	3 years/ End of the semester
	Course end survey/ Graduate Survey/ Alumni survey		70%	3 years/ End of the semester End of the programme

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

Courses	**Method of Assessment**	**Sources for data collection**	**Target for the performance**	**Length of Assessment Cycle/when the data is collected**

GR11A3050- Environmental Engineering GR11A3051- Environmental Engineering Lab GR11A3093- Transportation Engineering GR11A3098-Water Resources Engineering-I GR11A4042-Finite Element Method GR11A4046- Geotechnical engineering-II GR11A4047-Ground Improvement Techniques GR11A4093- Prestressed concrete	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	80%	3 years/ End of the semester End of the programme

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

Courses	Method of Assessment	Sources for data collection	Target for the performance	Length of Assessment Cycle/when the data is collected
GR11A1013- IT Workshop GR11A2006-Computer aided drafting of building Lab GR11A2015-Surveying lab –II GR11A4100-Remote Sensing and GIS GR11A4101-Remote	Internal/external Evaluation/ Assignments/ /Lab activities	Lab activity data/ Rubrics/ Course outcome	85%	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

Sensing and GIS Lab GR11A4116-STAAD Lab				

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
GR11A2071-Managerial Economics and Financial Analysis	Internal/external Evaluation/ Assignments/ /Lab activities	Lab activity data/ Rubrics/ Course outcome	60%	3 years/ End of the semester
GR11A3064-Industry Oriented Mini Project	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 Civil 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
GR11A1009-Environmental Science GR11A2001-Building Materials & Construction Planning GR11A4048-Ground Water Development &	Internal/external Evaluation/ Assignments/ /Lab activities	Lab activity data/ Rubrics/ Course outcome	70%	3 years/ End of the semester

Management GR11A4128-Water Resources system Planning & Management GR11A4129-Water Shed Management GR11A4039-Environmental Impact Assessment	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
GR11A3068-Management Science GR11A4097-Project work	Internal/external Evaluation/ Assignments/ /Lab activities	Lab activity data/ Rubrics/ Course outcome	75%	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

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
GR11A2036-Electrical Technology GR11A2073-Advanced English Communication Skills Lab	Internal/external Evaluation/ Assignments/ /Lab activities	Lab activity data/ Rubrics/ Course outcome	80%	3 years/ End of the semester

GR11A3043-Disaster Management and Mitigation GR11A3064-Industry Oriented Mini Project GR11A4097-Project work	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
GR11A1002-English GR11A1015-English Lab GR11A4110-Seminar GR11A4097-Project work	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 Civil Engineering projects.

Courses	Method of Assessment	Sources for data collection	Target for the performance	Length of Assessment Cycle/when the data is collected
GR11A3068-Management Science GR11A4040-Estimating & Costing	Internal/external Evaluation/ Assignments/ /Lab activities	Lab activity data/ Rubrics/ Course outcome	75%	3 years/ End of the semester

GR11A4020-Construction Technology & Project Management GR11A4097-Project work	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
GR11A4110-Seminar GR11A4116-STAAD Lab GR11A4018-Comprehensive Viva GR11A4101-Remote Sensing and GIS Lab GR11A2006-Computer aided drafting of building 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

d) Summaries of the results of the evaluation processes and an analysis illustrating the extent to which each of the programme outcomes are attained;

Attainment of POs

Direct Assessment			
PO	**Contributing Courses**	**Attainment %**	**Average attainment**
A	GR11A1001-Mathematics – I	63.51	64.93
	GR11A1010-Mathematics – II	55.89	
	GR11A1018-Mathematics – III	66.89	
	GR11A1011-Engineering Chemistry	58.57	
	GR11A1014-Engineering Chemistry Lab	90.10	
	GR11A1022-Physics for Engineers	65.91	

	GR11A1007-Engineering Physics Lab	84.00	
	GR11A1021-Engineering Mechanics	66.68	
	GR11A1003-Computer Programming & Data Structures	53.73	
	GR11A2010-Probability and Statistics	69.03	
	GR11A2004-Strength of Materials – I	39.93	

Direct Assessment			
PO	**Contributing Courses**	**Attainment %**	**Average attainment**
B	GR11A1012- Engineering Graphics	61.26	70.35
	GR11A2011- Strength of Materials II	59.06	
	GR11A2003- Fluid Mechanics	57.86	
	GR11A2007- Fluid Mechanics Lab	90.85	
	GR11A2005- Surveying	65.33	
	GR11A2008- Surveying Lab-I	96.34	
	GR11A3055- Geotechnical Engineering-I	44.67	
	GR11A3056- Geotechnical Engineering Lab	90.03	
	GR11A2001-Building Materials & Construction Planning	62.43	
	GR11A3048- Engineering Geology	59.43	
	GR11A4018- Comprehensive viva	86.63	

Direct Assessment			
PO	**Contributing Courses**	**Attainment %**	**Average attainment**
C	GR11A2012-Structural Analysis	51.21	68.50
	GR11A2009-Hydraulics and Hydraulic Machinery	46.50	
	GR11A2071-Hydraulics and Hydraulic Machinery Lab	89.76	
	GR11A3002-Advanced Structural Analysis	48.33	
	GR11A3029-Concrete Technology	68.20	
	GR11A3030-Concrete Technology Lab	96.36	
	GR11A3037- Design of Reinforced Concrete Structures	52.87	
	GR11A3038- Design of Steel Structures	54.97	
	GR11A3098- Water resources Engineering-II	68.90	
	GR11A4059-Irrigation Design & Drawing	100.0	
	GR11A4082-Pavement Analysis & Design	76.47	

Direct Assessment			
PO	**Contributing Courses**	**Attainment %**	**Average attainment**
D	GR11A3050- Environmental Engineering	67.83	66.63
	GR11A3051- Environmental Engineering Lab	89.23	
	GR11A3093- Transportation Engineering	63.43	
	GR11A3098-Water Resources Engineering-I	58.43	
	GR11A4042-Finite Element Method	49.38	
	GR11A4046- Geotechnical engineering-II	64.10	
	GR11A4047-Ground Improvement Techniques	78.25	
	GR11A4093- Prestressed concrete	38.2	
	GR11A2014 – Strength of materials lab	90.8	

Direct Assessment			
PO	**Contributing Courses**	**Attainment %**	**Average attainment**
E	GR11A1013- IT Workshop	99.13	85.94
	GR11A1006 – Computer Programming and Data Structures	80.87	
	GR11A2006-Computer aided drafting of building Lab	89.76	
	GR11A2015-Surveying lab –II	91.20	
	GR11A4100-Remote Sensing and GIS	61.80	
	GR11A4101-Remote Sensing and GIS Lab	92.85	

Direct Assessment			
PO	**Contributing Courses**	**Attainment %**	**Average attainment**
F	GR11A1008 – Engineering Workshop	89.02	63.08
	GR11A2071-Managerial Economics and Financial Analysis	33.73	
	GR11A3064-Industry Oriented Mini Project	92.44	

Direct Assessment			
PO	**Contributing Courses**	**Attainment %**	**Average attainment**

G	GR11A1009-Environmental Science	68.16	74.81
	GR11A2001-Building Materials & Construction Planning	62.43	
	GR11A3049 – Engineering Geology Lab	90.91	
	GR11A4048-Ground Water Development & Management	71.73	
	GR11A4128-Water Resources system Planning &	62.30	
	GR11A4039-Environmental Impact Assessment	93.30	

Direct Assessment			
PO	**Contributing Courses**	**Attainment %**	**Average attainment**
H	GR11A3068-Management Science	60.10	77.4
	GR11A4097-Project work	94.70	

Direct Assessment			
PO	**Contributing Courses**	**Attainment %**	**Average attainment**
I	GR11A2036- Electrical Technology	50.23	83.33
	GR11A2073-Advanced English Communication Skills	95.98	
	GR11A3064-Industry Oriented Mini Project	92.44	
	GR11A4097-Project work	94.70	

Direct Assessment			
PO	**Contributing Courses**	**Attainment %**	**Average attainment**
J	GR11A1002-English	72.37	89.25
	GR11A1015-English Lab	98.83	
	GR11A4110-Seminar	91.12	
	GR11A4097-Project work	94.70	

Direct Assessment			
PO	**Contributing Courses**	**Attainment %**	**Average attainment**
K	GR11A3068-Management Science	60.10	76.34
	GR11A4040-Estimating & Costing	76.67	
	GR11A4020-Construction Technology & Project Management	73.90	

	GR11A4097-Project work	94.70	

Direct Assessment			
PO	**Contributing Courses**	**Attainment %**	**Average attainment**
L	GR11A4110-Seminar	91.12	90.09
	GR11A4018-Comprehensive Viva	86.63	
	GR11A4101-Remote Sensing and GIS Lab	92.85	
	GR11A2006-Computer aided drafting of building Lab	89.76	

Indirect Assessment		
Assessment Tool	**Attainment Level**	**Average Attainment level in Indirect measure**
Student Exit Survey	Good	Satisfactory
Alumni Survey	Good	Satisfactory
Employer Survey	Good	Satisfactory
Industry Survey	Good	Satisfactory

e) How the results are documented and maintained

Maintenance and documentation of results: Evaluation of examinations is done through the Examination Branch. Analysis of exam results is done after the results. All the details of results of mid and end semester examinations are stored as digital soft copy and printed hard copy format at the examination branch. Model data is enclosed in the annexure. Other internal exam, lab internal data and surveys data is maintained by the department.

The results of Assessment and evaluation process for attaining POs are:

- Filed in the department.
- Maintained by each Course Faculty as a course file with all the results and evaluation details. These results and evaluation are informed and discussed with students.

2.4 Use of Evaluation results towards improvement of the programme (30)

2.4.1. Indicate how the results of evaluation used for curricular improvements (5)

(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 are to 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. 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 programme thus influencing the attainment of Programme Outcomes.

2.4.2. Indicate how results of evaluation used for improvement of course delivery and assessment (10)

(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 Programme 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)

(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.

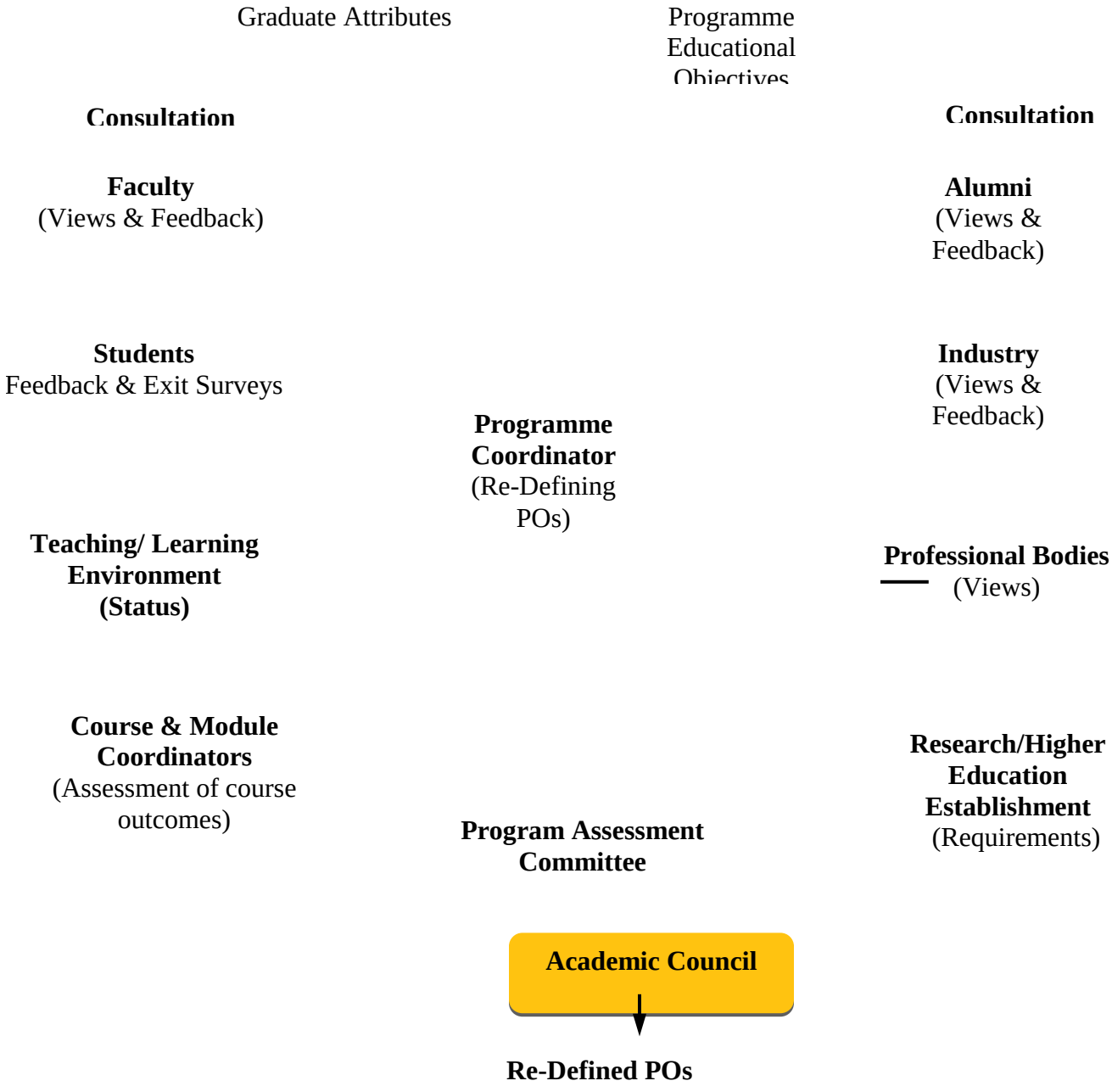

Figure 5: Process for Redefining POs

3 Programme Curriculums (125)

3.1. Curriculum (20)

3.1.1. Describe the Structure of the Curriculum (5)

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	3.00	2.00	0.00	5.00	4.00
GR14A1012	Engineering Mechanics – STATICS	2.00	2.00	0.00	4.00	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	Transform Calculus and Fourier Series	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
GR11A2001	Building materials & construction &	4.00	1.00	0.00	5.00	4.00

	planning					
GR11A2036	Electrical Technology	3.00	1.00	0.00	4.00	3.00
GR11A2004	Strength of Materials – I	4.00	1.00	0.00	5.00	4.00
GR11A2005	Surveying	4.00	1.00	0.00	5.00	4.00
GR11A2003	Fluid Mechanics	4.00	1.00	0.00	5.00	4.00
GR11A2007	Fluid Mechanics Lab	0.00	0.00	3.00	3.00	2.00
GR11A2008	Surveying Lab – I	0.00	0.00	3.00	3.00	2.00
GR11A2006	Computer Aided Drafting of Building Lab	0.00	0.00	3.00	3.00	2.00
GR11A2010	Probabilities & Statistics	3.00	1.00	0.00	4.00	4.00
GR11A2011	Strength of Materials – II	4.00	1.00	0.00	5.00	3.00
GR11A2009	Hydraulics and Hydraulic Machinery	4.00	1.00	0.00	5.00	4.00
GR11A2071	Managerial Economics and Financial Analysis	3.00	1.00	0.00	4.00	4.00
GR11A2012	Structural Analysis	4.00	1.00	0.00	5.00	4.00
GR11A2014	Strength of Materials Lab	0.00	0.00	3.00	3.00	2.00
GR11A2013	Hydraulics and Hydraulic Machinery Lab	0. 00	0.00	3.00	3.00	2.00
GR11A2015	Surveying Lab – II	0.00	0.00	3.00	3.00	2.00
GR11A3029	Concrete Technology	3.00	1.00	0.00	4.00	3.00
GR11A3037	Design of Reinforced Concrete Structures	3.00	2.00	0.00	5.00	4.00
GR11A3055	Geotechnical Engineering – I	3.00	1.00	0.00	4.00	4.00
GR11A3097	Water Resources Engineering - I	4.00	1.00	0.00	5.00	4.00
GR11A3002	Advanced Structural Analysis	3.00	1.00	0.00	4.00	4.00
GR11A3030	Concrete Technology Lab	0.00	0.00	3.00	3.00	2.00
GR11A3056	Geotechnical Engineering Lab	0.00	0.00	3.00	3.00	2.00
GR11A2073	Advanced English Communication Skills Lab	0.00	0.00	3.00	3.00	2.00
11A3038	Design of steel structures	3.00	1.00	0.00	4.00	4.00
GR11A3050	Environmental Engineering	3.00	1.00	0.00	4.00	4.00

GR11A3098	Water Resources Engineering - II	3.00	1.00	0.00	4.00	4.00
GR11A3048	Engineering Geology	3.00	0.00	0.00	3.00	3.00
GR11A3093	Transportation Engineering	4.00	0.00	1.00	5.00	4.00
GR11A3043	Disaster Management and Mitigation	4.00	0.00	1.00	5.00	4.00
GR11A3021	Bridge Engineering	4.00	0.00	1.00	5.00	4.00
GR11A3049	Engineering Geology Lab	0.00	0.00	3.00	3.00	2.00
GR11A3051	Environmental Engineering Lab	0.00	0.00	3.00	3.00	2.00
GR11A3064	Industrial Oriented Mini Project	0.00	0.00	3.00	3.00	2.00
GR11A4046	Geotechnical Engineering – II	3.00	1.00	0.00	4.00	4.00
GR11A4040	Estimating & Costing	3.00	1.00	0.00	4.00	4.00
GR11A4100	Remote Sensing & GIS	3.00	1.00	0.00	4.00	4.00
GR11A4048	Ground Water Development & Management	4.00	0.00	0.00	4.00	4.00
GR11A4093	Prestressed Concrete	4.00	0.00	0.00	4.00	4.00
GR11A4081	Optimization techniques in Civil Engineering	4.00	0.00	0.00	4.00	4.00
GR11A4059	Irrigation Design & Drawing	0.00	0.00	3.00	3.00	3.00
GR11A4042	Finite Elements Methods	4.00	1.00	0.00	5.00	5.00
GR11A4128	Water Resources system Planning & Management	4.00	1.00	0.00	5.00	5.00
GR11A4047	Ground Improvement Techniques	4.00	1.00	0.00	5.00	5.00
GR11A4050	Highway Materials Lab	0.00	0.00	3.00	3.00	3.00
GR11A4101	Remote Sensing & GIS Lab	0.00	0.00	3.00	3.00	3.00
GR11A4020	Construction Technology & Project Management	4.00	1.00	0.00	5.00	5.00
GR11A4002	Advanced Structural Design	3.00	1.00	0.00	4.00	4.00
GR11A4003	Airport, Docs & Harbour Engineering	3.00	1.00	0.00	4.00	4.00
GR11A4129	Water Shed Management	3.00	1.00	0.00	4.00	4.00
GR11A4039	Environmental Impact Assessment	3.00	1.00	0.00	4.00	4.00
GR11A3068	Management Science	3.00	1.00	0.00	4.00	4.00

GR11A4082	Pavement Analysis & Design	3.00	1.00	0.00	4.00	4.00
GR11A4116	STAAD Lab	0.00	0.00	3.00	3.00	3.00
GR11A4110	Seminar	0.00	0.00	6.00	6.00	6.00
GR11A4018	Comprehensive Viva	0.00	0.00	0.00	0.00	0.00
GR11A4097	Project Work	0.00	0.00	21.00	21.00	21.00
	Total	157.00	54.00	106.00	317.00	265.00

3.1.2 Give the Prerequisite flow chart of courses (5)

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

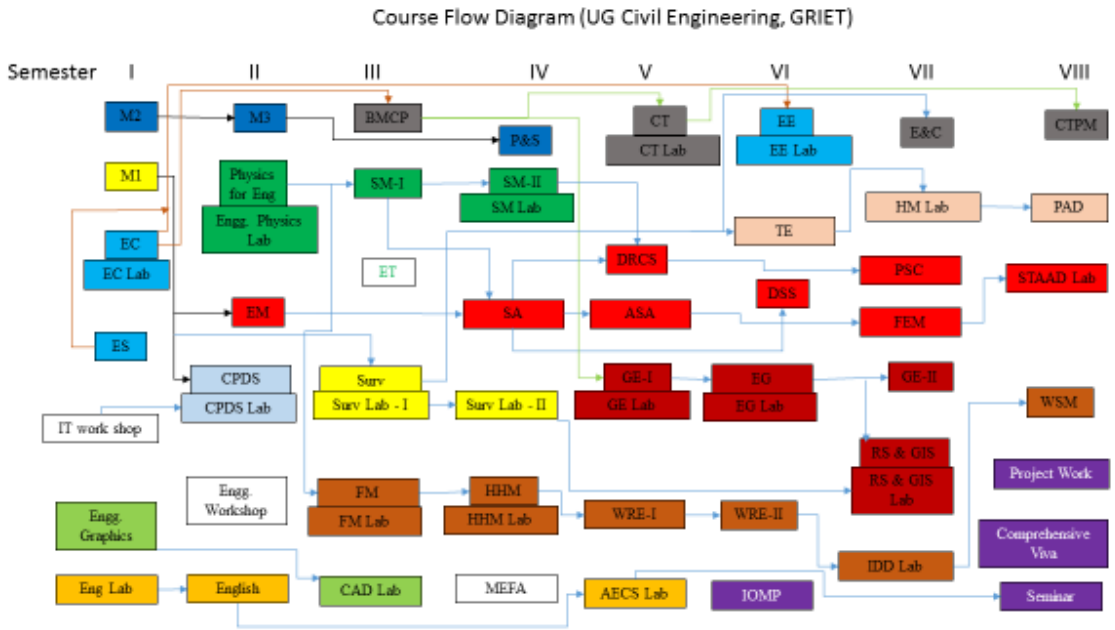

Fig. 3.1 Flowchart representing the prerequisites of the courses.

3.1.3. Justify how the programme curriculum satisfies the program specific criteria (10)

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

Program Specific Criteria for Civil Engineering

Lead Society: American Society of Civil Engineers

Applicability

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

The program must prepare graduates to apply knowledge of mathematics through differential equations, calculus-based physics, chemistry, and at least one additional area of basic science, consistent with the program educational objectives; apply knowledge of four technical areas appropriate to civil engineering; conduct civil engineering experiments and analyze and interpret the resulting data; design a system, component, or process in more than one civil engineering context; explain basic concepts in management, business, public policy, and leadership; and explain the importance of professional licensure.

Knowledge: Mathematics, chemistry, Physics, Structures, Geotechnical, Water Resources, Environmental and transportation related subjects

Problem solving ability: Engineering Mechanics, Mechanics of Solids, Design of concrete structures, design of steel structures, design of foundations.
Hands on Experience: Engineering Workshop, AutoCAD, STAAD,
Construction: Surveying, Concrete Technology Lab
Testing: Strength of Materials Lab, Hydraulics and Hydraulic machinery, Geotechnical engineering lab
Evaluation: Engineering Drawing, Estimation and Costing
Technical sales/maintenance: Construction Management, Managerial Economics and Financial Analysis.

Outcomes

The Civil Engineering discipline encompasses the principles in domain of materials, applied mechanics, computer aided drafting and design, construction, experimental techniques / procedures, analysis of engineering data, structural analysis / design of concrete and steel structures, design of transportation systems, water supply and sewerage facilities, canals, dams, irrigation structures, bridges, foundations, sustainability. Thus the programme courses are oriented to achieve the programme specific criteria.

The following are the components of the curriculum

- Mathematics
- Science
- Computing
- Humanities and Social Sciences
- Professional core

Courses in Mathematics stream:

Subject	Code
Linear Algebra and Single Variable Calculus	GR14A1001
Advanced Calculus	GR14A1002
Transform Calculus and Fourier Series	GR14A1003
Numerical Methods	GR14A1004
Probabilities & Statistics	GR11A2010

Courses in Science stream:

Subject	Code
Engineering Chemistry	GR14A1008
Engineering Chemistry Lab	GR14A1030
Physics for Engineers	GR14A1006
Engineering Physics Lab	GR14A1029

Courses in Computing stream:

Subject	Code
IT Workshop	GR14A1026
C Programming and Data Structures	GR14A1011
C Programming and Data Structures lab	GR14A1028
Basic Electrical Engineering	GR14A1018
Electrical Technology	GR11A2036

Courses in Humanities stream

Subject	Code
Business Communication and soft skills	GR14A1024
English	GR14A1005
Advanced English Communication Skills Lab	GR11A2073
Environmental Science	GR11A1009

Courses in Professional core Stream:

Subject	Code
Engineering Graphics	GR14A1023
Engineering Mechanics – STATICS	GR14A1012
Engineering Mechanics – DYNAMICS	GR14A1020
Engineering Workshop	GR14A1025
Building materials & construction & planning	GR11A2001
Strength of Materials – I	GR11A2004
Surveying	GR11A2005

Fluid Mechanics	GR11A2003
Fluid Mechanics Lab	GR11A2007
Surveying Lab – I	GR11A2008
Computer Aided Drafting of Building Lab	GR11A2006
Strength of Materials – II	GR11A2011
Hydraulics and Hydraulic Machinery	GR11A2009
Managerial Economics and Financial Analysis	GR11A2071
Structural Analysis	GR11A2012
Strength of Materials Lab	GR11A2014
Hydraulics and Hydraulic Machinery Lab	GR11A2013
Surveying Lab – II	GR11A2015
Concrete Technology	GR11A3029
Design of Reinforced Concrete Structures	GR11A3037
Geotechnical Engineering – I	GR11A3055
Water Resources Engineering - I	GR11A3097
Advanced Structural Analysis	GR11A3002
Concrete Technology Lab	GR11A3030
Geotechnical Engineering Lab	GR11A3056
Design of steel structures	GR11A3038
Environmental Engineering	GR11A3050
Water Resources Engineering - II	GR11A3098
Engineering Geology	GR11A3048
Transportation Engineering	GR11A3093
Disaster Management and Mitigation	GR11A3043
Bridge Engineering	GR11A3021
Engineering Geology Lab	GR11A3049
Environmental Engineering Lab	GR11A3051
Industrial Oriented Mini Project	GR11A3064
Geotechnical Engineering – II	GR11A4046
Estimating & Costing	GR11A4040
Remote Sensing & GIS	GR11A4100
Ground Water Development & Management	GR11A4048
Prestressed Concrete	GR11A4093
Optimization techniques in Civil Engineering	GR11A4081
Irrigation Design & Drawing	GR11A4059
Finite Elements Methods	GR11A4042
Water Resources system Planning & Management	GR11A4128
Ground Improvement Techniques	GR11A4047
Highway Materials Lab	GR11A4050
Remote Sensing & GIS Lab	GR11A4101
Construction Technology & Project Management	GR11A4020
Advanced Structural Design	GR11A4002

Airport, Docs & Harbour Engineering	GR11A4003
Water Shed Management	GR11A4129
Environmental Impact Assessment	GR11A4039
Management Science	GR11A3068
Pavement Analysis & Design	GR11A4082
STAAD Lab	GR11A4116

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

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	8	19.00	16.00	a, e, h, i, l	1, 2
Science	6	18.00	12.00	a, b, e, f, i, l	1, 2
Computing	4.5	14.00	9.00	a, c, d, f, h, i	1,2,3
Humanities	9	30.00	18.00	d, g, i, j, k	1,3
Professional core	72.5	182.00	145.00	a,b,c,d,e,f,g,h,i,j,k,l	1,2,3

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

(Describe how the core engineering subjects in the curriculum provide the learning experience with the complex engineering problems)

Core Engineering Courses

Structural Engineering: Structural engineering is one of the core areas in civil engineering. With ever increasing demand for infrastructure, this field has become very prominent. Design of high rise buildings for residential and commercial activities, structural design of road and railway bridges, aqueducts, water tanks, with steel, reinforced concrete, prestressed concrete etc. are major contributions to society. Introducing and developing new materials in construction for the benefit of environmental, sustainable and economic reasons.

Geotechnical Engineering: This is another crucial area in civil engineering. The bearing capacity of soil, characterization of the soil properties, recommending suitable foundation for various structures to be constructed etc., suitability of soil for roads, railways and canal embankments, suggesting remedial measures in case of poor soil conditions, ground improvements techniques are some of the major and important areas where geotechnical engineering helps in.

Water Resources Engineering: Assessment of surface and ground water resources, design of irrigation structures like canals, diversion head works, dams etc. are some of the important areas related to most desirable need for society. Augmenting the water resources, for irrigation power generation etc., design of facilities for ground water recharge, urban run-off control are part of sustainable development.

Environmental Engineering: One of the most important duties of a civil engineer is to take care of the public health by providing safe drinking water, proper disposal of liquid and solid wastes. Assessment of water requirement, ascertain quality, design of treatment processes to meet the quality requirement, design of water distribution system consisting pipes, valves, pumps, storage tanks etc. Also, design of waste water collection plants and their treatment and disposal are some of the key areas. Development towards zero discharge is the goal for sustainable development.

Transportation Engineering: Providing suitable transportation facilities for men and material is the back bone for economic development of any nation. Design of transportation facilities such as highways, railways, waterways, airports, ports, harbours etc. plays a major role. Design of efficient, economical and environment friendly transportation system is the need of present day engineers.

Construction Engineering: Execution of any civil engineering project needs lot of managerial skills. One has to schedule the activities of the project, allocate resources like men, material and machines, to the activities so as to complete the project as per schedule. Optimal use of available resources to complete the project within schedule with minimum possible cost and minimum impact on the environment. They should have good understanding of sustainable materials and construction practices, Civil engineer should have good understanding of tendering, procurement, stores and labour maintenance.

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	X	X	X	X							X		Open Channel, Pipes
Hydraulics & Hydraulic Machinery	X	X	X		X			X	X		X	X	Turbines and pumps
Design of Reinforced Concrete Structures	X	X	X	X								X	RCC Slabs, beams and columns
Environmental Engineering	X	X	X	X	X	X		X	X		X	X	Water supply wastewater collection and disposal
Strength of Materials	X		X	X			X			X		X	Pressure vessels, Beams

Surveying	X		X	X	X			X	X	X		X	Field measurements and setting out
Engineering Geology	X	X	X	X		X				X		X	Effect of geological formations
Geotechnical Engineering	X	X	X							X		X	Foundation for all engineering structures
Prestressed Concrete		X			X			X		X		X	Prestressed girders
Design of Steel Structures	X		X	X				X				X	Steel trusses, bridges, columns
Irrigation design and drawing	X	X	X		X						X	X	Dams and diversion head works
Concrete Technology		X	X		X	X		X				X	Concrete mix design
Bridge Engineering	X	X	X	X								X	Design of bridges
Structural Analysis	X				X						X	X	Analysis of beams, trusses
Advanced Structural Analysis	X	X		X	X					X		X	Analysis of frames
Water Resources Engineering	X	X	X	X	X					X	X		Canals, well yield
Transportation Engineering	X	X	X		X					X		X	Pavement design, geometric design of roads
Construction Technology and Project Management	X	X	X	X							X		Project planning
Finite Element Method	X			X					X			X	Analysis of structures
Optimization techniques in Civil Engineering	X	X	X	X		X	X				X		Economical design
Advanced Structural Design	X	X	X	X	X			X				X	Steel bridges, water tanks
Building materials and construction	X	X		X	X			X			X		Selection of suitable materials
STAAD	X	X	X	X	X						X		Analysis and design of structural members

3.4 Industry interaction/internship (10)

(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 is having collaborations with the reputed industries and professional bodies so as 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, Engineering Staff College of India, and is a member of Institution of Engineers (India)
- 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 IITH, IIITH, ESCI, Water and Land Management Training and Research Institute (WALAMTARI) etc.
- Students are provided and given internship facility with industry and research organization such as L&T, Ultratech, Infotech enterprises, Ramky enviro etc.,
- The department conducts several workshops on material testing, Experimental techniques in Civil Engineering, 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: transportation systems, building Materials, designs.
- Department organizes several workshops with industry experts for the benefit of the students. Example: NDT, AutoCAD etc.,

Participation details: Workshops, Seminars, Symposia and FDPs

Event Name	Collaboration With	Duration	Resource Persons	Target Audience	Benefit
Guest Lecture on " You have potential to become an excellent Teacher"	IIT Delhi	27th March 2015 (1 day)	Prof. V.S. Raju Retd. Director, IIT Delhi	Faculty	Motivation and tips to faculty members
Formation of IEI Student Chapter	IEI Student Chapter	9th Feb 2015 (1 day)	Er.Sai Baba (IRS) Chief Engineer, Hyd Metro Rail	Students	Interaction with professionals
Guest Lecture on " Metro	IEI Student	9th Feb 2015 (1 day)	Er. Sai Baba (IRS), Chief Engineer, Hyderabad	Students	Detailed knowledge of

Rail Project Planning & Design"	Chapter		Metro		upcoming project
Awareness on "Need of learning different software"	CAD Centre	21st Jan 2015 (1 day)	CAD Centre	120	Idea about latest software in Civil engg
STEPS 2014	GRIET under TEQIP-II	16th&17th Dec 2014 (2 days)	Guest Lectures by Eminent speakers.	33	Exposure to latest developments
Guest Lecture on " Goal Setting & Achievement"	GRIET under TEQIP-II	27th Sep 2014 (1 day)	Prof.K.V Subba Raju	Students	Motivation and personality development
Guest Lecture on " Water Resource Management"	Central Design Organization(I&CAD)	5th Sep 2014 (1 day)	Er. I S N Raju Former Chief Engineer	Students	Practical aspects of water resources management
Guest Lecture on " Water Conservation"	WALMI, Gujarat	5th Sep 2014 (1 day)	Er.M.K Dixit SE Water and Land Management Institute, Gujarat (WALMI)	Students	Field studies of water conservation
Guest lecture on " Traffic Engineering"	ICI Student Chapter	9th Aug 2014 (1 day)	Sri K. Pitchi Reddy, Retired Chief Engineer, R & B	Students	Practical aspects in design of traffic islands
Workshop on "Fluid Mechanics"	IIT Kharagapur	20-30 May 2014 (2 weeks)	Faculty from IIT Kharagpur	Faculty	Concepts of fluid mechanics
STEPS 2013	GRIET under TEQIP-II	Dec 2013 (2 days)	Er.M.K Srinivas Dr.P Rama Raju Mr.J Srikar Dr.M Venkata Reddy	Faculty 27	Exposure to latest developments
FDP on "Stake holder Management"	GRIET under TEQIP-II	7th,8th&9th Oct 2013 (3 days)		Faculty	
Guest Lecture on "Advances in Cement & Concrete"	ICI Student Chapter	26th July 2013 (1 day)	Er.C.Edukondalu Hon.Secretary ICI-APHC	70 Students	Recent advances in admixtures and qualities of concrete
Workshop on "Intelligent Surveying	under TEQIP-II	25th & 26th March 2013 (2 days)	B. Chandrakanth	41	Use of total station

using Total Station"					
Workshop on " Building Planning & Design using AUTO CAD	under TEQIP-II	18th & 19th March 2013 (2 days)	Bhaskara Rao, Corporate trainer, RAMSYS info CAD H.N Naveen kumar	43	Techniques in using AutoCAD
Guest Lecture on "Applications of Geotech"	Griet	4th March 2013 (1 day)	Dr. E.Sai Baba Reddy, Prof, CE, Rector of JNTUH	Students 115	Advances in geotechnical Engineering
Workshop on "Recent Trends in Concrete & Construction Technology"	under TEQIP-II	27th & 28th Feb 2013 (2 days)	Prof.M.V Sheshagiri Rao, JNTUH Dr.M. Chandrasekhar, MCS Consultancy. N.Krishna Reddy, EE (Rural Development), Panchayatraj Hari Krishna, Aparna Constructions	Students	Latest developments in construction with concrete
Workshop on "Advanced Surveying Using Total Station"	under TEQIP-II	22nd & 23rd Feb 2013 (2 days)	Vamsi Kumar, Lawrence & Mayo Prashant Babu, Manager, L&T A.Raj Kumar, NICMAR	Students	Use of total station in surveying
Guest lecture on "Indian Construction & Project Management"	GRIET	19th Feb 2013 (1 day)	Dr.A.N. Rao	130 Students	Project management technics
Recent Advances in pavement materials & Pavement management systems	GRIET	8th Feb 2013	M. Lakshman Rao, Manager(Designs), IVRCL, M. Lakshmi Narayana, Deputy V.P, Transtroy India Dr.P Saravana, Prof. JNTUH Dr.S.K Rao, R&D, GMR Infra	Students	Knowledge of pavement construction & design
Guest lecture on "Earth Quake Behaviour"	GRIET	2nd Feb 2013 (1 day)	Dr.M. Janardhan, Prof Civil Engineering JNTUH	110 Students	Effect of earth quake on structures
ICI Student	GRIET	30th & 31st	Prof. R.Kishore, OU	Students	Interaction

Chapter inauguration and workshop	under TEQIP-II	Jan 2013 (2 days)	S.P. Anchuri, Chairman, ICI Hyderabad Sri Yedukondalu, General Secretary, ICI		with professionals
Design and analysis using STAAD Pro	GRIET under TEQIP-II	23rd and 24th Jan 2013 (2 days)	T. Naresh kumar, manager Sandilya consultancy L. Lakshman Rao, Jones Lang Laralle M. Shanker, Manager, NCC	Students	Use of STAADPro
Guest Lecture on " Design and Construction of Sir Arthor Cotton Barrage"	GRIET	23rd Jan 2013 (1 day)	Dr.P Rama Raju Chief Engineer (Retd)	Students and staff	Exposed to Salient features of barrage
STEPS 2012	GRIET under TEQIP-II	19th Dec 2012	Guest lectures by eminent speakers	Faculty and students	Exposure to latest developments
STAAD Pro	CAD center	13th Sep 2012		Students	Introduction to STAAD.Pro

3.5. Curriculum Development (15)

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

(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)

(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 has 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)

(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
Program Structure
Civil Syllabus 1st Year
Civil Syllabus 2nd Year
Civil Syllabus 3rd Year
Civil Syllabus 4th Year

Programme Structure and Course syllabus of Civil Engineering is annexed.

4. Students' Performance (75)

Admission intake in the programme

Item	2014-2015	2013-2014	2012-2013	2011-2012	2010-2011	2009-2010	2008-2009
Sanctioned intake strength in the programme	120	120	120	120	120	120	60
Total number of admitted students in first year minus number of students migrated to other programmes at the end of 1st year (N1)	103	120	120	120	120	117	60
Number of admitted students in 2nd year in the same batch via lateral entry (N2)	0	23	24	24	24	12	6
Total number of admitted students in the programme N = (N1 + N2)	103	143	144	144	144	129	66

4.1 Success Rate (20)

(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
2014-2015	103	0	0	0	0
2013-2014	143	85	0	0	0
2012-2013	144	81	97	0	0
2011-2012	144	68	88	94	0
2010-2011 (LYG)	144	58	98	107	137
2009-2010 (LYGm1)	129	54	87	107	117
2008-2009 (LYGm2)	66	24	40	47	58

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 (2010-2011)	LYGm1 (2009-2010)	LYGm2 (2008-2009)
Number of students admitted in the corresponding First Year + admitted via lateral entry in 2nd year	144.00	129.00	66.00
Number of students who have graduated in the stipulated period	137.00	117.00	58.00
Success index (SI)	0.95	0.91	0.88

Average SI 0.91

Success rate 18.20

4.2 Academic Performance (20)

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	2010-2011	2009-2010	2008-2009
Approximating the API by the following mid-point analysis			
9 < Number of students with CGPA < 10	6.00	13.00	2.00
8 < Number of students with CGPA < 9	48.00	46.00	23.00
7 <= 8	51.00	42.00	17.00
6 <= 7	16.00	12.00	14.00
5 <= 6	0.00	0.00	1.00
Total	121.00	113.00	57.00
Approximating API By Mid-CGPA	0.00	0.00	0.00
Mean of CGPA/Percentage of all the students API	7.86	8.03	7.69
Assessment	15.72	16.06	15.38

Av. API = 7.123
Academic Performance = 2 x Av. API = 15.72

Academic Performance 15.72

4.3 Placement and Higher Studies (20)

Assessment Points = 20 × (x + 1.25y)/N

where, **x** = Number of students placed
y = Number of students admitted for higher studies with valid qualifying scores/ranks, and
N = Total number of students who were admitted in the batch including lateral entry subject to maximum assessment points = 20

Item	LYG 2010-2011	LYGm1 2009-2010	LYGm2 2008-2009
Number of admitted students corresponding to LYG including lateral entry (N)	144.00	129.00	66.00
Number of students who obtained jobs as per the record of placement office (x1)	27.00	28.00	26.00
Number of students who found employment otherwise at the end of the final year (x2)	12.00	10.00	5.00
Number of students who opted for Higher studies with valid qualifying scores/ranks (y)	30.00	39.00	22.00
x=x1+x2	39.00	38.00	31.00
Assessment points	10.62	13.45	17.73

Average assessment points 13.93

4.4 Professional Activities (15)

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

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

GRIET lays stress not only on the academic excellence but also on beyond academic excellence to make the Programme 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 personality 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.
- Pragnya (a tech-fest) and Pulse (a cultural fest) are major annual attractions and widely participated.

To give fillip to beyond-curricular activity, the institution has encouraged registration of its student groups as members in professional societies, chapters such as: Institution of Engineers (IE), Indian Concrete Institute (ICI), Indian Society for Technical Education (ISTE), Free Software Foundation (FSF), Computer Society of India (CSI), Institute of Electrical and Electronic Engineers (IEEE), Institute of Electronic and Telecommunication Engineers (IETE), Society of Automobile Engineers (SAE), Robotics Club, Gaming Club.

The student chapters of professional societies such as IE, ICI, IEEE, CSI, Robotic Club, and FSF have been intensely involved in Co-curricular activities giving full benefit and encouragement to the students.

Events organized by the professional societies/chapters/others:

Title	Professional Societies	Date	Achievement / Benefit
Guest Lecture on "Planning, Design and Construction of Metro Rail Project" Er. Saibaba Chief - Engineer (HMRDA)	IEI Student chapter	9 Feb 2015	Lecture aimed to make students aware of latest construction methods
Guest Lecture by Mr. Mogul K and Srinvasan on career guidance and how to face an interview	CONsoft Technologies	21 Oct 2014	Lecture aimed towards personality development
Workshop on DURABILITY OF CONCRETE by Mavul rao & team (jaypee cement)	ICI-student chapter	15 Oct 2014	Workshop gave clear understanding to students about properties of fresh concrete
Lecture on " Goal Setting and achievement by the students" Prof. K.V.Subba Raju Ph.D. M. Sc (Applied Psychology), Harvard University USA	GRIET	27 Sep 2014	Motivational lecture for personality development
Lecture on "Water Conservation" Er. M.K.Dixit SE(WALMI) Water and Land Management Institution	GRIET	5 Sep-14	Lecture highlighted the importance of water conservation and Practical aspects.
Guest lecture on "Water Resource Management" Er. I S N Raju Former Chief Engineer Central Design organization(I & CAD)	GRIET	5 Sep 14	Practical aspects in design and construction of Irrigation structures.
Sri K. Pitchi Reddy Retired Chief Engineer Roads and Buildings delivered a lecture on "Traffic Engineering"	ICI Student Chapter	9 Aug 2014	Lecture highlighted the importance of roads and buildings and practical aspects.
A two day national workshop conducted on "Sustainable Technologies in Civil Engineering: Perspectives and Strategies (STEPS	GRIET	27&28 Dec13	Aimed on Sustainable Technologies in Civil Engineering.

2013)"			
Workshop on Green Buildings	ICI Student Chapter	9 Oct 2013	Aimed on awareness of Green Buildings
Guest lecture on "Advances in Cement and Concrete" Er. C. Yedukondalu Hon. Secretary ICI- APHC	ICI student chapter	26 Jul 2013	Lecture aimed at creating awareness on recent developments in cement, admixtures and properties of concrete
Guest lecture on " Introduction on Impact of earth quake behavior on buildings" by Dr. M. Janardhan, Professor, JNTUH	GRIET	2 Feb 2013	Introduction on earthquake resistant design of buildings.
Guest lecture on "Construction Network & Project Management" by Dr. A. N. Rao	GRIET	19 Feb 2013	Aimed on construction management with networks and relevant software.
National symposium on software 2.0 emerging competencies	CSI	30 Apr 2013	Workshop conducted for academic improvement
Others:			
Robotics Clusters	IEEE	21st February, 12th March & 04th April, 2015	Emphasizing the increasing interest in Robotics in the students, the robotics cluster series helped to ensure that the participants were involved in robot making hands on sessions.
Web Technologies Clusters	IEEE	18th February, 4th & 16th March	The series of the Web Technologies Clusters helped the participants to understand and applications of Web technologies
Android Workshop	IEEE	5th and 6th February, 2015	Equipping the attendees with necessary software and imparting sufficient knowledge for Android App Development
Technical Talk on Internet of Things by Mr. Sumit Kumar	IEEE	31st January, 2015	The Internet of Things (IOT) is the network of physical objects or "things" embedded with electronics, software,

			sensors and connectivity to enable it to achieve greater value and service by exchanging data with the manufacturer, operator and/or other connected devices.
Launch of Skill Connect Program	IEEE	27th December, 2014	Emphasizing the need for the students to elevate their levels in accordance with the current standards
Colloquium 14	IEEE	11th October 2014	Quality source of knowledge to the students and faculty alike, about various topics of same origin.
Technical Talk on Ham Radio	IEEE	15th September, 2014	The motto, to offer an alternative and cost-effective option for remote communicators in rural areas and developing countries
Robotics Cluster II	IEEE	12th August, 2014	Aimed to transform the cluster attendees into a team and decide the course of action of the cluster, as the motto of clusters is to provide a working environment for enthusiastic students
Junior ExeCom Recruitment Drive	IEEE	17th July, 2014	To pass on the legacy of IEEE GRIET SB into professional hands and to provide an insight to the upcoming batches on the function of student branch
Robotics Cluster	IEEE	25th March, 2014.	Presentation on theory and evolution of robotics, which dealt with the developmental necessities and logic of

			robotics
Literary Cluster	IEEE	15th March 2014	Aims to mainly focus on the development of a student in the field of public speaking, writing and reading skills, thereby boosting their confidence levels high enough to face the present day world.
Technical talk on "Chandrayaan-1, Stepping stone to MOM"	IEEE	13th March, 2014	Topics dealing with the rise of India as superpower in the field of space exploration and about the effect of the success of Chandrayaan-1 on Mars Orbiter Mission.
Web technology Cluster	IEEE	25th February, 2014	acquainting students about one of the most basic and necessary skill for a web designer, "Photoshop"
Seminar on "Transformation of Data: from Relation data to Big data"	IEEE	01 Mar 2013	The seminar aimed at introducing the students to the increasing importance of "Data" in today's technological world and how this continuously multiplying data can be dealt with.
Workshop on "Android Application Development"	IEEE	27 Feb 2013 to 28 Feb 2013	The workshop focused on the basic theoretical concepts of android application development tools and practical implementation of these concepts to design a simple application
Seminar on "Research and Education Opportunities in Data Sciences"	IEEE	28 Jan 2013	Emphasized the importance of Data Sciences to the students
Industrial Visit To Center for Electronic Test Engineering (CETE),	IEEE	02 Jan 2013	Exposed to the importance of testing all

ECIL, Hyderabad			the electric machinery used in both research and industry in order to prevent any hazardous accidents.
PRAGNYA'12	IEEE	09 Oct 2012 to 10 Oct 2012	Prangnya'12 a national level technical symposium offers challenges for people coming from various walks of engineering. The breadth of events extends from the classical paper presentations, to new and demanding events such as carbon trading.
WIE Star Program	IEEE	03 Aug 2012, 06 Aug 2012, 16 Aug 2012	To educate the government school students about the basics of computers, electronics, communication etc., and update them with various developments in technology such as robotics.
IEEE Star Program	IEEE	03 Aug 2012	This educational outreach program promotes involvement of IEEE members with local junior high and high schools in order to create a positive image of engineering careers.
Open Source Seminar	IEEE & FSF	21 Jul 2012	The second and third year students attended this seminar where introduction to the concept of open source was given and its uses and advantages were discussed.
Android Seminar	IEEE & FSF	21 Jul 2012	To let the students know the working of android and its applications
"GRIET Productions" Club	IEEE	31 Jul 2012	It provides a platform for

			the students who are interested in photography, cinematography, direction and script writing.
Student Outreach Session	IEEE	25 Jun 2012	The basic idea of this session is to impart knowledge about safety from peril of addictions by the youngsters.

4.4.2 Organization of paper contests, design contests, etc. and achievements (3)

(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.

Department level activities

Name of event	Date	No benefitted	Activities	Achievement
UN World water day 2014	22-03-2014	110 Nos	PPT Presentations, Essay writing, Group Discussion, Elocution, Poster presentation, Situational Skit, Listening Comprehension	Development of skills for leadership and communication

UN World water day 2015	22-03-2015	217 Nos	PPT Presentations, Essay writing, Group Discussion, Elocution, Poster presentation, Situational Skit, Listening Comprehension	Development of skills for leadership and communication
Pragnya 2014	17-10-2014 & 18-10-2014	52 Nos	Collusus Brick Bond Mock Up Paper Presentation	Development of technical knowledge
UN Peace day-2014	21-09-2014	154 Nos	PPT Presentations, Essay writing, Group Discussion, Elocution, Poster presentation, Situational Skit, Listening Comprehension	Development of skills for leadership and communication
UN Peace day-2013	21-09-2013	227 Nos	PPT Presentations, Essay writing, Group Discussion, Elocution, Poster presentation, Situational Skit, Listening Comprehension	Development of skills for leadership and communication
Engineer's Day 2014	15-09-2014	154 Nos	PPT Presentations, Essay writing, Group Discussion, Elocution, Poster presentation, Situational Skit, Listening Comprehension	Development of skills for leadership and communication
Engineer's Day 2013	15-09-2013	227 No s	PPT Presentations, Essay writing, Group Discussion, Elocution, Poster presentation, Situational Skit, Listening Comprehension	Development of skills for leadership and communication

Engineer's Day 2012	15-09-2012	146 Nos	PPT Presentations, Essay writing, Group Discussion, Elocution, Poster presentation, Situational Skit, Listening Comprehension	Development of skills for leadership and communication

Name of the Event Organized	Date	Benifited No	Achievements
Workshop on Construction & Demolition Waste Recycling	28-Feb-15	17	Reuse of C&D waste
Student Chapter (IEI) inauguration by A. Saibaba, Chief Engineer, Railways (IRSE) in the department of Civil Engineering	09-Feb-15	120	Detailed knowledge of upcoming project
Visited Andhra Pradesh Engineering Research Laboratories(APERL)	2 & 3 Feb 2015	120	Gained practical knowledge
Conducted Psychology Test by Mr. Ashish shah Psychology Trainer, BOCCONI, India	04-Feb-15	130	Awarness on Psycology
Awareness programme for GRE and GATE	23-Jan-15	140	Awareness on GRE & GATE rules and benefits
Awareness program on Need of Learning different software's for the civil Engineering Students	21-Jan-15	120	Idea about latest software in Civil engg
Seminar on Augmenting Power supply for the lift irrigation and drinking water schemes	29 -30 Jan 2015	20	Exposure to latest developments

Two day National workshop conducted on "Sustainable Technologies in civil Engineering: Perspectives and Strategies, STEPS-2014	16& 17 Dec 2014	25	Sustainable technologies in Civil Engg
Training program on Total Station	19 Dec 2014 to 24 Dec 2014	7	Training to Faculty and students on Total station survey
Institution Visit to Survey of India	10-Apr-14	50	Familiarity with activities of Survey of India & interaction with staff
Sustainable Technologies in Civil Engineering: Perspectives and Strategies, STEPS 2013	27 & 28 Dec13	50	Lectures by eminent persons
Sustainable Technologies For Effective Management of Water Resources by Dr.P.RamaRaju, Former Engineer-in Chief, AP Irrigation	27-Dec-13	50	Awareness on Sustainable methods of water resources management
Mining the minds of the masses for sustainable rural technologies by Mr.J Srikar,Vice President, palle Srujana, NGO Working on Sustainable Rural Technologies	27-Dec-13	50	Awareness on Sustainable methods of water resources management
Eco Yoga for attitudinal changes towards ecological sustainability by Dr. M Venkatareddy Ex Director, Govt Vemana Yoga Research Institute, Hyderabad	27-Dec-13	50	Awareness on Sustainable methods of water resources management

Sustainable Green Building Technologies with case study, Field Visit to Godrej Green Building near Hi-tech City, Hyderabad by Er.K Sampath KumarCounsellor- Green Buildings, CII-Sohrabji Godrej Green Business centre	28-Dec-13	**50**	Exposure to green building technologies
Sustainable Designs Of Water Supply Distribution Using EPANET Software of US Environmental Protection Agency by Er. D. Ram Mohan Rao, Associate Professor, Muffakham jah College of Engineering & Technology, Hyderabad	28-Dec-13	**50**	Water distribution network design using EPANET
Sustainable Technologies for Disaster Preparedness and Management by Dr. M. Bhasker Rao, Former Specialist in Policy Planning and related issues, SAARC Disaster Management Centre, New Delhi	28-Dec-13	50	Disaster management
A two day national workshop on Building planning & Drawing using Auto CAD	18^{th} &19^{th} Mar 2013	43	Techniques in AutoCAD
A two day national workshop on Intelligent Surveying using Total Station	25^{th}&26^{th} Mar 2013	41	Use of Total Station

A one day national workshop Recent Advances in Pavement Materials and Pavement Management	8th Feb 2013	66	Knowledge on pavement materials and management
A two day national workshop on Advanced surveying using Total Station	22nd&23rd Feb 2013	78	Surveying with Total Station
A two day national workshop on Recent Trends in Concrete & Construction Technology	27th&28th Feb 2013	78	Knowledge Recent trends in construction with concrete
Industrial visit to PRECA India Pvt. Ltd	28th Sept 2013	85	Awareness on practical structural elements
Pragnya'13	4th and 5th October 2013	45	Conducted 4 technical events in department of Civil Engineering 1) A-1 Surveyor 2) Explo CIV's 3) CAD Mania 4) Paper & poster presentation
Student Chapter (ICI) inauguration in the department of Civil Engineering	Oct-12	85	Students will have exposure to activities of professional bodies

4.4.3 Publication of technical magazines, newsletters, etc (3)

(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 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.

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.

Civil Techno Project Mission: A half yearly newsletter published by department of Civil Engineering. This covers the events conducted, achievements of students and staff in the previous six moths. News letter highlights the recent developments in Civil engineering field. Editorial team headed by head of the department consists of few students and staff. Circulated among all students, faculty, industries etc.

Publications	Name of Magazine / newsletter	Issue	Started Year	Editor	Publisher(s)
Newsletter	Civil Techno Project Mission	Half yearly	2012	Dr. Mohd Hussain	Dept of Civil Engg, GRIET
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)

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

Marks cannot be greater than max Marks. 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
2015		
FDP in Entrepreneurship @EDC GRIET, Hyderabad as part of Entrepreneur initiative program.	"Faculty Development Programme in Entrepreneurship" at GRIET from 26-03-2015 to 08-04-2015, organized by Centre for entrepreneurship development (CED), Hyderabad supported by Entrepreneurship Development Institute of India(EDII) Ahmadabad, sponsored by National Science and Technology Entrepreneurship Development Board (Ministry of Science & Technology, Government of India)	Participants: Dr. V Srinivasa Reddy Associate Professor Department of Civil Engineering S Venkata Charyulu Assistant Professor Department of Civil Engineering
2014		
Entrepreneur Development Cell	"Competition on Innovation and Product Development" on 22 Jan 2014 at Block No:4 Department of Bio-Technology , Room No:	N C Maulika (11241A0145) III/IV B.Tech Student

	4413	(2011-15) gave her poster presentation on Innovative crack healing concrete.

Institute Level Entrepreneurial Activities:

Year	Event	Achievement/ Impact
2012-13	1. Student Competition on 'Entrepreneurship challenge' 2. Lecture by Patent Awareness 3. MSME Program on Entrepreneurship	1. Mr. VV Hitheswar successfully launched YQ Software Ltd. 2. Eight students joined family business in 2011-12 3. Thirteen students joined family business in 2012-13
2013-14	1. Organized a guest lecture by eminent and entrepreneur Mr. Srikanth of sunfield energy pvt.Ltd on 23.10.2013 2. An interactive session with CEO of Fortune Automobiles Mr. Nirav Modi on 22.11.2013 3. 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	1. Organized a seminar on importance of entrepreneurship on 27-8-2014 and Assistant Director MSME was chief guest 2. Conducted " idea tree" on 19-2-2015 3. Conducted an FDP for GRIET Staff from 26-3-2015 to 8-4-2015 in collaboration with Centre for Entrepreneurship Development GRIET initiated	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 become entrepreneurs

	the culture of incubation centres in association with Govt.of India and private industries. 4. GRIET established incubation centre with Micro Small Medium Enterprise(MSME) 5. 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	

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

(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.

Inter-Institute Events by Students:

Name of the Programme	Year	Place	Name of the students/ Branch	Achievement
Ankhur business Plan (B- Plan)	11 Feb 2015	Institute of Public Enterprises (IPE)	Ms. K. Keerthi (III B.Tech)/ Civil Engineering	Fifth Position
"Survey saints" held at CONVERGENCE 2K15	2-4 Mar 2015	VNRVJIET	Mr. M. Bharadwaj II B.Tech / Civil Engineering	First position
"Tech LIKZ" held at CONVERGENCE 2K15	2-4 Mar 2015	VNRVJIET	Mr. M. Bharadwaj II B.Tech / Civil Engineering	Participated
"CBIT CIVILIZATION 2015"	10 & 11 March 2015	CBIT	Mr. A. Sai chetan 12241A0102 and Miss. Ch. Sirisha 12241A0109	Paper Presentation
"STHAPTYA 2015	10 -11 March 2015	JNTUH	Mr. A. Sai chetan 12241A0102 and Miss. Ch.	Paper Presentation

			Sirisha 12241A0109	
47th Engineers' Day	15th Sep 2014	Institution of engineers (India)	Mr. M. Azharuddin 11241A0194	bagged award
Best outgoing student	Aug 2014	JNTUH	Pentala Divya, 10241A0145	Gold Medal
NCETSTM2K14	08-09th August 2014	MREC, Hyderabad	Y Sai Santosh	second prize in Paper Presentation
"Technology Entrepreneur Program(TEP)"	26 Jul 2014	ISB	R. Kowsik 12241A0149	winning team leader in Young Entrepreneur
13thGraduation day	JUL 2013	GRIET	Ms. Anusha (09241A0157)	First with 88.27%
13thGraduation day	JUL 2013	GRIET	Mr. Gopi Krishna (09241A0165)	Mrs&Mr Masthan endowment award
13thGraduation day	JUL 2013	GRIET	Ms.P.Divya (10241A0145) & Ms.Navyatha (10241A01A3)	Mrs&Mr Masthan endowment award

Student Publications:

1. V Srinivasa Reddy, **N C Maulika** (2014), " Bacteria Based High Performance Concrete", National Conference on Advances in Civil Engineering and Infrastructure development (ACEID-2014), 6-7 February 2014, Vasavi College of Engineering, Hyderabad.
2. V Srinivasa Reddy, **Y Sai Santosh** (2014), "Post Fire Damage Assessment And Rehabilitation Of Fire Damaged Concrete Structures", Proceedings of the National Conference on Emerging Trends in Science, Technology and Management (NCETSTM2K14), Malla Reddy Engineering College, Hyderabad, 08-09th August 2014, pp. 44-53. (Sai santosh got second prize (photo of prize and certificate attached))

5 Faculty Contributions (175)

List of Faculty Members:

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

For CAYm2 2012-2013

Name of the Faculty	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	Interaction with outside world
						1st Year	UG	PG			Funding Agency	Amount		
Dr G Venkata Ramana	Ph.D	JNTU, Hyderabad	2010	Professor	01.05.2010	0.00	100.00	0.00	14	None	None	0.00	0	None
Dr. Mohammad Hussain	Ph.D	JNTU, Hyderabad	2002	Professor	03.06.2011	0.00	100.00	0.00	6	None	None	0.00	0	Institution of eminence in India
Dr Akshay SK Naidu	Ph D	NTU, Singapore	2003	Professor	01.03.2012	0.00	100.00	0.00	13	None	None	0.00	0	None
Dr. Ravi Shankar BR	Ph. D	Univ. of Illionois, Urbana champaign, USA	2007	Associate professor	02.08.2010	0.00	100.00	0.00	6	None	None	0.00	0	None
Sri V Gajendra	M.E/ M.Tech	MS Univ of Baroda,	1996	Associate professor	08.08.2009	0.00	100.00	0.00	11	None	None	0.00	0	Institution of eminence in India
Sri V Mallikarjun Reddy	M.E/ M.Tech	JNTU, Hyderabad	2008	Associate professor	01.07.2010	0.00	100.00	0.00	0	None	None	0.00	0	Institution of eminence in India
Sri GVV Satyanarayana	M.E/ M.Tech	JNTU, Hyderabad	2008	Associate professor	16.11.2010	0.00	100.00	0.00	0	None	None	0.00	0	Institution of eminence in India

Ms. C Lavanya	M.E/ M.Tech	JNTU, Kakinada	2005	Assistant Professor	27.05.2010	0.00	100.00	0.00	4	None	None	0.00	0	Institution of eminence in India
Sri Bh. Mahesh Chandraaknth	B.E/ B.Tech	JNTUH	2008	Assistant Professor	16.10.2010	0.00	100.00	0.00	0	None	None	0.00	0	None
Sri S Venkata charyulu	M.E/ M.Tech	JNTUH	2013	Assistant Professor	09.07.2010	0.00	100.00	0.00	0	None	None	0.00	0	None
Sri S.Prasad Raju	M.E/ M.Tech	JNTUH	2012	Assistant Professor	25.10.2010	50.00	50.00	0.00	0	None	None	0.00	0	None
Nithya John	M.E/ M.Tech	JNTUH	2011	Assistant Professor	02.04.2012	0.00	100.00	0.00	0	None	None	0.00	0	None
Mr.Y. Kamala Raju	M.E/ M.Tech	JNTU, Kakinada	2011	Assistant Professor	22.05.2012	0.00	100.00	0.00	0	None	None	0.00	0	None
Ms O.S.D Hima Bindu	M.E/ M.Tech	Andhra Univ	2005	Assistant Professor	25.06.2012	0.00	100.00	0.00	0	None	None	0.00	0	None
Mr. A. Srinivasa Reddy	M.E/ M.Tech	Bharat University	2007	Assistant Professor	27.06.2012	0.00	100.00	0.00	0	None	None	0.00	0	None
Mr. D.Siddu Ramulu	B.E/B.Tech	JNTU H	2009	Assistant Professor	14.07.2012	0.00	100.00	0.00	0	None	None	0.00	0	None
R. Ramya Swetha	B.E/B.Tech	Andhra Univ	2013	Assistant Professor	12.09.2012	0.00	100.00	0.00	0	None	None	0.00	0	None
Mr. B.Raja sekhar	M.E/ M.Tech	JNTUH	2010	Assistant Professor	06.12.2012	0.00	100.00	0.00	0	None	None	0.00	0	None
Mr.C.Venkateshwara Rao	M.E/ M.Tech	Andhra Univ	2011	Assistant Professor	07.12.2012	0.00	100.00	0.00	0	None	None	0.00	0	None
Mr. B.Srinivasa Rao	M.E/ M.Tech	JNTUH	2009	Assistant Professor	06.12.2012	0.00	100.00	0.00	0	None	None	0.00	0	None
Mr. B.Krupakar Yadav	M.E/ M.Tech	JNTUH	2012	Assistant Professor	27.11.2012	0.00	100.00	0.00	0	None	None	0.00	0	None
Mr. S. Madhusudhan Reddy	M.E/ M.Tech	Andhra Univ	2012	Assistant Professor	29.11.2012	0.00	100.00	0.00	0	None	None	0.00	0	None
Mr. P. Mahesh kumar	M.E/ M.Tech	JNTUK	2005	Assistant Professor	30.11.2012	0.00	100.00	0.00	0	None	None	0.00	0	None
Mr. B. Srinu Naik	M.E/ M.Tech	JNTUH	2012	Assistant Professor	3.12.2012	0.00	100.00	0.00	0	None	None	0.00	0	None
Mr. P.N.K Haranath	M.E/ M.Tech	JNTUH	2009	Assistant Professor	3.12.2012	0.00	100.00	0.00	0	None	None	0.00	0	None
Mr. T.K. Satish Kumar	M.E/ M.Tech	JNTUA	2011	Assistant Professor	4.12.2012	0.00	100.00	0.00	0	None	None	0.00	0	None
Mr. M.Prasanna Kiran Kumar	M.E/ M.Tech	Andhra Univ	2012	Assistant Professor	8.12.2012	0.00	100.00	0.00	0	None	None	0.00	0	None
Mr.. Ravi Gadiraju	M.E/ M.Tech	Andhra Univ	2010	Assistant Professor	1.12.2012	0.00	100.00	0.00	0	None	None	0.00	0	None

For CAYm1 2013-2014

Name of the Faculty	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	Interaction with outside world
						1st Year	UG	PG			Funding Agency	Amount		
Dr. Mohammad Hussain	Ph.D	JNTU, Hyderabad	2002	Professor	03.06.2011	0.00	100.00	0.00	6	None	None	0.00	0	Institution of eminence in India
Dr G Venkata Ramana	Ph.D	JNTU, Hyderabad	2010	Professor	01.05.2010	0.00	100.00	0.00	14	None	None	0.00	0	Institution of eminence in India
Sri V Gajendra	M.E/ M.Tech	MS Univ of Baroda,	1996	Associate professor	08.08.2009	0.00	100.00	0.00	14	None	None	0.00	0	Institution of eminence in India
Sri V Mallikarjun Reddy	M.E/ M.Tech	JNTU, Hyderabad	2008	Associate professor	01.07.2010	0.00	100.00	0.00	4	None	None	0.00	0	Institution of eminence in India

Sri GVV Satyanarayana	M.E/ M.Tech	JNTU, Hyderabad	2008	Associate professor	16.11.2010	0.00	100.00	0.00	0	None	None	0.00	0	Institution of eminence in India
Mr. T Srinivas	M.E/ M.Tech	JNTU, Hyderabad	2006	Assosiate professor	20.06.2013	0.00	100.00	0.00	0	None	None	0.00	0	Institution of eminence in India
Mr. B Shanmukhewara Babu	M.E/ M.Tech	JNTU, Hyderabad	1993	Assosiate professor	20.06.2013	0.00	100.00	0.00	0	None	None	0.00	0	None
Mr. V Srinivasa Reedy	M.E/ M.Tech	JNTU, Hyderabad	2002	Assosiate professor	01.07.2013	0.00	100.00	0.00	35	None	None	0.00	0	Institution of eminence in India
Ms. C Lavanya	M.E/ M.Tech	JNTU, Kakinada	2005	Assistant Professor	27.05.2010	0.00	100.00	0.00	8	None	None	0.00	0	Institution of eminence in India
Sri S Venkata charyulu	M.E/ M.Tech	JNTU, Hyderabad	2013	Assistant Professor	09.07.2010	0.00	100.00	0.00	0	None	None	0.00	0	None
Sri V. S.Prasad Raju	M.E/ M.Tech	JNTU, Hyderabad	2012	Assistant Professor	25.10.2010	50.00	50.00	0.00	1	None	None	0.00	0	None
Nithya John	M.E/ M.Tech	JNTU, Hyderabad	2011	Assistant Professor	02.04.2012	0.00	100.00	0.00	0	None	None	0.00	0	None
Mr.Y. Kamala Raju	M.E/ M.Tech	JNTU, Kakinada	2011	Assistant Professor	22.05.2012	0.00	100.00	0.00	0	None	None	0.00	0	None
Ms O.S.D Hima Bindu	M.E/ M.Tech	Andhra University	2005	Assistant Professor	25.06.2012	0.00	100.00	0.00	0	None	None	0.00	0	None
Mr. A Srinivasa Reddy	M.E/ M.Tech	Bharat University	2007	Assistant Professor	27.06.2012	0.00	100.00	0.00	0	None	None	0.00	0	None
Mr.. Ravi Gadiraju	M.E/ M.Tech	Andhra University	2010	Assistant Professor	1.12.2012	0.00	100.00	0.00	0	None	None	0.00	0	None
Mr. V.S.S.Sudheer Chekka	M.E/ M.Tech	JNTUH	2014	Assistant Professor	20.06.2013	0.00	100.00	0.00	0	None	None	0.00	0	None
Ms. Ayona Nair	M.E/ M.Tech	Mahatma Gandhi Univ, Kerala	2011	Assistant Professor	01.07.2013	0.00	100.00	0.00	0	None	None	0.00	0	None
Mr. M. Suresh Babu	M.E/ M.Tech	Andhra University	2012	Assistant Professor	12.09.2013	0.00	100.00	0.00	0	None	None	0.00	0	None
Ms. P. Sirisha	M.E/ M.Tech	CBIT/Osmania University	2008	Assistant Professor	10.02.2014	0.00	100.00	0.00	0	None	None	0.00	0	None
Mr. D.Siddu Ramulu	B.E/ B.Tech	JNTU H	2009	Assistant Professor	14.07.2012	0.00	100.00	0.00	0	None	None	0.00	0	None
Ms. P.Santhi Raj	B.E/ B.Tech	NITW	2000	Assistant Professor	25.06.2012	0.00	100.00	0.00	0	None	None	0.00	0	None
K Shilpa	B.E/ B.Tech	SVU	2003	Assistant Professor	03.07.2012	0.00	100.00	0.00	0	None	None	0.00	0	None

Dr. Ravi Shankar BR	Ph. D	Univ. of Illionois, Urbana champaign, USA	2007	Associate professor	02.08.2010	0.00	100.00	0.00	6	None	None	0.00	0	Institution of eminence in India
Ms. J. Srilaxmi	B.E/ B.Tech	GRIET/JNTU, Hyderabad	2013	Assistant Professor	24.07.2013	0.00	100.00	0.00	0	None	None	0.00	0	None
Dr Akshay SK Naidu	Ph D	NTU, Singapore	2003	Professor	01.03.2012	0.00	100.00	0.00	13	None	None	0.00	0	Institution of eminence in India
Ms. R Ramya Swetha	M.E/ M.Tech	Andhra University	2013	Assistant Professor	12.09.2012	0.00	100.00	0.00	0	None	None	0.00	0	None

For CAY 2014-2015

Name of the Faculty	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	Interaction with outside world
						1st Year	UG	PG			Funding Agency	Amount		
Dr. Mohammad Hussain	Ph.D	JNTU, Hyderabad	1983	Professor	03.06.2011	0.00	100.00	0.00	6	None	None	0.00	0	Institution of eminence in India
Dr. N. Sanjeev	Ph.D	Andhra University	1983	Professor	03.11.2014	0.00	25.00	75.00	9	None	None	0.00	0	None
Dr. G.V.K.S.Vara Prasad	Ph.D	NIT, Warangal	2008	Professor	29.12.2014	0.00	100.00	0.00	9	None	None	0.00	0	Institution of eminence in India
Sri C.V.S Narayana	M.E/ M.Tech	NIT, Warangal	1985	Professor	23.12.2014	0.00	100.00	0.00	1	None	None	0.00	0	Institution of eminence in India
Sri V Mallikarjun Reddy	M.E/ M.Tech	JNTU, Hyderabad	2008	Assosiate professor	01.07.2010	0.00	50.00	50.00	6	None	None	0.00	0	Institution of eminence in India
Sri GVV Satyanarayana	M.E/ M.Tech	JNTU, Hyderabad	2008	Assosiate professor	16.11.2010	0.00	25.00	75.00	7	None	None	0.00	0	Institution of eminence in India
Mr. T Srinivas	M.E/ M.Tech	JNTU, Hyderabad	2006	Assosiate professor	20.06.2013	0.00	50.00	50.00	0	None	None	0.00	0	Institution of eminence in India
Mr. B Shanmukhewara Babu	M.E/ M.Tech	JNTU, Hyderabad	1993	Assosiate professor	20.06.2013	0.00	100.00	0.00	0	None	None	0.00	0	Institution of eminence in India
Dr. V Srinivasa Reedy	PhD	JNTU, Hyderabad	2002	Assosiate professor	01.07.2013	0.00	50.00	50.00	44	None	None	0.00	0	Institution of eminence in India

Dr. C Lavanya	PhD	JNTU, Kakinada	2005	Assistant Professor	27.05.2010	0.00	100.00	0.00	9	None	None	0.00	0	Institution of eminence in India
Sri S Venkata charyulu	M.E/ M.Tech	JNTU, Hyderabad	2013	Assistant Professor	09.07.2010	0.00	100.00	0.00	0	None	None	0.00	0	Institution of eminence in India
Sri S.Prasad Raju	M.E/ M.Tech	JNTU, Hyderabad	2012	Assistant Professor	25.10.2010	50.00	50.00	0.00	0	None	None	0.00	0	None
Mr. Y. Kamala Raj	M.E/ M.Tech	JNTU, Kakinada	2011	Assistant Professor	22.05.2012	0.00	100.00	0.00	0	None	None	0.00	0	None
Ms. O.S.D Hima Bindu	M.E/ M.Tech	Andhra University	2005	Assistant Professor	25.06.2012	0.00	100.00	0.00	0	None	None	0.00	0	Institution of eminence in India
Mr. A. Srinivasa Reddy	M.E/ M.Tech	Bharat University	2007	Assistant Professor	27.06.2012	0.00	100.00	0.00	0	None	None	0.00	0	None
Ms. Ayona Nair	M.E/ M.Tech	Mahatma Gandhi Univ, Kerala	2011	Assistant Professor	01.07.2013	0.00	100.00	0.00	0	None	National Agency	0.00	0	None
Ms. P Sirisha	M.E/ M.Tech	CBIT/Osmania University	2008	Assistant Professor	10.02.2014	50.00	50.00	0.00	0	None	None	0.00	0	None
Ms. C Preeti	M.E/ M.Tech	IIIT, Hyderabad	2013	Assistant Professor	24.06.2014	0.00	100.00	0.00	0	None	None	0.00	0	None
Ms. R Ramya Swetha	M.E/ M.Tech	Andhra University	2013	Assistant Professor	12.09..2012	0.00	100.00	0.00	0	None	None	0.00	0	None
Mr. Shaik Fayazuddin	M.E/ M.Tech	NIT, Warangal	2014	Assistant Professor	01.08.2014	0.00	100.00	0.00	0	None	None	0.00	0	None
Mr. G Karthik	M.E/ M.Tech	NIT, Nagpur	2014	Assistant Professor	25.06.2014	0.00	100.00	0.00	0	None	None	0.00	0	None
Ms. K Shilpa	M.E/ M.Tech	JNTU H	2014	Assistant Professor	03.07.2012	0.00	100.00	0.00	0	None	None	0.00	0	None
Mr, D.Siddu Ramulu	B.E/ B.Tech	JNTU, Hyderabad	2009	Assistant Professor	14.07.2012	0.00	100.00	0.00	0	None	None	0.00	0	None
Ms. P.Santhi Raj	M.E/ M.Tech	JNTUH	2014	Assistant Professor	25.06.2012	0.00	100.00	0.00	0	None	None	0.00	0	None
Dr G Venkata Ramana	Ph.D	JNTU, Hyderabad	2010	Professor	01.05.2010	0.00	100.00	0.00	14	None	None	0.00	0	nstitution of eminence in India
Ms. J. Srilaxmi	B.E/ B.Tech	GRIET/JNTU, Hyderabad	2013	Assistant Professor	24.07.2013	0.00	100.00	0.00	0	None	None	0.00	0	None
Mr. V.S.S.Sudheer Chekka	M.E/ M.Tech	JNTUH	2014	Assistant Professor	20.06.2013	0.00	100.00	0.00	0	None	None	0.00	0	None

Ms. K Hemalatha	M.E/ M. Tech	JNTU, Hyderabad	2014	Assistant Professor	02.05.2014	0.00	100.00	0.00	0	None	None	0.00	0	None
Ms. K Puneetha reddy	B.E/ B.Tech	KLU	2013	Assistant Professor	02.05.2014	0.00	100.00	0.00	0	None	None	0.00	0	None
Ms. K. Soujanya	B.E/ B.Tech	SCEW/JNTU, Hyderabad	2014	Assistant Professor	03.06.2014	0.00	100.00	0.00	0	None	None	0.00	0	None
Ms. Sri Lakshmi Sravya M	M.E/ M.Tech	Vellore Inst. Of Tech	2012	Assistant Professor	26.03.2015	0.00	100.00	0.00	0	None	None	0.00	0	None

5.1 Student-Teacher Ratio (STR) (20)

STR is desired to be 15 or superior
Assessment = 20 × 15/STR; subject to maximum assessment of 20
STR = (**x** + **y** + **z**)/**N**1
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
2012-2013	140	142	121	28	403	14.39	20.00
2013-2014	135	134	141	27	410	15.19	19.76
2014-2015	137	138	133	27	408	15.11	19.85

Average assessment 19.87

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)
2012-2013	360	403	28	27	28
2013-2014	360	410	27	27	27
2014-2015	360	408	27	27	27

5.2 Faculty Cadre Ratio (20)

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

Year	A	B	N	CRI	Assessment
2012-2013	3	4	28.00	0.80	16.07
2013-2014	3	7	27.00	1.00	20.00
2014-2015	5	5	27.00	1.00	20.00

Average assessment 18.69

5.3 Faculty Qualifications (30)

Assessment = 3 × FQI
where, FQI = Faculty qualification index
= $(10x + 6y + 2z_0)/N2$
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
2012-2013	4	21	3	28.00	6.07	18.21
2013-2014	4	19	4	27.00	6.00	18.00
2014-2015	6	21	4	27.00	6.89	20.67

Average assessment 18.96

5.4 Faculty Competencies correlation to Programme Specific Criteria (15)

(Provide evidence that programme 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 (specialization, research publications, 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 ASCE and IUCEE. The procedures evolved based on the policies to assure that students at GRIET meet all program requirements.
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.
At GRIET, the structure of the curriculum provides both breadth and depth across the range of engineering topics implied by the title of the program. The professional component of our curriculum includes:

a. One year of a combination of college level mathematics and basic sciences (some with experimental experience) appropriate to the discipline.
b. One and half years of engineering topics, consisting of engineering sciences and engineering design appropriate to the student's field of study. The engineering sciences have their roots in mathematics and basic sciences but carry knowledge further toward creative application. These studies provide a bridge between mathematics and basic sciences on the one hand and engineering practice on the other. Engineering design is the process of devising a system, component, or process to meet desired needs. It is a decision-making process (often iterative), in which the basic sciences, mathematics, and the engineering sciences are applied to convert resources optimally to meet these stated needs.
c. A general education component that complements the technical content of the curriculum and is consistent with the program and institution objectives.

d. In third and fourth years the programme covers all important areas of civil engineering like Structural engineering, geotechnical engineering, transportation, water resources, environmental engineering, construction technology etc. The programme also covers advanced subjects like STAAD, AutoCAD, GIS etc.

The Civil Engineering discipline encompasses the principles in domain of materials, applied mechanics, computer aided drafting and design, construction, experimental techniques / procedures, analysis of engineering data, structural analysis / design of concrete and steel structures, design of transportation systems, water supply and sewerage facilities, canals, dams, irrigation structures, bridges, foundations, sustainability.

The following are the components of core curriculum satisfying Program Specific Criteria.

1. Program Specific Criteria's Structural engineering Courses and Faculty Competency

Structural Engineering is the subject domain dealing with design of civil engineering structures. This deals with basics of structural analysis, strength of materials and then design of structures like multistoried buildings, bridges, water tanks etc. It also deals with design with different materials like Steel, Reinforced cement concrete, prestressed concrete etc.

Structural Engineering Specific Courses	Name of the Faculty
Strength of materials	Y. Kamala Raju / K. Hemalatha
Structural Analysis	Dr. V. Srinivasa Reddy / GVV Satyanarayana
Advanced Structural Analysis	Dr. V. Srinivasa Reddy/ J. Cici Jennifer Raj
Design of Reinforced Concrete Structures	V. Mallikarjuna Reddy / V. Naresh Kumar Varma
Prestressed Concrete	Dr. Md. Hussain / P.Sirisha
Design of Steel structures	V. Mallikarjuna Reddy / C.Preeti
Finite Element Methods	GVV Satyanarayana /C.Preeti
Engineering Mechanics	V.S.P.Raju
Strength of Materials Lab	R Ramya Swetha / C. Preethi/ P.Sirisha
STAAD Lab	T. Srinivas / R. Ramya Swetha
CAD Lab	A.Srinivasa Reddy/R.Ramya Swetha

Dr. Mohd. Hussain obtained his B.Tech degree in Civil Engineering from National Institute of Technology, Warangal in the year 1983. He got Postgraduate degree M.E. in "Hydromechanics and Water Management" from University College of Engineering, Osmania University in the year 1992. He obtained his doctoral degree Ph.D. in "Water Resources Engineering" from JNTUH in the year 2002. He holds postgraduate degree MHRM from Pondicherry University in 2004 and Postgraduate Diploma in "Design and Construction of Concrete Structures" from Annamalai University in 2006. He is Fellow of Institution of Engineers (FIE), Fellow of Indian Institution of Bridge Engineers (IIBE) and Life member of IWRS, Roorkee. He is the founder coordinator of three centres in GRIET; Centre for Continuous Excellence in Life Skills(CEL), Centre for Sustainable Technologies for Eco-Social Resilience to Global Climate Change(CST-ERG) and Centre for Water Resources Engineering and Management (CREAM). He worked in Nagarjuna sagar Project and Hydrology Project AP Irrigation and Command Area Development Department. He worked as faculty member in Water and Land Management Training and Research Institute (WALAMTARI), Hyderabad for fourteen years. He was associated with a Collaborative Research project on Ground water in Chittoor district with NGRI. He has 29 years of rich field, administrative, research and teaching experience. His research interests include Water Resources Engineering, Irrigation Engineering and Management, Groundwater and Surfacewater Conjunctive Use Management, Hydrometry, Rainwater Harvesting, Capacity building of water managers and water users in the area of Irrigation Management, Participatory Irrigation Management(PIM), Concrete Bridge Engineering, Concrete structures - particularly - Buildings and Hydraulic Structures. He published Twenty six papers in journal, national and international conferences. He conducted seminars/workshops and attended both as participant and resource person in many workshops and

	seminars.
	**Dr. V Srinivasa Reddy** has joined the Department of Civil Engineering, GRIET Hyderabad as Associate Professor in July 2013. Prior to this he was working as Lecturer in Department of Civil Engineering JNTUH College of Engineering Hyderabad from Sep 2008 to Jun 2013. He received Ph.D degree in Civil Engineering from JNTU Hyderabad, M.Tech in Structural Engineering from JNTU Hyderabad in 2002 (topped his batch) and B.Tech in Civil Engineering from Acharya Nagarjuna University in 1996. He has to his credit over 56 research papers published in various referred national and international journals and conferences. His Doctoral research is on Self healing microbial concrete. He has received Scholarship from State Bank of India during his B.Tech and M.Tech. He has more than 6 years teaching experience in Civil Engineering and 10 year experience in Information Technology. He is currently member of Entrepreneur Development Cell (EDC) GRIET - member (From Nov 2013 - till date). He has association with number of professional bodies such as Institute of Engineers (India) (IEI), Indian Society for Technical Education (ISTE), Indian Concrete Institute (ICI), Universal Association of Civil, Structural and Environmental Engineers (UACSE), American Concrete Institute (ACI) India Chapter. His research interests are Concrete technology, Special concretes, Rehabilitation and Retrofitting of structures, Civil Engineering Software applications. During his teaching career he has taught both B.Tech and M.Tech subjects such as Engineering Mechanics, Surveying, Construction Management, Strength of Materials, Structural Analysis, Concrete Technology, Rehabilitation and retrofitting of structures, Structural Stability Analysis, Shells and Folded Plates, Finite Element Methods, Theory of Elasticity and Plasticity and Structural Dynamics.
	**Mr.V.Mallikarjuna Reddy** got B.Tech (Civil Engineering) from S.V.University, Tirupati in Dec 1985 and M.Tech (Structural Engineering) from JNTUH, Kukatpally in Feb 2008. He is pursuing Ph.D (2010 batch) from JNTUH. His area of research is special concretes. He has 28 years of teaching and 1 year of field experience as Structural Engineer. Attended 6 International conferences and 1 National conferences. Published 9 research papers in National, International conferences and international journals. Participated in many Faculty development programs and workshops for continuously updating his knowledge. He is executive council member of Indian Concrete Institute (ICI) Hyderabad chapter. He is also coordinator for ICI Students chapter GRIET.
	**Mr. G.V.V. Satyanarayana** got M.Tech from JNTUH, Hyderabad in Structural Engineering in 2008. He has 27 years of experience in teaching. Worked in design consultancy for 12 months as design engineer and quality control engineer for 12 months. Pursuing his Ph.D from JNTUH, Hyderabad. Attended many national and international conferences Published 6 research papers in conferences and National and International journals. Doing

	research project on "Behavioural studies of Two way slabs with blended cement concrete". Participated in many Faculty development programs and workshops for continuously updating his knowledge. By offering consultancy services, gained exposure to recent trends in civil engineering. His knowledge is helpful to guide the students in different areas such as design of RCC structural elements, cost evaluation techniques and construction management to save time and money etc., and guiding their projects.
	**Mr. T. Srinivas** did his M.Tech in Structural Engineering from JNTUH, Hyderabad and he completed his B.E. in Civil Engineering from CBIT (Chaitanya Bharathi Institute of Technology) affiliated to OU. He is now pursuing Ph.D. in JNTUH, Hyderabad. He possess 13 years of rich industrial experience in Civil Engineering constructions especially in Buildings like Planning, Analysis, Designing, Estimation and Execution of works and along with this 4 years of experience in academics. His versatile experience in different works pertaining to the construction industry made him easy to understand the basic concepts and depth of the subjects. His experience, practical knowledge and innovative teaching practices helped the students in understanding the subjects, in doing the projects and in designing the models. He participated in National Conferences, Faculty Development Programmes and many Workshops for continuously updating his knowledge. His areas of research interest are mainly focused on the utilization of Fly Ash in Geopolymer Concrete, Special Concrete, Structural Analysis and design of different structures.
	**Mr. V.S.P.RAJU** got M.Tech from JNTU Hyderabad is specialized in Structural Engineering, BE (Civil Engg.) from Osmania University and Diploma in Civil Engg. from AP Technical Board, has 10 years of teaching experience. He has guided B.Tech Projects in various streams. He is expert in handling subjects like Surveying lab, Surveying theory, Engineering Mechanics, Strength of Materials, Structural Analysis, Finite Element Methods, Earthquake Resistant Design of Buildings, Reinforced Cement Concrete and Steel Structures.
	**Mrs. R.Ramya Swetha**, obtained B.E, Civil Engineering from SRKR Engineering College, Bhimavaram, affiliated to Andhra University in the year 2009 and M.E. Structural Engineering with distinction from SRKR Engineering College, Bhimavaram, affiliated to Andhra University in 2013. She has 3 years of experience. She has guided projects for B.Tech students. She handled subjects like Numerical Methods in Structural Engineering, Project Planning and Management, Fluid Mechanics, Prestressed Concrete, Strength of materials lab, CAD Lab.

	**Mrs. P.Sirisha**, M.E from CBIT (Affiliated to Osmania University), Hyderabad is specialized in Structural Engineering and has 4 years of industrial experience and 2 years of teaching experience. She has worked in Construction Industries in Chennai and Hyderabad as Senior Design Engineer (Design and Estimations for Tender work). As Design Engineer, she is experienced in implementing the Work Order System for all the tender works, analysing the IT Parks and office buildings using different softwares. Her experience, practical knowledge and interactive teaching practices helped to students in understanding the subject and creativity in designing prototypes. Her practical knowledge helps to demonstrate the theoretical knowledge and technical skill.
	**Mr. Y Kamala Raju** obtained his Bachelor of Engineering from Muffakhamjah College of Engineering & Technology, Osmania University, M.Tech (Structural Engineering) from JNTUK, Kakinada. He joined GRIET in the year 2012 as Assistant Professor of Civil Engineering. He is having 3 years of overall experience in Teaching. He has worked in Rural Development Department, Govt. of AP as an Engineering Consultant for 2 years. He is a member of IEI. His area of research interests includes Modelling and Analysis of RCC Frames, Advanced Foundation Engineering, Strength of Materials and Prestressed Concrete related subjects. His experience, practical knowledge and innovative teaching practices helped to students in understanding the subject and creativity project works.
	**Mrs. K. Hemalatha** obtained B.Tech, Civil Engineering with distinction from GMRIT, Rajam affiliated to JNTUK in the year 2012 and M.Tech., Structural Engineering with distinction from Spoorthy Engineering College affiliated to JNTUH in the year 2014. She has one year of teaching experience. She has guided projects B.Tech students. She is presently handling subjects like Strength of materials -I and II.
	**Mr. V. Naresh Kumar Varma** obtained his B.Tech in Civil Engineering from Osmania University, Hyderabad in the year 2012 and M.Tech., Structural Engineering from JNTUCEH, Hyderabad in the year 2014. Attended one national conference in Feb 2015 in GITAM University Hyderabad.
	**Mr A. Srinivasa Reddy** obtained B.Tech. Civil Engineering with First Class from JNTU Hyderabad in the year 2005 and M.Tech, Computer Science and Engineering with first class from Bharat University in the year 2007. His research interests include mechanical behavior of natural and reinforced soils, geophysical methods applied to site characterization. He has guided projects for B.Tech students. He is expert in handling subjects like Computer Aided Drafting Lab, Building Materials Construction and Planning Theory, Environmental Engineering Subjective and Environmental

	Engineering Laboratory.
	**Ms. C. Preeti** has completed masters in 2013 from International Institute of Information and Technology Hyderabad (IIIT-H), specialized in Computer Aided Structural Engineering. Graduated in 2011 from Guru Gobind Singh Indraprastha university. She is having 2 years teaching experience.
	**Mrs J.Cici Jennifer Raj** completed masters in 2014 from Institute of Road and Transport Technology, Erode affiliated to Anna University Chennai), specialized in Structural Engineering. Graduated in 2012 from Coimbatore Institute Of Technology, Coimbatore affiliated to Anna University. She is having one year of teaching experience.

2. Program Specific Criteria's Geotechnical Engineering of Courses and Faculty Competency

Geotechnical Engineering is a field of engineering that encompasses technologies dealing with engineering properties of soil and design of foundations for structures. Foundation is crucial for safety of any structure. Students learn how to design suitable foundation for any structure depending on the nature of soil.

Geotechnical Engineering Specific Courses	Name of the Faculty
Geotechnical Engineering-1	Dr. C. Lavanya/ D. Sidhu Ramulu
Geotechnical Engineering –II	Sk. Fayazuddin
Ground improvement techniques	Dr. C. Lavanya / D. Sidhu Ramulu
Engineering Geology	Dr. C. Lavanya
Geotechnical Engineering Lab	Dr. C. Lavanya /Sk. Fayazuddin / D. Sidhu Ramulu
Engineering Geology Lab	B.Shanmukeshwara Babu /D.Siddu Ramulu
Remote sensing and GIS Lab	B.Shanmukeshwara Babu/ K.Sowjanya
Remote sensing and GIS	B.Shanmukeshwara Babu

	**Dr. C. Lavanya** is graduated from Jawaharlal Nehru Technological University (JNTU), Hyderabad in Civil Engineering. She has done her Masters from Jawaharlal Nehru Technological University (JNTU), Kakinada in Soil Mechanics and Foundation Engineering and her Ph.D from Jawaharlal Nehru Technological University (JNTUH), Hyderabad in geotechnical engineering. She has two years of industry working experience and six years in teaching including four years in research. She has published 9 research publications in international and national journals and conferences. She is a life member for Indian Geotechnical Society (IGS). She has guided mini and main projects for B.Tech students. She is expert in handling subjects like Geotechnical Engineering - I and II, Ground Improvement techniques, Engineering Geology. Her knowledge in soil mechanics and foundation engineering helps students in understanding the basic concepts & depth of subject with ease. In Geotechnical Engineering Lab and Engineering Geology Lab helps the students to enhance the understanding of basic principles, finding solutions to mathematical problems etc.
	**Mr. B. Shanmukeswar babu** completed his BTech in Civil Engineering from Bapatla Engineering college, Nagarjuna University in 1988 and M.Tech in Remote sensing from JNT University in 1993 with Distinction. M.Tech project was carried out at CSRE, IIT Mumbai and worked as Research Fello and Research Associate at JNT University and IISC, Bangalore for 3 years. Worked in Software for 16 years and in USA for 3 years. Currently working as Associate Professor in Department of Civil Engineering since June 2013 teaching Remote sensing & GIS, Engineering Geology.
	**Mr. Shaik Fayazuddin** has done his Masters in Geotechnical Engineering from NIT Warangal in 2014. He has Bachelor's degree in Civil Engineering from GITAM University, Visakhapatnam. His areas of research interests are Earthquake Engineering, Liquefaction of Soils, and Geographical Information Systems. He has attended many conferences and workshops to stay abreast of developments in his field. He has successfully coordinated many workshops and events in the department. He has been a mentor and efficiently guided B.Tech Projects. His knowledge is helpful to train the students in different areas such as Soil Mechanics, Foundation Engineering, Earthquake Engineering, Soil Dynamics and Machine Foundations.
	**Mr. D. SIDHU RAMULU** obtained B.Tech in Civil Engineering with distinction from Sree Visvesvaraya Institute of Engg. & Tech., Mahaboobnagar in the year 2009 and pursuing parttime M.Tech from JNTU Hyderabad, specialization in Geotechnical Engineering and he has nearly 7 years of experience which includes 4 years industrial experience and 3 years of teaching experience. He has worked as a Junior Engineer Trainee in IVRCL at Gujarat and as a Senior Executive Customer Service Officer in ACC Ltd. at Anantapur and received best performer for IDAP. He attended

	many national seminars and workshops. His knowledge is helpful to train the students in different areas such as Fluid mechanics, Hydraulics & Hydraulic Machinery, Engineering Geology, Auto-CAD, STAAD Pro and Geotechnical Engineering labs and subjects such as Geotechnical Engineering-I and II, Engineering Geology and Ground Improvement Techniques.
	**Ms. K. Soujanya**, obtained B.Tech from Sahasra College of Engineering for Women (JNTUH) with distinction in the year 2014. Joined GRIET in 2014. She assists students in Q-GIS lab and STAAD pro Lab.

3. Program Specific Criteria's Environmental Engineering Courses and Faculty Competency

Environmental Engineering is one of the important areas in the developed world. Providing protected drinking water to citizens and disposal of treated wastewater is main task of civil engineers.

Environmental Engineering Specific Courses	Name of the Faculty
Environmental Engineering	Dr. G. V K S V Prasad/ O.S.D. Hima Bindu
Environmental Impact Assessment	O.S.D. Hima Bindu
Environmental Engineering Lab	O.S.D. Hima Bindu / V.V.Siva Reddy

	**Dr. G.V.K.S.V.Prasad** got M.Tech from IIT Mumbai in Environmental Science and Engineering in 1989. Worked in Environmental Engineering consultancy for eight months. He has 26 years of experience in teaching. Received his Ph.D from NIT Warangal in 2008. Attended many national and international conferences including 31st IAHR convention at Seoul, South Korea. Published 9 research papers in conferences and international journals. Completed research project on "Utilization fly ash from biomass power plants in concrete" with grants from AICTE. Participated in many Faculty development programs and workshops for continuously updating his knowledge. By offering consultancy services, gained exposure to recent trends in civil engineering. His knowledge is helpful to train the students in different areas such as Water supply, Wastewater engineering, Solid waste management, Topographical survey using total station, construction management, etc. and guiding their projects.
	**Mrs. O.S.D.Himabindu** got M.E. from Andhra university in 2005 with Environmental Engineering as major. She is pursuing her Ph.D. from KLU. She has 6 years of experience in teaching. Her knowledge is helpful to train the students in different areas such as water analysis, wastewater analysis, water supply, design of STPs, solid waste management.

4. Program Specific Criteria's Water Resources Engineering of Courses and Faculty Competency

Water Resources Engineering is one of the core areas of civil engineering. Protecting the available water resources and optimal utilization of resources for different purposes is essential in the present situation of water shortage. Design of canals, irrigation structures like dams, techniques for drawing ground water and means of improving ground water table are some topics which students focus on during their programme.

Water Resources Specific Courses	Name of the Faculty
Water Resources Engineering –I	Dr. Mohammed Hussain/ C V S Narayana
Water Resources Engineering –II	Dr. Mohammed Hussain/ C V S Narayana
Water Resources System Planning & Management	T. Madhuri
Irrigation Design and drawing	T. Madhuri/Y.Kamal Raj/P.Sirisha
Groundwater development & management	C V S Narayana
Water shed management	Dr. Mohammed Hussain
Fluid Mechanics	S.Venkata Charyulu/ C V S Narayana
Fluid Mechanics Lab	S.Venkata Charyulu/S.Sumalata
Hydraulic and Hydraulic Machinery	S.Venkata Charyulu
Hydraulic and Hydraulic Machinery Lab	S.Venkata Charyulu/ S.Sumalata

	**Dr. Mohd. Hussain** obtained his B.Tech degree in Civil Engineering from National Institute of Technology, Warangal in the year 1983. He got Postgraduate degree M.E. in "Hydromechanics and Water Management" from University College of Engineering, Osmania University in the year 1992. He obtained his doctoral degree Ph.D. in "Water Resources Engineering" from JNTUH in the year 2002. He holds postgraduate degree MHRM from Pondicherry University in 2004 and Postgraduate Diploma in "Design and Construction of Concrete Structures" from Annamalai University in 2006. He is Fellow of Institution of Engineers (FIE), Fellow of Indian Institution of Bridge Engineers (IIBE) and Life member of IWRS, Roorkee. He is the founder coordinator of three centres in GRIET; Centre for Continuous Excellence in Life Skills(CEL), Centre for Sustainable Technologies for Eco-Social Resilience to Global Climate Change(CST-ERG) and Centre for Water Resources Engineering and Management (CREAM). He worked in Nagarjuna sagar Project and Hydrology Project AP Irrigation and Command Area Development Department. He worked as faculty member in Water and Land Management Training and Research Institute (WALAMTARI), Hyderabad for fourteen years. He was associated with a Collaborative Research project on Ground water in Chittoor district with NGRI. He has 29 years of rich field, administrative, research and teaching experience. His research interests include Water Resources Engineering, Irrigation Engineering and Management, Groundwater and Surfacewater Conjunctive Use Management, Hydrometry, Rainwater Harvesting, Capacity building of water managers and water users in the area of Irrigation Management, Participatory Irrigation Management(PIM), Concrete Bridge Engineering, Concrete structures - particularly - Buildings and Hydraulic Structures. He published Twenty six papers in journal, national and international conferences. He conducted seminars/workshops and attended both as participant and resource person in many workshops and seminars.
	**Mr. C.V.S NARAYANA**, B.Tech from REC Warangal in 1983 and received M.Tech with specialization in Water resources engineering from REC Warangal (NIT) in 1985. Since then he is in the field of academics serving the student community for the last 3 decades, through prestigious institutes like KITS Warangal, NEC Nellore, Gayathri Vidya Parishath, Vizag at various levels. He has 27 years teaching experience and 3 years research experience at Nagpur, NEERI. During this period he developed an excellent two dimensional dispersion medium to study qualitative and quantitative study of impact of industrial wastes on ground water. Throughout his academics is a first class with distinction student. Also he got second M.Tech degree in computer science and engineering from the prestigious institute, Birla Institute of Technology, Ranchi. He has

	registered for his Ph.D from J.N.T.U Kakinada, in the field of water resources engineering. He has mastered many of the civil engineering subjects like Engineering Mechanics, Fluid Mechanics, Hydraulic Machinery, Water Resources Engineering, Environmental Engineering, Strength of Materials, Structural Analysis etc. He has worked as Head of the Department of civil engineering for about 12 years. Earlier he has established more than 18 labs of civil engineering, 11 of them personally monitored during their establishment. He has been the Principal investigator for ICC (Industrial Consultancy cell) at KITS, Warangal and GVP, Vizag.
	**Mrs. T Madhuri**, M.S in Hydraulics & Water Resources from IIT Madras (1998) while B.E from Osmania University (1995). She has 13 years of industrial experience and 5 months of teaching experience. She started her career as developer and attained position of a Technical Architect. Worked for companies like TCS, Wipro, Infosys etc. in India and various companies in USA like Accenture. During her career, she developed client-server, web based and e-Commerce applications. She mentored developers and technical leads.
	**Mr. S.Venkat charyulu** did his M.Tech and passed out first class with the distinction from JNTUH in 2013. He did his B.E and passed out first class with distinction from the Vasvi College of Engineering affiliated to Osmania University. He has 15 years of experience In the various civil Engineering constructions, execution and implementations. He has 6 years of teaching experince. He has one year service in niset as project manager for the central governament orginazation. He has trained many students in the fields of Surveying, Fluid Mechanics, Buildings Planning and Construiction Management, Water Resources Engineering. His knowledge is helpful to train the students in different areas such as water supply, topographical survey using total station, construction management and also guiding in the academic project works.
	**Mrs. P.Sirisha**, M.E from CBIT (Affiliated to Osmania University), Hyderabad is specialized in Structural Engineering and has 4 years of industrial experience and 2 years of teaching experience. She has worked in Construction Industries in Chennai and Hyderabad as Senior Design Engineer (Design and Estimations for Tender work). As Design Engineer, she is experienced in implementing the Work Order System for all the tender works, analysing the IT Parks and office buildings using different softwares. Her experience, practical knowledge and interactive teaching practices helped to students in understanding the subject and creativity in designing prototypes. Her practical knowledge helps to demonstrate the theoretical knowledge and technical skill.

	**Mr. Y Kamala Raju** obtained his Bachelor of Engineering from Muffakhamjah College of Engineering & Technology, Osmania University, M.Tech (Structural Engineering) from JNTUK, Kakinada. He joined GRIET in the year 2012 as Assistant Professor of Civil Engineering. He is having 3 years of overall experience in Teaching. He has worked in Rural Development Department, Govt. of AP as an Engineering Consultant for 2 years. He is a member of IEI. His area of research interests includes Modelling and Analysis of RCC Frames, Advanced Foundation Engineering, Strength of Materials and Prestressed Concrete related subjects. His experience, practical knowledge and innovative teaching practices helped to students in understanding the subject and creativity project works.

5. Program Specific Criteria's Transportation Engineering of Courses and Faculty Competency

Transportation Engineering is one of the core areas of civil engineering which plays important role in development of any nation. Civil engineers play key role in development of transportation facilities like, roads, highways, railways, airports, ports and harbors. Various aspects of desgnand construction of these facilities will be covered in courses of this group.

Transportation Engineering Specific Courses	Name of the Faculty
Transportation Engineering	G. Karthik/ Y. Jahnavi
Highway Materials Testing Lab	K. Shilpa/ G. Karthik
Pavement Analysis and Design	G. Karthik / Y. Jahnavi

	**G.Karthik** got M.Tech from NIT Nagpur in Transportation Engineering in 2014. He has one year of experience in teaching. Attended an international conference in IIT Mumbai called TPDMC-2014. Attended one national conference in MGIT, Hyderabad. He has guided B.Tech main and mini projects.
	**Mrs K.Shilpa**, obtained B.E, Civil Engineering from KSRM College of Engineering, affiliated to SV University in the year 2003 and M.Tech., Transpotation Engineering with distinction from JNTUH in 2014. She has 7 years of experience. She has guided projects for B.Tech students. She handled subjects like Engieering Geology, Pavement Analysis and Surveying.

	**Mrs. Jahnavi Yarlagadda** masters in Transportation Engineering from IIT Kharagpur in the academic year 2012-14 and graduated from JNTU Kakinada in the department of Civil Engineering 2012. She has majorly worked on traffic related problems and safety of road users at intersections. Having an experience of one year in teaching profession, she dealt with diverse topics in the basic civil engineering and guided number of UG students in completion of their main project courses.

6. Program Specific Criteria's Construction Technology of Courses and Faculty Competency

Construction Technology is a branch of civil engineering dealing with the execution of civil engineering projects in site. This group covers all the courses to impart knowledge for successful completion of civil engineering projects including surveying, estimation, building materials, construction planning and management, etc.

Construction Technology	Name of the Faculty
Concrete Technology	T.Srinivas/P.Shanti Raj
Building Materials and Construction Planning	OSD Hima Bindu
Surveying	V.S.P. Raju
Surveying Lab	VSP Raju/Y.Jahnavi/ J.Srilaxmi
Estimation and costing	Dr. G. V K S V Prasad/ GVV Satyanarayana
Managerial Economics and Financial Analysis	K.Sunil Kumar
Management Science	M.Venkateshwara Raju
Concrete Technology Lab	K. Hemalatha / M.Sri Lakshmi Sravya/ P.Shanti Raj
Construction Technology and Project Management	Dr. N. Sanjeev

	**Dr. N Sanjeev** presently working as Professor & Dean in CIVIL Engineering at GRIET is an IES officer with more than 31 years of Versatile Exposure including 10 years teaching experience in Engineering colleges. Responsible for Execution of QA/ QC (Quality Assurance/ Quality Control) Procedures and Processes across all the Works Sites in accordance with ISO 9001- 2000 Quality Management System (QMS) and a Trouble Shooter for Critical Issues at Works Sites. Responsible for preparation of Quality Manuals, Method Statements, ITP's & inspection of Project Works, thorough inspection during the works in progress and the post- inspection of Project Works, to ensure strict compliance of Specifications & Designs and for reporting to Management the non-compliance as well as suitable remedial measures, including closure of NC's (Non-Conformities) observed during site visits. Responsible to Organize and conduct in

	house Interactive Refreshing Training Sessions for Site Engineers at all sites and Initiate Group discussions and Technical Workshops/ Seminars for Senior Technical Staff at HO & RO's to Accomplish the Task of near ZERO DEFECT perfection in QUALITY. Responsible for Research & Development (R & D) of Various Concrete Mix Designs (including without any River Sand).
	**Dr. G.V.K.S.V.Prasad** got M.Tech from IIT Mumbai in Environmental Science and Engineering in 1989. Worked in Environmental Engineering consultancy for eight months. He has 26 years of experience in teaching. Received his Ph.D from NIT Warangal in 2008. Attended many national and international conferences including 31st IAHR convention at Seoul, South Korea. Published 9 research papers in conferences and international journals. Completed research project on "Utilization fly ash from biomass power plants in concrete" with grants from AICTE. Participated in many Faculty development programs and workshops for continuously updating his knowledge. By offering consultancy services, gained exposure to recent trends in civil engineering. His knowledge is helpful to train the students in different areas such as Water supply, Wastewater engineering, Solid waste management, Topographical survey using total station, construction management, etc. and guiding their projects.
	**Mr. G.V.V. Satyanarayana** got M.Tech from JNTUH, Hyderabad in Structural Engineering in 2008. He has 27 years of experience in teaching. Worked in design consultancy for 12 months as design engineer and quality control engineer for 12 months. Pursuing his Ph.D from JNTUH, Hyderabad. Attended many national and international conferences Published 6 research papers in conferences and National and International journals. Doing research project on "Behavioural studies of Two way slabs with blended cement concrete". Participated in many Faculty development programs and workshops for continuously updating his knowledge. By offering consultancy services, gained exposure to recent trends in civil engineering. His knowledge is helpful to guide the students in different areas such as design of RCC structural elements, cost evaluation techniques and construction management to save time and money etc., and guiding their projects.
	**Mr. T. Srinivas** did his M.Tech in Structural Engineering from JNTUH, Hyderabad and he completed his B.E. in Civil Engineering from CBIT (Chaitanya Bharathi Institute of Technology) affiliated to OU. He is now pursuing Ph.D. in JNTUH, Hyderabad. He possess 13 years of rich industrial experience in Civil Engineering constructions especially in Buildings like Planning, Analysis, Designing, Estimation and Execution of works and along with this 4 years of experience in academics. His versatile experience in different works pertaining to the construction industry made him easy to understand the basic concepts and depth of the subjects. His experience, practical knowledge and innovative teaching practices helped the students in understanding the subjects, in doing the projects and in designing the models. He participated in National Conferences, Faculty Development Programmes and many Workshops for continuously updating his knowledge. His areas of research interest are mainly focused on the

	utilization of Fly Ash in Geopolymer Concrete, Special Concrete, Structural Analysis and design of different structures.
	**Mrs. O.S.D.Himabindu** got M.E. from Andhra university in 2005 with Environmental Engineering as major. She is pursuing her Ph.D. from KLU. She has 6 years of experience in teaching. Her knowledge is helpful to train the students in different areas such as water analysis, wastewater analysis, water supply, design of STPs, solid waste management.
	**Mrs. P.Santhi Raj** got B.Tech from NIT Warangal and M.Tech with distinction from JNTUH in Structural Engineering. She has 14 years of experience which includes seven years of teaching and seven years of industry. She attended many faculty development programs, Coordinator for couple of National and International conferences. Her industrial experience and knowledge is helpful to train the students in various areas such as concrete technology, construction technology and project management, prestressed concrete, engineering drawing, presentation skills, estimation and costing, structural design, etc. and guiding their projects.
	**Mr. V.S.P.RAJU** got M.Tech from JNTU Hyderabad is specialized in Structural Engineering, BE (Civil Engg.) from Osmania University and Diploma in Civil Engg. from AP Technical Board, has 10 years of teaching experience. He has guided B.Tech Projects in various streams. He is expert in handling subjects like Surveying lab, Surveying theory, Engineering Mechanics, Strength of Materials, Structural Analysis, Finite Element Methods, Earthquake Resistant Design of Buildings, Reinforced Cement Concrete and Steel Structures.
	**Mrs. K. Hemalatha** obtained B.Tech, Civil Engineering with distinction from GMRIT, Rajam affiliated to JNTUK in the year 2012 and M.Tech., Structural Engineering with distinction from Spoorthy Engineering College affiliated to JNTUH in the year 2014. She has one year of teaching experience. She has guided projects B.Tech students. She is presently handling subjects like Strength of materials -I and II.
	**Mrs. M.Sri Lakshmi Sravya** obtained B.Tech, Civil Engineering with distinction from VR Siddhartha Engineering College, Vijayawada, autonomous to Nagarjuna University in the year 2010 and M.Tech, Structural Engineering with distinction from Vellore Institute of Technology (VIT) in 2012. She has two and half years of experience. She has guided for B.Tech students and handled subjects like Structural Analysis, Estimation and Costing, Rehabilitation and Retrofitting of Structures, Concrete Technology.
	**Mrs. Jahnavi Yarlagadda** masters in Transportation Engineering from IIT Kharagpur in the academic year 2012-14 and graduated from JNTU Kakinada in the department of Civil Engineering 2012. She has majorly worked on traffic related problems and safety of road users at intersections. Having an experience of one year in teaching profession, she dealt with diverse topics in the basic civil engineering and guided number of UG students in completion of their main project courses.

Ms J. Srilaxmi obtained B.Tech in Civil Engineering with distinction from GRIET, Hyderabad affiliated to JNTUH in the year 2013. She has two years of experience. She is expert in handling labs Surveying – I and Surveying – II.

7. Basic Sciences faculty competencies

English

The emphasis on the English language has become indispensable in graduation level due to its internationalization .Its role as a primary tool for socio-economic advancement demands our professionals to be cosmopolitan in their approach. The prescribed books 'Enjoying Everyday English and Inspiring Speeches and Lives' are designed to meet the linguistic and communicative challenges of the engineering students. It is meant to serve broadly as students' handbooks. Detailed text 'Enjoying Every day English' focuses on the skills of listening, speaking, reading, writing, grammar and vocabulary whereas the non-detailed text is meant for the development of extensive reading/ reading for pleasure. The message oriented texts help to fetch life skills also. The accompanying audio and video CDs enable the students to practice language skills and to enhance aspects relating to appropriate body language, eye contact, gestures, pronunciation, intonation and rhythm which eventually empower the learners to use the language accurately and appropriately in the day to day context of communication and public speaking.

English Lab

The activities of English lab orient the students about the importance of four basic skills required for effective communication. The English lab sessions also allow the students to learn the required language tools to acquire proficiency in respect to the same. The activities like Role-play, JAM, telephonic skills enable the learner to explore the various styles to be adopted for cordial socializing, affirmed and concise presentation. It even helps the pupil to frame formal descriptions and the usage of the related media for effective presentation of ideas. The following teaching faculty competencies related to English area.

English Specific Courses	Name of the Faculty
English	R Lakshmi Kanthi
English Lab	Prasanna Laksmi
Advanced English Communications Lab	M Aravind Kumar

	**Mr. M. M. Aravind Kumar,** has six years of industrial experience in AP Tourism Development Corporation and seven years of teaching experience and had Joined GRIET as Asst Prof in English, in 2008. He had his Master's Degree in English Literature from Osmania University and PG Diploma in Communicative English from University of Hyderabad, Master of Human Resource Management from Acharya Nagarjuna University, M.Phil in Human Resource Management through ANU, Guntur, Pursuing Ph.D. Part time in HRM from ANU, Guntur on Training Practices To stay in connect he attends various Faculty development programmes , conferences that are conducted in various Univesities and institutions. The classes that he takes I B.Tech and III B. tech. He teaches both theory and Elcs lab for for 1st years and for 3rd years Advanced English communication skills lab respectively. He also teaches Management Science for III and IV B.Tech students with his qualification and experience related to the subject. He is keen to specify the need and objective of learning Management science by the engineering students. He tries to make the learner realize the direct functionality of the units in the syllabus prescribed the professions concerned.
	**P. Sujeetha Rao**, pursuing PhD (English) from OU, in progress, Registered 2013. She completed PGCTE (EFLU,Hyderabad), M.A(ELT) from Osmania University in 2003 and B.Sc.Computers from OU in 1997. She has 11 years of teaching experience and she has Research Interest on Contemporary Indian Writing in English. She published a paper in National Conference and attended many workshops and FDP's.
	**Sailaja Eswara**, obtained M.Phil from Madurai Kamaraj University in 2008 and M.A Literature from Andhra University in 2004. She has 6+ years of teaching experience. She has Research Interest on Thematic study of Anita Rau Badami. She guided many students from B.tech I year & III year. She attended many workshops.
	**M.Pushpa Latha**, obtained M.A English literature from Osmania University in 2008, B.Ed from Osmania University in 2014 and B.A English literature from Osmania University in 2006. She has 5 years of teaching experience. She guided many students from B.Tech I year.

Mathematics

Mathematics is a course through which engineering and technology analyzed in depth, since it provides us with the best possible form for accurate representation of facts and at the same time expresses them compactly without any ambiguity. Hence, it is apparent that a person who wants to be trained in these fields must get himself well equipped with the necessary mathematical skills that can make his understanding of core concepts without any lack of depth. In fact, such an emphasis that the learning of these skills is necessary for a student to be an engineer or scientist.

In GRIET, faculty for mathematics in the department of Basic Sciences have realized this long back and hence are trying to impart students with the necessary mathematical skills that meet needs of their core courses. The syllabus that is designed for such an achievement is well thought out by the members of the faculty who were part of the board of studies who after long pondering made the curriculum robust. The level of Mathematics that a student must learn is divided into Linear Algebra and Single Variable Calculus, Advanced Calculus, Transform Calculus and Fourier Series, Numerical Methods and Probability & Statistics. The courses that are covered in the first year cover most of the concepts that are required at engineering education level. These three courses cover topics like Matrices that include advanced concepts like Singular Value Decomposition, Functions of Single and Multi-Variables, Vector Calculus, Ordinary & Partial Differential Equations, Laplace Transforms, Fourier series, Numerical Analysis etc. The following teaching faculty competencies related to Mathematics area.

Mathematics Specific Courses	**Name of the Faculty**
Linear Algebra and Single Variable Calculus	Dr. S RamaMurthy
Advanced Calculus	Dr. G. Swapna
Transform Calculus and Fourier Series	Mr. V. Siva Rama Krishna Reddy
Numerical Methods	Mrs M. Madhavi
Probability & Statistics	Dr. V.N. Rama Devi

	**Dr. S RamaMurthy,** is a professor in mathematics. He obtained M.Sc (Maths), from Kakatiya University, Warangal in 1985. He obtained his Ph.D from JNTUH Hyderabad, 2006. He has published more than 9 research papers in various conference proceedings and international journals. His areas of interest is Approximation theory, pattern recognition and digital image processing.
	**Dr. G. Swapna**, is a professor in Mathematics. She obtained her Ph. D from Andhra University in 2014, M.Phil from Andhra University in 2009 and M.Sc from Andhra University in the year 2005. She has 8 years of teaching experience.
	**Dr. V.N.Rama Devi** has done her M.Sc, Statistics from Acharya Nagarjuna University, she has 14 years of teaching experience. Ph.D. in Statistics in Acharya Nagarjuna University. Attended many National Seminars & Workshops. She is guiding UG and PG student projects in statistics.

	**Mr. V. Siva Rama Krishna Reddy** is an Assistant Professor in Mathematics. He obtained M.Sc., from Kakatiya University, Warangal in 2005. He has more than 10 years of teaching experience. He is pursuing Ph.D from Rayalaseema University, Karnool in the area of "Approximation theory and Pattern recognition". He has published 6 research papers in various conference proceedings and international journals.
	**Mrs M. Madhavi,** Assistant professor in Mathematics. She obtained M.Sc from Nagarjuna University in the year 2003. She has 11 years of teaching experience. She is handling Mathematics related subjects for I Year B.Tech students.

Physics

Physics generates fundamental knowledge needed for the future technological advances that will continue to drive the economic engines of the world. Physics is an important element in the education of chemists, engineers and computer scientists, as well as practitioners of the other physical and biomedical sciences. Physics extends and enhances our understanding of other disciplines, such as the earth, agricultural, chemical, biological, and environmental sciences, plus astrophysics and cosmology subjects of substantial importance to all peoples of the world. The following teaching faculty competencies related to Physics area.

Physics Specific Courses	Name of the Faculty
Physics for Engineers	Mr.M.Sridhar / Mrs. K Vagdevi
Engineering Physics Lab	Mr. M Krishna /Ms.Arshiya Fathima

	**Mr.M.Sridhar** working as Associate Professor got M.Sc (Solid State Physics) in 2000 from Acharya Nagarjuna University & M.Tech Energy Management in 2002 from S.V.University. He has 13 years of experience in teaching. Pursuing PhD from JNTU Hyderabad. Attended many National and International conferences. Published 2 papers in national and International Journals and 2 papers in national and International Conferences. Participated in Faculty developments programs and workshops for continuously updating his knowledge. By offering gained exposure to recent trends in Physics, his knowledge is useful to train the Civil Engineering students.

	**Mrs. K.Vagdevi** got MSc Physics in 2001, & M.Tech Space technology and Applications in 2003 from S.V.University,Tirupathi.Worked as Asst Prof in BIT Institute of Technology, Hindupur for 2 yrs. She has 12 yrs of experience in teaching .Pursuing PhD from JNTU Anantapur.Attended many national and International conferences. Published 2 papers in national and International Journals and 5 papers in national and International Conferences. Participated in many Faculty developments programs and workshops for continuously updating her knowledge. By offering gained exposure to recent trends in Physics, her knowledge is useful to train the Civil Engineering students.
	**Mr. M.Krishna** is a M.Sc (physics) graduate from Osmania University Hyderabad. He has 4 years of teaching experience. He taught PG courses for one year. He joined as asst.prof. in physics in GRIET in the year 2010. He has attended workshops and FDPs in GRIET.
	**Ms. Arshiya Fathima** did M.Sc.(Physics) with a specialization of solid state physics from Siddhartha college of arts & sciences, Vijayawada affiliated to Acharya Nagarjuna university in 2009. She has 5 years of teaching experience. Trained at Wipro mission 10X faculty training programme in 2011.

Chemistry

Modern development of industries requires more understanding of materials required for engineering and industrial purposes. This part of chemistry explains various aspects with regard to environment, fuels, metals and alloys, and polymers. This subject will develop basic understanding and skill of Engineers. Apply the knowledge in controlling environmental pollution and selecting fuels, propellants, metals and alloys used in Engineering and polymeric materials used in domestic, industrial and medical fields. To select material where requirements are very stringent and specific. Engineering chemistry applications are applied in the field of Electrical and Electronics, Nanotechnology, Different Energy sources, mechanical, electronics and instrumentation. The following teaching faculty competencies related to Chemistry area.

Chemistry Specific Courses	Name of the Faculty
Engineering Chemistry	Dr. E. Hariprasad / Ms.K.Kalpana
Engineering Chemistry Lab	S Haritha Kiranmai

	**Dr. E. Hariprasad** obtained his M.Sc. (chemistry) from University of Hyderabad, and did his Ph.D. in materials chemistry under the guidance of Prof. T. P. Radhakrishnan, School of Chemistry, University of Hyderabad. He performed his postdoctoral research in Institute of Chemistry, The Hebrew University of Jerusalem, Israel for one year. His research interests are in the area of synthesis and applications of metal/metal oxide nanostructures.
	**Ms.K.Kalpana** is presently working as Assistant Professor and has a total of ten years of experience in teaching and industry and teaching Engineering chemistry theory and laboratory for I year B.Tech students. She is pursuing her Ph.D (registered in 2012) from JNTUH, Hyderabad and completed her Masters in chemistry from JNTUH, Hyderabad in 2001. She has done her Bachelors in Science from affliated college of Osmania University in 1998.
	**Ms.Haritha Kiranmai** is M.Sc. graduate from Acharya Nagarjuna University Guntur. She has four years of teaching experience for post graduate students and three years of experience of teaching for B.Tech students. She joined as Assitant Professor in GRIET in the year 2010.

Computer Programming and Data Structures

The subject will help about the basic computer system concepts, significance of sorting, searching algorithms, basic operations of stacks and queues etc. Also ability to extend analytical and logical skills in a language through algorithms and flowcharts, to solve a given problem and using programming concepts, c-library and generate code for a given problem. Also to apply sorting and searching algorithms fo real time scenario, to describe the basic operations of stacks and queues. Ability to develop the software system to meet desired needs in realistic constraints and to distinguish and establish as practicing professionals and sustain career in industry.

Computer Programming and data structures Specific Courses	Name of the Faculty
Computer Programming and data structures	Mr. V. Vijaya Kumar
Computer Programming and data structures Lab	Ms. K. CH. Suneetha

	**Mr. V. Vijaya Kumar** obtained M.Tech from HIET in the year 2014. He has 2 years of teaching experience. He joined GRIET in 2013. He is handling C Programming and Data Structures theory and laboratory for I year B.Tech students.
	**Ms. K. CH. Suneetha**, obtained M.Tech (Software Engineering) from SMCET Affiliated to JNTUH in the year 2012. She has two years of teaching experience. She joined GRIET in 2013. She is handling C Programming and Data Structures for I Year B.Tech Students.

List of Publications in Journals

S. No.	Author	Paper Title	Journal	Year
1	G.V.V Satyanarayana	" Studies on Response of Two way Blended Cement Concrete Slabs under Impact Load"	ICI journal Vol:16, April June 2015 No.1, PP 7-12	2015
2	V. Srinivasa Reddy	"Studies on Pore Structure Characterization of Bacterial Concrete"	International Journal of Engineering Research & Technology (IJERT), Vol. 3 Issue 11, November-2014, ISSN: 2278-0181, pp 564-570	Nov-14
3	V Naresh Kumar Varma	"Compressive Strength and Durability Studies on Concrete Using Sponge Iron Scrap Material as Coarse Aggregate Replacement "	International Journal of Research in Engineering and Technology eISSN: 2319-1163 | pISSN: 2321-7308	February 20-21, 2015
4	V. Srinivasa Reddy	"Flexural Behavior Of Bacteria Incorporated Reinforced Concrete Beams",	International Journal of Engineering Research And Management (IJERM), Volume-1, Issue-1, April 2014 pp 12-18	Apr-14

5	V. Srinivasa Reddy	Bio-Inspired Solutions for Durable Concrete "	International Journal Of Earth Sciences And Engineering, Journal Rating (SJR) 0.15 (2012); H-index: 2 (2012); CSIR-NISCAIR, INDIA Impact Factor 0.042 (2011), August 2014, Volume 07 No 04 , ISSN 0974-5904, P.P.575-581	6th–8th January, 2014
6	G.V.V Satyanarayana	"Studies on Energy absorption capacity of Two way slabs with Blended Pozzolonic concretes subjected to Flexure"	ICJ journal for publication	2015
7	V. Mallikarjuna Reddy	"Effect of w/c ratio on workability and mechanical properties of high strength Self Compacting Concrete with fly ash and Micro Silica as admixtures.(M70 grade)"	IOSR journal of Mechanical ans Civil engineering(IOSR-JMCE), e-ISSN:2278-1684,p-ISSN:2320-334X, Volume11, issue 5 Ver.VI(Sep.-Oct.2014) PP 15-21	2014
8	V. Srinivasa Reddy	"Development And Applications Of Reactive Powder Concrete"	Tech Mantra – Technical magazine of The RAMCO Cements limited, Vol . II No.3 (2014), pp 06-15	2014
9	V. Mallikarjuna Reddy	"Effect of w/c ratio on workability and mechanical properties of high strength Self Compacting Concrete(M70 grade)"	International Journal of Engineering Research and Development, e-ISSN: 2278-067X p-ISSN:2278-800X Volume 7 Issue-1 pp 06-13	2013
10	G.V.V Satyanarayana	"Behaviour of Blended Mortars under Acid Environment",	The IUP Journal of Structural Engineering, Vol. VI, No.2, pp.26-37	2013
11	V. Srinivasa Reddy	"Studies on Permeability of Self-Healing Built-In Bacteria Concrete"	International Journal of Recent Technology and Engineering (IJRTE), Volume-1, Issue-6, January 2013 119-125, ISSN: 2277-3878	2013
12	V. Srinivasa Reddy	"Feasibility Studies On Granulated Blast Furnace Slag As Cement And Sand Replacement"	Engineering Sciences International Research Journal	2013

13	V. Srinivasa Reddy	"Studies on Bacterial Concrete Exposed to Elevated Temperatures and Thermal Cycles"	Engineering Science and Technology: An International Journal (ESTIJ), Vol. 3, No.1, 126-135, ISSN: 2250-3498	2013
14	V. Srinivasa Reddy	"Permeation Properties of Bacterial Concrete",	IOSR Journal of Mechanical and Civil Engineering (IOSR-JMCE) , March 2013 Issue ,08-16,ISSN: 2278-1864	2013
15	V. Srinivasa Reddy	"Mathematical Model for Predicting Stress Strain Behaviour of Bacterial Concrete"	International Journal of Engineering Research and Development, Volume 5, Issue 11, 21-29,e-ISSN: 2278-067X, p-ISSN: 2278-800X	2013
16	V. Srinivasa Reddy	"Bioengineered Concrete - A Sustainable Self-Healing Construction Material"	Research Journal of Engineering Sciences, Vol. 2(6), 45-51,ISSN 2278 – 9472	2013
17	V. Srinivasa Reddy	"Quantification and Characterization of $CaCO_3$ Precipitation by Bacillus Subtilis JC3 in Bacterial Concrete"	Indian Concrete Institute Journal, Oct-Dec 2013, 25-27	2013
18	C. Lavanya	"Study on Coefficient of Permeability of Copper slag when admixed with Lime and Cement"	International Organization of Scientific Research Journal of Mechanical and Civil Engineering, DOI:10.9790/1684-0761925, Vol. 7, Issue 6, pp. 19-25	2013
19	Dr. G.V.K.S.V. Prasad	"Equity in Water Supply in Intermittent Water Distribution Networks"	Water and Environment Journal, (ISSN:1747-6585)	December 2013
20	V. Srinivasa Reddy	"A biological approach to enhance strength and Durability in concrete structures"	International Journal of Advances in Engineering & Technology, Vol. 4, Issue 2,392-399, ISSN: 2231-1963	2012
21	V. Srinivasa Reddy	"The biological approach to enhance durability in concrete structures"	Journal of Biotechnology and Biomaterials, Volume 2 , Issue 6, ISSN: 2155-952X	2012
22	C. Lavanya	"Influence of Admixture on Shear parameters of Copper Slag"	International Journal of Engineering Research and Technology, ESRSA Publications, Vol. 1, Issue 10,	2012

			pp. 475 - 480	
23	V. Srinivasa Reddy	"Estimation of GGBS and HVFA Strength Efficiencies in Concrete with Age"	International Journal of Engineering and Advanced Technology (IJEAT),Volume-2, Issue-2,221-225, ISSN: 2249 – 8958	2012
24	V. Srinivasa Reddy	" Performance of microbial concrete developed using Bacillus Subtilus JC3",	Journal of The Institution of Engineers (India)- Series A-IEI Springer (Under Review)	
25	V. Srinivasa Reddy	"Accelerated Corrosion Induced Cracking Test on reinforced bacterial concrete"	The Indian Concrete Journal (ICJ) (Under Review	
26	V. Srinivasa Reddy	"Strength Enhancement Of Cement Mortar Using Microorganisms - An Experimental Study"	International Journal of Earth Sciences and Engineering, Volume 04, N0 06, Spl October 2011, 933-936 ,ISSN no: 0974-5904	2011
27	Dr.Mohd.Hussain	"Optimal surface irrigation under conditions of limited water supply – A case study in Sriram Sagar Project"	Journal of India Water Resources Society, Vol. 1, No. 2, PP.25-29,ISSN 0970 -6984	1995

List of Publications in Conferences

S. No.	Author	Paper Title	Conference	Year

1	V. Mallikarjuna Reddy	"Performance of High strength Self Compacting Concrete (M70 grade) exposed to elevated temperatures"	UKIERI Concrete Congress at JALANDHAR NIT	Nov 2 -5, 2015
2	V Srinivasa Reddy	"Experimental Investigation on Pore Structure Characterization of Concrete incorporated with Bacillus subtilis JC3"	UKIERI Concrete Congress ,Concrete Research Driving Profit and Sustainability	2 - 5 Novemb er 2015
3	V. Mallikarjuna Reddy	"Comparative study on the effect of Packing Factor on workability and mechanical properties of high strength Self Compacting Concrete (M70 grade) with different mineral admixtures"	NASHIK, Maharashtra	July 2-4,2015
4	V Srinivasa Reddy	"Feasibility Study on Bacterial Concrete as an Innovative Self-Crack Healing System"	International Conference on Recent Trends in Engineering and Technology (ICRTET2015)	02- 04 July, 2015
5	V Srinivasa Reddy	"Experimental Investigation on Pore Structure Characterization of Concrete Incorporated With *Bacillus Subtilis* JC3"	National Conference onRecent Trends in Civil Engineering	February 20-21, 2015
6	Shaik Fayazuddin	"Liquefaction Potential Assessment Based On SPT Using LiqIT Software"	6th International Geotechnical Symposium on Disaster Mitigation in Special Geo-Environmental Conditions, Organized by IIT Madras	January 21-23,2015
7	Dr. Mohd Hussain	"Planning and Implementation of operation plans of Irrigation projects to increase water use efficiency: A case study in India"	International conference on " Modeling Tools for Sustainable Water Resource Management",organized by the Department of Civil Engineering,Indian Institute of Technology(IIT),Hyderabad	26-29 Decembe r,2014
8	V Srinivasa Reddy	" Microbial Concrete- A sustainable solution for concrete crack repair and Rehabilitation"	At The Institute of Engineers India , Andhra pradesh state centre during 77th Annual General Meeting at the Institution of Engineers India	Decembe r 22 2014

			(IEI) Hyderabad	
9	V. Mallikarjuna Reddy	"CHARACTERISTICS OF TRIPLE BLENDED HIGH STRENGTH SELF COMPACTING CONCRETE (M70 GRADE"	Two Day International Conference on "PROFESSIONAL ENGINEERS: CHALLENGES IN DISASTER MANAGEMENT(ICPECDM-2014)"	18 –19 December, 2014
10	G. Karthik	"Optimization of signal timings in Indian scenario", 11th Transportation planning and implementation methodologies for developing countries	International conference Organized by IIT Bombay	December 10-12, 2014
11	V. Mallikarjuna Reddy	"CHARACTERISTICS OF TRIPLE BLENDED HIGH STRENGTH SELF COMPACTING CONCRETE (M70 GRADE"	Two Day National Conference on "RECENT RESEARCH ADVANCES IN CIVIL ENGINEERING (RRACE – 2014)	7 – 8 November, 2014
12	T. Srinivas	"Mechanical Properties and Cost Evaluation of Concrete with High Volume Fly Ash"	National Conference On Recent Research Advances in Civil Engineering ,RRACE-2014	7 – 8 November, 2014
13	V Srinivasa Reddy	"Bacterial Concrete: A Biomimetics based Sustainable Self-healing Biomaterial"	National Conference On Recent Research Advances In Civil Engineering , Osmania University Hyderabad	7 – 8 November, 2014
14	Dr. Mohd Hussain	"Capacity Building of water resource managers and users by developing S.E.L.F. Renewal Quotient in Participatory Irrigation Management"	International conference on "HYDROLOGY AND WATERSHED MANAGEMENT", organized by Centre for Water Resources of Institute of Science and Technology(IST)	29 October to I November 2014

15	Dr. Mohd Hussain	"Optimal wastewater reuse planning for irrigation and studies on the quality of soil and water:A case study in Musi River corridor near Hyderabad"	International conference on "HYDROLOGY AND WATERSHED MANAGEMENT",organized by Centre for Water Resources of Institute of Science and Technology(IST)	29 October to I Novemb er 2014
16	V Srinivasa Reddy	"Studies on characterization of $CaCO_3$ precipitation in bacterial cement mortar"	International Conference on Sustainable Civil Infrastructure (ICSCI-2014) by American Society of Civil Engineers (ASCE) India Section and Department of Civil Engineering, IIT Hyderabad	October 17-18, 2014
17	G.V.V Satyanarayana	" Sustainable Studies on Energy absorption Capacity of Two way Slabs with Blended Concretes"	ICSCI 2014, IIT Hyderabad(ASCE India section)	Oct-14
18	V Srinivasa Reddy	"Post Fire Damage Assessment And Rehabilitation Of Fire Damaged Concrete Structures"	National Conference on Emerging Trends in Science, Technology and Management (NCETSTM2K14), Malla Reddy Engineering College, Hyderabad	08-09th August 2014
19	V Srinivasa Reddy	**"** Bacterial Concrete – An innovative Self-Crack Healing System"	National Conference on New Trends in Civil Engineering (NTCE-2014), G.V.P College of Engineering, Visakhapatnam, Andhra Pradesh	July 18-19 2014
20	V Srinivasa Reddy	**"** Bio-engineered Solution to enhance durability of construction materials: A Review"	National Conference on New Trends in Civil Engineering (NTCE-2014), G.V.P College of Engineering, Visakhapatnam, Andhra Pradesh	July 18-19 2014
21	V Srinivasa Reddy	**"** Repair and Rehabilitation of Concrete Structures using Biological Approach"	National Conference on New Trends in Civil Engineering (NTCE-2014), G.V.P College of Engineering, Visakhapatnam, Andhra Pradesh	July 18-19 2014
22	V Srinivasa Reddy	"Modifying concrete properties through bacteriogenic mineral plugging", pp 858-862	3rd International Conference on "Recent Trends in Engineering & Technology, SNJB's Late Sau Kantabai Bhavarlalji Jain College of Engineering,	28th to 30th March, 2014

			Published by Elsevier Science & Technology	
23	V. Mallikarjuna Reddy	"Comparative study on the effect of w/c ratio on workability and mechanical properties of high strength Self Compacting Concrete (M70 grade) with different mineral admixtures"	NASHIK, Maharashtra. Paper is published in ELSEVIER. ISBN No:978-93-5107-222-5	28-30 March 2014
24	V Srinivasa Reddy	" Bacteria Based High Performance Concrete"	National Conference on Advances in Civil Engineering and Infrastructure development (ACEID-2014)	6-7 Februaur y 2014
25	V Srinivasa Reddy	"Bio-Inspired Solutions for Durable Concrete"	International Conference on Emerging Trends in Civil Engineering ICETCE 2014), VNRVJIET, Hyderabad	6th -8th January 2014
26	V. Mallikarjuna Reddy	"Effect of PACKING FACTOR on workability and mechanical properties of Self Compacting Concrete OF M70 grade with GGBS and Micro Silica as filler material"	International conference on Emerging Trends in Civil Engineering, VNRVJIET, Hyderabad , ISBN: 978-7800-294-1(HB) Page No:192-198	2014
27	G.V.V Satyanarayana	" Behavioural Studies on Two way Slabs with Blended Concretes Under Flexural Loads"	National Conference On Recent Research Advances in Civil Engineering ,RRACE-2014	2014
28	C. Lavanya	"Efficacy of copper slag cushion in arresting heave of an expansive soil"	International Conference on Recent trends in Engineering & Technology, ELSEVIER Journals, ISBN No: 978-93-5107-222-5, pp.658-662	2014
29	C. Lavanya	"Comparison studies on influence of admixture on copper slag cushion laid over an expansive soil",	Indian Geotechnical Conference (IGC 2014), Kakinada, pp.704-711	2014

30	Cici Jennifer Raj	"Study of the behavior and designing of Cold formed light gauge steel beams subjected to various loadings"	National Conference at Mother Teresa College of Engineering & Technology	2014
31	Cici Jennifer Raj	"Experimental Investigation on the behavior of Cold formed light gauge steel beams subjected to Static loading"	National Conference at Kalasalingam University,Srivilliputhur	2014
32	Cici Jennifer Raj	"Experimental Investigation on the behavior of Cold formed light gauge steel beams subjected to Cyclic loading"	National Conference at Government College of Technology,Coimbatore	2014
33	Cici Jennifer Raj	"Experimental Investigation and comparison on the behavior of cold formed light gauge steel beams subjected to Cyclic loading"	International Conference at Coimbatore Institute of Technology,Coimbatore	2014
34	V Srinivasa Reddy	"Calcite crystals precipitation by Bacillus subtilis JC3 as a mechanism for strength improvement of cement mortar"	3rdInternational Science Congress, at Karunya University, Coimbatore	8th - 9th December 2013
35	V Srinivasa Reddy	"Studies on the Use of Granulated Blast Furnace Slag as Substitute for Fine Aggregate in Concrete"	46th Engineers' Day, -The Institution of Engineers (India), A P State Centre Hyderabad	15th Sep 2013
36	V Srinivasa Reddy	"Development of Self Compacting Concrete Using Rice Husk Ash and Ground Granulated Blast Furnace Slag"	46th Engineers' Day, -The Institution of Engineers (India), A P State Centre Hyderabad	15th Sep 2013
37	V Srinivasa Reddy	"Studies on the flexural behavior of Bacteria incorporated reinforced concrete beams"	National Conference on Recent Advances in Structural Engineering (RASE-2013)	12-14 September 2013
38	V Srinivasa Reddy	"Crack Self-Healing Concrete: A Promising Technology Of Future"	National Conference on "Sustainability, Energy and Environment SEE-13" Chaitanya Bharathi Institute of Technology	01-02 August 2013

39	Dr. Mohd Hussain	Sustainable Practices of Engineering Management in Irrigation Projects to increase water use efficiency :A case study in India"	International Conference INDIA WATER WEEK 2013 by Ministry of Water Resources , Government of India	8-12 April,2013
40	Dr. Mohd Hussain	"Capacity building of water resource managers and users by developing D.E.E.P.-A.C.C.E.S.S. implementation Quotient of daily life skills for sustainable participatory irrigation management "	International Conference INDIA WATER WEEK 2013 by Ministry of Water Resources , Government of India	8-12 April,2013
41	V Srinivasa Reddy	"Strength And Chloride Ion Permeability Studies Of Bacterial Concrete"	National Conference on Sustainable Construction Materials and Technologies (SCMAT)	Mar 15-16, 2013
42	V Srinivasa Reddy	"Studies on Stress-Strain Behaviour of Bacterial Concrete"	The 2nd International Conference on Advancement in Engineering and Management - Royal Institute Of Technology & Science- ICAEM-2013	Feb 27th & 28th 2013
43	V Srinivasa Reddy	"Assesment Of Chloride Ion Penetration Of Bacterial Concrete"	The International Conference on Information & Engineering Sciences (ICIES-2013)	February 14-15, 2013
44	V Srinivasa Reddy	"Microbial-Induced Calcite Precipitation: Its Potential Application In Enhancing Concrete Properties"	National Conference on New Trends in Civil Engineering and Earth Sciences (NTCE-2013)	5-6 February 2013
45	G.V.V Satyanarayana	"Behaviour of Two-way slabs under flexture"	National seminar on Health Monitoring of Reinforced concrete structures for sustainability (HMRCS), KITS, Warangal	2013
46	C. Lavanya	"Influence of admixtures on Load - Settlement behaviour of Copper Slag - Cushioned Expansive Soil Bed"	Indian Geotechnical Conference (IGC 2013), Roorkee	2013

47	V Srinivasa Reddy	” Development Of Bacteria-Based Self-Healing Concrete”	National Conference on Recent Advances in Geo-Sciences, Engineering & Technology (NCRAGE)	20th & 21st Decembe r 2012
48	V Srinivasa Reddy	“Development of Microbial Based System For Sustainable Concrete: A Novel Method To Heal Cracks”	National Seminar on “Sustainable Technologies in Civil Engineering: Perspectives and Strategies”, STEPS-2012, GRIET, Hyderabad	19th Decembe r 2012
49	Dr. Mohd Hussain	“Capacity building of water resource managers in Participatory Irrigation Management”	one day national seminar on “Sustainable Technologies in Civil Engineering: Perspectives and Strategies(STEPS-2012)	19th Decembe r,2012
50	Dr. Mohd Hussain	“Preliminary aspects of selfless-innerself-centred S.P.R.Y. Living Unlearning and Learning Practice Model in the present new minute for sustainable natural resource management”	one day national seminar on “Sustainable Technologies in Civil Engineering: Perspectives and Strategies(STEPS-2012)	19th Decembe r,2012
51	Dr. Mohd Hussain	“Sustainable Management Practices in Irrigation Projects”	one day national seminar on “Sustainable Technologies in Civil Engineering: Perspectives and Strategies(STEPS-2012)	19th Decembe r,2012
52	V Srinivasa Reddy	”Studies on Durability of Bacterial Concrete”	National Conference on Advances in Earth Sciences, Structural, Geotechnical and Earthquake Engineering(AESG2E-2012)	04th - 05th October 2012
53	V Srinivasa Reddy	“Stress-Strain behaviour of SCC with and without GGBS”	National Conference on Advances in Earth Sciences, Structural, Geotechnical and Earthquake Engineering(AESG2E-2012)	04th - 05th October 2012
54	V Srinivasa Reddy	“The biological approach to enhance durability in concrete structures”	3rd World Congress on Biotechnology-OMICS Group--Hyderabad, India	13-15 Septemb er 2012

55	V Srinivasa Reddy	"Studies on the Structural Applications of Reactive Powder Concrete: An ultra high performance concrete"	National Level Symposium on "Emerging Technologies in Civil Engineering Applications"	May 28-29th 2012
56	C. Lavanya	"Influence of Admixture on Compaction Characteristics and CBR of Copper Slag,	Indian Geotechnical Conference (IGC 2012), New Delhi, pp. 359 - 362	2012
57	V Srinivasa Reddy	"Self-Healing Bacterial Concrete: A Review"	National Conference on "Recent Trends in Structural Engineering", VNRVJIET, Hyderabad	2012
58	V Srinivasa Reddy	"SEM Observations of the Microstructure of Bacteria Modified Cement-Sand Mortar"	National Conference In Advances In Civil Engineering (ACE 2012), Vasavi College Of Engineering Hyderabad	2012
59	V Srinivasa Reddy	"Studies On Self - Healing Durable Concrete With Microorganisms"	75th Annual General Meeting at the Institution of Engineers India (IEI) Hyderabad	2012
60	Dr. Mohd Hussain	"Preliminary aspects of universal APT self-facing Environmental Communication and Leadership Wisdom Model "	one day national seminar on "Sustainable Technologies in Civil Engineering:Perspectives and Strategies(STEPS-2011)	17th Decembe r,2011
61	Dr. Mohd Hussain	"Practices for the sustainability of quality and quantity of water resources"	one day national seminar on "Sustainable Technologies in Civil Engineering:Perspectives and Strategies(STEPS-2011)	17th Decembe r,2011
62	V Srinivasa Reddy	"Strength Enhancement Of Cement Mortar Using Microorganisms - An Experimental Study"	International Conference on Advances in Civil Engineering	October 21 – 23, 2011
63	V Srinivasa Reddy	"Professional Ethics for Engineers"	National Seminar on Human Values in Technical Education: an Approach for Holistic Development of Society (NSHVTE – 2011)	October 8-9, 2011
64	V Srinivasa Reddy	"Current and Emerging Trends in Engineering Education"	National Seminar on Human Values in Technical Education: an Approach for Holistic Development of Society (NSHVTE – 2011)	October 8-9, 2011

65	C. Lavanya	”A Review on Utilization of Copper slag for various Geotechnical Applications”	Indian Geotechnical Conference (IGC 2011), Kochi, pp. 445 - 448	2011
66	V Srinivasa Reddy	“Studies On Corrosion Resistance Of Bacterial Concrete (B. Subtilis)”	International Conference on Advances In Materials And Techniques For Infrastructure Development AMTID , NIT Calicut, 55	2011
67	V Srinivasa Reddy	“Crack Repair In Concrete Structures Using Microorganisms”	National Conference on IPCWM2011, SRIT Coimbatore, ISBN 81-903838-4-1, 1.7-1.17	2011
68	V Srinivasa Reddy	“Structural Applications of Reactive Powder Concrete”	74th Annual General Meeting at The Institution of Engineers India (IEI) Hyderabad	2011
69	V Srinivasa Reddy	“Structural Health Monitoring of Concrete using Non Destructive Tests”	1st National Conference on Technical Research Advances in Civil Engineering (TRACE – 2011) LDRP-ITR , Gandhinagar	2011
70	C V S Narayana	“ Behavior of model footings on reinforced soil system”	Indian Geotechnical conference	16th - 18th Dec 2010
71	Dr G.V.K.S.V Prasad	“Optimal Design of Water Distribution Network for Equity in Water supply”	National Conference on Sustainable Water Resources Management and Impact of Climate Change- held at BITS Hyderabad campus	March 5-6, 2010
72	Dr. Mohd Hussain	“Universal B.E.S.T. Intuitive Leadership Wisdom model of Mindfulness attention”	“International Conference on Hydrology and Watershed Management”	February ,3-6,2010
73	Dr. Mohd Hussain	“Basic tools for integrated water resources management for sustainable crop production : Case studies in Andhra Pradesh state of India”	“International Conference on Hydrology and Watershed Management”	February ,3-6,2010
74	Dr. Mohd Hussain	“Capacity Building of water resource managers by developing M.A.A.T.R.U.S.H.R.I. Enlightenment Quotient in the	“International Conference on Hydrology and Watershed Management”	December 5-8,2006

		successful implementation of Participatory management of water resources towards sustainable development"		
75	Dr. Mohd Hussain	"Multidisciplinary Diagnostic Analysis (M.D.A.) Annual Reports , Design Operation Plans (D.O.P), Seasonal Operation Plans (S.O.P) and Actual Implementation of Approved Seasonal Operation Plans (A.O.P) as basic tools for Integrated Water Resources Management for sustainable crop production in irrigation projects: Case Studies in AndhraPradesh of India"	"International Conference on Hydrology and Watershed Management"	Decembe r 5-8, 2006
76	Dr G.V.K.S.V Prasad	"Reliability of Drinking water Distribution Systems"	International Conference on Public Private Partnership in Water Sector organized by IWWA- Nagpur	Nov-06
77	C. Lavanya	" Swell - Shrink behaviour of stabilized fly ash cushions in expansive soils"	Indian Geotechnical Conference (IGC 2006), Chennai, pp. 301-304	2006
78	Dr G.V.K.S.V Prasad	"Assessment of Variations in Nodal demand Satisfaction of Water Distribution Networks."	31st IAHR Congress held at Seoul, Korea	Sep-05
79	Dr. Mohd Hussain	"Engineering Management Practices for the sustainability of quality and quantity of water resources in 21st Century"	national seminar on " Sustainable Technologies in Civil and Mechanical Engineering"	28-30 July 2005
80	Dr. Mohd Hussain	" Impact of Transactional Analysis in my daily life – Confession of an Engineer "	International Transactional Analysis Conference at Bangalore	July 28 to August 1 ,2004
81	Dr G.V.K.S.V Prasad	"Performance Evaluation of Water Distribution Systems Under Deficit Conditions" presented at Organised by NIT, Warangal during	International Conference on Advanced Modeling Techniques for Sustainable Management of Water Resources"	28th-30th January 2004

82	Dr. Mohd Hussain	"A simple conjunctive water use model to monitor the groundwater table in waterlogged areas of irrigation project command areas"	International conference on "Hydrology and watershed Management"	December, 18-20, 2002
83	Dr. Mohd Hussain	" Capacity Building of Water Users Associations in Andhra Pradesh in India : Certain Observations"	International conference on "Hydrology and watershed Management"	December, 18-20, 2002
84	Dr G.V.K.S.V Prasad	"Effect of metering on water Consumption – a case study"	32nd Annual convention of Indian Water Works Association held at Bhopal	22-24th April 2002
85	Dr. Mohd Hussain	"Water Resources and Hydrological Problems in Krishna and Godavari Basins"	One day Brain Storming session on Hydrological and Water Resource Problems in Godavari and Krishna Basins,sponsored by Indian National Committee on Hydrology, Roorkee	April 23, 1999
86	Dr. Mohd Hussain	"Conjunctive Water Use Management in the Command Areas of irrigation Projects in Andhra Pradesh,"	Young Scientists Convention, organised by Andhra Pradesh Akademi of Sciences, Hyderabad	24th – 25th July 1998
87	Dr G.V.K.S.V Prasad	"Strategies for in-plant minimization of industrial pollution"	National Seminar on Environmental Conservation and Management held at GITAM, Visakhapatnam	7-8th March 1996
88	Dr G.V.K.S.V Prasad	"Upgrading existing biological treatment facilities using Powdered Activated Carbon"	National Seminar on Environmental Conservation and Management held at GITAM, Visakhapatnam	7-8th March 1996
89	Dr. Mohd Hussain	"A review of certain simulation models for effective on-farm water management in the waterlogged command areas of India"	National Seminar on Waterlogging, Drainage and Salinity in Irrigation Commands at WALAMTARI, Hyderabad	December 28-29, 1994
90	Dr. Mohd Hussain	"Management Information Systems (MIS) for drainage in the Irrigation Command Areas of India"	National Seminar on Waterlogging, Drainage and Salinity in Irrigation Commands at WALAMTARI, Hyderabad	December 28-29, 1994

91	Dr. Mohd Hussain	"Developing perceptual skills of Irrigation Scheme Managers in Conflict Resolution in Social and Psycho-biological Perspective"	National Seminar on Human Resource Development in Irrigation Management at WALAMTARI	September 3-4, 1993
92	Dr. Mohd Hussain	"Developing Delegation Skills of Irrigation Scheme Managers"	National Seminar on Human Resource Development in Irrigation Management at WALAMTARI	September 3-4, 1993
93	Dr. Mohd Hussain	"Design Operation Plan (DOP) as a basic management tool for operation of irrigation schemes – A case study of Thandava Medium Irrigation Project in Andhra Pradesh,"	Second National symposium on Irrigation Management at WALAMTARI	December 17-18, 1993
94	Dr G.V.K.S.V Prasad	"Contact Stabilization process for industrial waste treatment – some applications"	National Seminar on Industrial Pollution Control held at IIT Mumbai	8-9th June 1989

Book Publications

S. No.	Author	Name of the Book	Publisher Name
1	Dr. G. Venkata Ramana	Water Resources Engineering - I	Academic Publications, Hyderabad
2	V Gajendra	Transportation Engineering	Academic Publications, Hyderabad
3	GVV Satyanarayana	Mechanics of solids	Durga Publications, Hyderabad

List of Lab Manuals prepared / published in-house

S. No.	Faculty Name	Laboratory Name
1.	S. Venkata Charyulu	Fluid Mechanics
2.	S.P Raju	Surveying – I
3.	A. Srinivasa Reddy	Computer Aided Drafting of Buildings
4.	V. Mallikarjuna Reddy	Strength of Materials
5.	S. Venkata Charyulu	Hydraulics and Hydraulic machinery

6.	S.P Raju	Surveying - II
7.	P. Santhi Raj	Concrete Technology
8.	C. Lavanya	Geo Technical Engineering
9.	C. Lavanya	Engineering Geology
10.	O.S.D Hima Bindu	Environmental Engineering
11.	V.V Shiva Reddy	Irrigation Design & Drawing
12.	G. Karthik	Highway Materials
13.	B. Shanmukeswara Babu	Remote Sensing & GIS
14.	T. Srinivas	STAAD

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

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

File Name
5.5
Certificates
NITTTR

Name of the faculty	max. 5 per faculty		
	2012-2013	2013-2014	2014-2015
K. Shilpa	0.00	5.00	3.00
Dr G Venkata Ramana	5.00	3.00	0.00
Dr. G.V.K.S.Vara Prasad	0.00	0.00	3.00
Dr. Mohd Hussain	5.00	5.00	3.00
Dr. N. Sanjeev	0.00	0.00	3.00
Dr. Ravi Shankar BR	5.00	5.00	0.00
Dr Akshay SK Naidu	5.00	5.00	0.00
Mr D Siddu Ramulu	5.00	5.00	3.00
Mr A Srinivasa Reddy	5.00	5.00	5.00
Mr. B Shanmukhewara Babu	0.00	5.00	5.00
Mr B Srinu Naik	5.00	0.00	0.00
Mr. B.Krupakar Yadav	5.00	0.00	0.00
Mr. B.Raja sekhar	5.00	0.00	0.00
Mr. B.Srinivasa Rao	5.00	0.00	0.00
Mr G Karthik	0.00	0.00	5.00
Mr M Suresh Babu	0.00	5.00	0.00

Mr. M.Prasanna Kiran Kumar	5.00	0.00	0.00
Mr. P. Mahesh kumar	5.00	0.00	0.00
Mr. P.N.K Haranath	5.00	0.00	0.00
Mr. S. Madhusudhan Reddy	5.00	0.00	0.00
Mr Shaik Fayazuddin	0.00	0.00	5.00
Mr. T Srinivas	0.00	5.00	3.00
Mr. T.K. Satish Kumar	5.00	0.00	0.00
Mr. V Srinivasa Reedy	0.00	5.00	5.00
Mr. V.S.S.Sudheer Chekka	0.00	5.00	5.00
Mr. Y. Kamala Raju	5.00	5.00	5.00
Mr.. Ravi Gadiraju	5.00	5.00	0.00
Mr.C.Venkateshwara Rao	5.00	0.00	0.00
Ms O.S.D Hima Bindu	5.00	3.00	5.00
Ms Ayona Nair	0.00	3.00	5.00
Ms C Lavanya	5.00	5.00	3.00
Ms C Preeti	0.00	0.00	5.00
Ms J Srilaxmi	0.00	5.00	3.00
Ms K Hemalatha	0.00	0.00	5.00
Ms K Puneetha Reddy	0.00	0.00	3.00
Ms K Soujanya	0.00	0.00	5.00
Ms P Sirisha	0.00	3.00	5.00
Ms P Santhi Raj	0.00	5.00	3.00
Ms R Ramya Swetha	0.00	5.00	3.00
Ms. Sri Lakshmi Sravya M	0.00	0.00	5.00
Nithya John	5.00	3.00	0.00
Sri S.Prasad Raju	5.00	5.00	3.00
Sri Bh. Mahesh Chandrakanth	5.00	0.00	0.00
Sri C V S Narayana	0.00	0.00	5.00
Sri GVV Satyanarayana	5.00	5.00	3.00
Sri S Venkata charyulu	5.00	5.00	3.00
Sri V Gajendra	5.00	5.00	0.00
Sri V Mallikarjun Reddy	5.00	5.00	5.00

Sum	**135.00**	**125.00**	**122.00**
N	**28.00**	**27.00**	**27.00**
Assessment = 3 × Sum/N	**14.46**	**13.89**	**13.56**

Average assessment 13.97

5.6 Faculty Retention (15)

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	2012-2013	2013-2014	2014-2015
Number of faculty members with experience of less than l year (x0)	0.00	0.00	5.00
Number of faculty members with 1 to 2 years experience (x1)	0.00	2.00	6.00
Number of faculty members with 2 to 3 years experience (x2)	12.00	8.00	7.00
Number of faculty members with 3 to 4 years experience (x3)	6.00	8.00	6.00
Number of faculty members with 4 to 5 years experience (x4)	5.00	4.00	3.00
Number of faculty members with more than 5 years experience (x5)	5.00	5.00	4.00
N	28.00	27.00	27.00
RPI = x1 + 2x2 + 3x3 + 4x4 + 5x5	87.00	83.00	70.00
Assessment	9.32	9.22	7.78

Average assessment 3.47

5.7 Faculty Research Publications (FRP) (20)

(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
5.7
Publication 2
Publication 1
IJMTER journal paper
IJERTV
Publication 3

Name of the faculty (contributing to FRP)	**FRP points (max. 5 per faculty)**		
	2012-2013	**2013-2014**	**2014-2015**
K. Shilpa	0.00	0.00	0.00
Dr G Venkata Ramana	5.00	5.00	0.00
Dr. G.V.K.S.Vara Prasad	0.00	0.00	0.00
Dr. Mohd Hussain	5.00	0.00	5.00
Dr. N. Sanjeev	0.00	0.00	0.00
Dr. Ravi Shankar BR	3.00	0.00	0.00
Dr Akshay SK Naidu	3.00	0.00	0.00
Mr D Siddu Ramulu	0.00	0.00	0.00
Mr A Srinivasa Reddy	0.00	0.00	0.00
Mr. B Shanmukhewara Babu	0.00	0.00	0.00
Mr B Srinu Naik	0.00	0.00	0.00
Mr. B.Krupakar Yadav	0.00	0.00	0.00
Mr. B.Raja sekhar	0.00	0.00	0.00
Mr. B.Srinivasa Rao	0.00	0.00	0.00
Mr G Karthik	0.00	0.00	3.00
Mr M Suresh Babu	0.00	0.00	0.00
Mr. M.Prasanna Kiran Kumar	0.00	0.00	0.00
Mr. P. Mahesh kumar	0.00	0.00	0.00
Mr. P.N.K Haranath	0.00	0.00	0.00
Mr. S. Madhusudhan Reddy	0.00	0.00	0.00
Mr Shaik Fayazuddin	0.00	0.00	3.00
Mr. T Srinivas	0.00	0.00	3.00
Mr. T.K. Satish Kumar	0.00	0.00	0.00

Mr. V Srinivasa Reedy	0.00	5.00	5.00
Mr. V.S.S.Sudheer Chekka	0.00	0.00	0.00
Mr.. Ravi Gadiraju	0.00	0.00	0.00
Mr.C.Venkateshwara Rao	5.00	0.00	0.00
Mr. Y. Kamala Raju	5.00	5.00	5.00
Ms Ayona Nair	0.00	0.00	0.00
Ms C Lavanya	5.00	3.00	5.00
Ms C Preeti	0.00	0.00	0.00
Ms J Srilaxmi	0.00	0.00	0.00
Ms K Hemalatha	0.00	0.00	0.00
Ms K Puneetha Reddy	0.00	0.00	0.00
Ms K Soujanya	0.00	0.00	0.00
Ms O.S.D Hima Bindu	0.00	0.00	0.00
Ms P Sirisha	0.00	0.00	0.00
Ms P Santhi Raj	0.00	0.00	0.00
Ms R Ramya Swetha	0.00	0.00	0.00
Ms. Sri Lakshmi Sravya M	0.00	0.00	0.00
Nithya John	0.00	0.00	0.00
Sri S.Prasad Raju	0.00	3.00	0.00
Sri Bh. Mahesh Chandrakanth	0.00	0.00	0.00
Sri C V S Narayana	0.00	0.00	0.00
Sri GVV Satyanarayana	3.00	5.00	5.00
Sri S Venkata charyulu	0.00	0.00	0.00
Sri V Gajendra	5.00	5.00	0.00
Sri V Mallikarjun Reddy	3.00	5.00	5.00
Sum	32.00	31.00	34.00
N	28.00	27.00	27.00
Assessment of FRP = 4 × Sum/N	4.57	4.59	5.04

Average assessment 4.73

5.8 Faculty Intellectual Property Rights (FIPR) (10)

Assessment of FIPR = 2 × (Sum of the FIPR points scored by each faculty member)/**N**

Name of the faculty (contributing to FIPR)	FIPR points (max. 5 per faculty)		
	2012-2013	2013-2014	2014-2015
Dr G Venkata Ramana	0.00	5.00	0.00

Dr. G.V.K.S.Vara Prasad	0.00	0.00	0.00
Dr. Mohd Hussain	0.00	0.00	0.00
Dr. N. Sanjeev	0.00	0.00	0.00
Dr. Ravi Shankar BR	0.00	0.00	0.00
Dr Akshay SK Naidu	0.00	0.00	0.00
Mr D Siddu Ramulu	0.00	0.00	0.00
Mr A Srinivasa Reddy	0.00	0.00	0.00
Mr. B Shanmukhewara Babu	0.00	0.00	0.00
Mr B Srinu Naik	0.00	0.00	0.00
Mr. B.Krupakar Yadav	0.00	0.00	0.00
Mr. B.Raja sekhar	0.00	0.00	0.00
Mr. B.Srinivasa Rao	0.00	0.00	0.00
Mr G Karthik	0.00	0.00	0.00
Mr M Suresh Babu	0.00	0.00	0.00
Mr. M.Prasanna Kiran Kumar	0.00	0.00	0.00
Mr. P. Mahesh kumar	0.00	0.00	0.00
Mr. P.N.K Haranath	0.00	0.00	0.00
Mr. S. Madhusudhan Reddy	0.00	0.00	0.00
Mr Shaik Fayazuddin	0.00	0.00	0.00
Mr. T Srinivas	0.00	0.00	0.00
Mr. T.K. Satish Kumar	0.00	0.00	0.00
Mr. V Srinivasa Reedy	0.00	0.00	5.00
Mr. V.S.S.Sudheer Chekka	0.00	0.00	0.00
Mr.. Ravi Gadiraju	0.00	0.00	0.00
Mr.C.Venkateshwara Rao	0.00	0.00	0.00
Mr. Y. Kamala Raju	0.00	0.00	0.00
Ms Ayona Nair	0.00	0.00	0.00
Ms C Lavanya	0.00	0.00	5.00
Ms C Preeti	0.00	0.00	0.00
Ms J Srilaxmi	0.00	0.00	0.00
Ms K Hemalatha	0.00	0.00	0.00
Ms K Puneetha Reddy	0.00	0.00	0.00

K Shilpa	0.00	0.00	0.00
Ms K Soujanya	0.00	0.00	0.00
Ms O.S.D Hima Bindu	0.00	0.00	0.00
Ms P Sirisha	0.00	0.00	0.00
Ms P Santhi Raj	0.00	0.00	0.00
Ms R Ramya Swetha	0.00	0.00	0.00
Ms. Sri Lakshmi Sravya M	0.00	0.00	0.00
Nithya John	0.00	0.00	0.00
Sri S.Prasad Raju	0.00	0.00	0.00
Sri Bh. Mahesh Chandrakanth	0.00	0.00	0.00
Sri C V S Narayana	0.00	0.00	0.00
Sri GVV Satyanarayana	0.00	0.00	5.00
Sri S Venkata charyulu	0.00	0.00	0.00
Sri V Gajendra	0.00	5.00	5.00
Sri V Mallikarjun Reddy	0.00	0.00	0.00
Sum	0.00	10.00	15.00
N	28.00	27.00	27.00
Assessment of FRP = 2 × Sum/N	0.00	0.74	1.11

Average assessment 0.62

5.9 Funded R&D Projects and Consultancy (FRDC) Work (20)

(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 the faculty (contributing to FRDC)	FRDC points (max. 5 per faculty)		
	2012-2013	2013-2014	2014-2015
Dr G Venkata Ramana	2.00	2.00	0.00

Dr. G.V.K.S.Vara Prasad	0.00	0.00	2.00
Dr. Mohd Hussain	2.00	2.00	2.00
Dr. N. Sanjeev	0.00	0.00	2.00
Dr. Ravi Shankar BR	2.00	2.00	0.00
Dr Akshay SK Naidu	2.00	2.00	0.00
Mr A Srinivasa Reddy	0.00	0.00	0.00
Mr. B Shanmukhewara Babu	0.00	0.00	0.00
Mr B Srinu Naik	0.00	0.00	0.00
Mr. B.Krupakar Yadav	0.00	0.00	0.00
Mr. B.Raja sekhar	0.00	0.00	0.00
Mr. B.Srinivasa Rao	0.00	0.00	0.00
Mr D Siddu Ramulu	0.00	0.00	0.00
Mr G Karthik	0.00	0.00	0.00
Mr M Suresh Babu	0.00	0.00	0.00
Mr. M.Prasanna Kiran Kumar	0.00	0.00	0.00
Mr. P. Mahesh kumar	0.00	0.00	0.00
Mr. P.N.K Haranath	0.00	0.00	0.00
Mr. S. Madhusudhan Reddy	0.00	0.00	0.00
Mr Shaik Fayazuddin	0.00	0.00	0.00
Mr. T Srinivas	0.00	2.00	2.00
Mr. T.K. Satish Kumar	0.00	0.00	0.00
Mr. V Srinivasa Reedy	0.00	2.00	2.00
Mr. V.S.S.Sudheer Chekka	0.00	2.00	2.00
Mr.. Ravi Gadiraju	0.00	0.00	0.00
Mr.C.Venkateshwara Rao	0.00	0.00	0.00
Mr. Y. Kamala Raju	0.00	0.00	0.00
Ms Ayona Nair	0.00	2.00	0.00
Ms C Lavanya	2.00	2.00	5.00
Ms C Preeti	0.00	0.00	0.00
Ms J Srilaxmi	0.00	0.00	0.00
Ms K Hemalatha	0.00	0.00	0.00
Ms K Puneetha Reddy	0.00	0.00	0.00

K Shilpa	0.00	2.00	0.00
Ms K Soujanya	0.00	0.00	0.00
Ms O.S.D Hima Bindu	2.00	2.00	0.00
Ms P Sirisha	0.00	2.00	0.00
Ms P Santhi Raj	0.00	2.00	0.00
Ms R Ramya Swetha	0.00	2.00	0.00
Ms. Sri Lakshmi Sravya M	0.00	0.00	0.00
Nithya John	0.00	0.00	0.00
Sri S.Prasad Raju	2.00	2.00	0.00
Sri Bh. Mahesh Chandrakanth	0.00	0.00	0.00
Sri C V S Narayana	0.00	0.00	2.00
Sri GVV Satyanarayana	2.00	2.00	2.00
Sri S Venkata charyulu	0.00	2.00	2.00
Sri V Gajendra	0.00	2.00	0.00
Sri V Mallikarjun Reddy	2.00	2.00	2.00
Sum	18.00	38.00	20.00
N	28.00	27.00	27.00
Assessment of FRP = 2 × Sum/N	2.57	5.63	2.96

Average assessment 3.72

5.10 Faculty Interaction with Outside World (10)

(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, national research laboratories.

Three points for interaction with institution/industry (not covered earlier).
Points to be awarded, for those activities, which result in joint efforts in publication of books/research paper, pursuing externally funded R&D / consultancy projects and/or development of semester-long course / teaching modules.

Name of the faculty (contributing to FIP)	FIP		
	2012-2013	2013-2014	2014-2015
Dr G Venkata Ramana	5.00	5.00	5.00
Dr. G.V.K.S.Vara Prasad	0.00	0.00	3.00
Dr. Mohd Hussain	5.00	5.00	5.00
Dr. N. Sanjeev	0.00	0.00	0.00
Dr. Ravi Shankar BR	5.00	5.00	0.00
Dr Akshay SK Naidu	5.00	5.00	0.00
Mr D Siddu Ramulu	0.00	0.00	0.00
Mr A Srinivasa Reddy	0.00	0.00	0.00
Mr. B Shanmukhewara Babu	0.00	5.00	5.00
Mr B Srinu Naik	0.00	0.00	0.00
Mr. B.Krupakar Yadav	0.00	0.00	0.00
Mr. B.Raja sekhar	0.00	0.00	0.00
Mr. B.Srinivasa Rao	0.00	0.00	0.00
Mr G Karthik	0.00	0.00	3.00
Mr M Suresh Babu	0.00	0.00	0.00
Mr. M.Prasanna Kiran Kumar	0.00	0.00	0.00
Mr. P. Mahesh kumar	0.00	0.00	0.00
Mr. P.N.K Haranath	0.00	0.00	0.00
Mr. S. Madhusudhan Reddy	0.00	0.00	0.00
Mr Shaik Fayazuddin	0.00	0.00	3.00
Mr. T Srinivas	0.00	5.00	5.00
Mr. T.K. Satish Kumar	0.00	0.00	0.00
Mr. V Srinivasa Reedy	0.00	5.00	5.00
Mr. V.S.S.Sudheer Chekka	0.00	3.00	0.00
Mr.. Ravi Gadiraju	0.00	0.00	0.00
Mr.C.Venkateshwara Rao	0.00	0.00	0.00
Mr. Y. Kamala Raju	0.00	3.00	3.00
Ms O.S.D Hima Bindu	0.00	3.00	3.00
Ms Ayona Nair	0.00	0.00	0.00
Ms C Lavanya	5.00	5.00	5.00

Ms C Preeti	0.00	0.00	3.00
Ms J Srilaxmi	0.00	0.00	0.00
Ms K Hemalatha	0.00	0.00	0.00
Ms K Puneetha Reddy	0.00	0.00	0.00
K Shilpa	0.00	0.00	0.00
Ms K Soujanya	0.00	0.00	0.00
Ms P Sirisha	0.00	0.00	3.00
Ms P Santhi Raj	0.00	0.00	3.00
Ms R Ramya Swetha	0.00	0.00	0.00
Ms. Sri Lakshmi Sravya M	0.00	0.00	3.00
Nithya John	0.00	0.00	0.00
Sri S.Prasad Raju	0.00	3.00	3.00
Sri Bh. Mahesh Chandrakanth	0.00	0.00	0.00
Sri C V S Narayana	0.00	0.00	5.00
Sri GVV Satyanarayana	5.00	5.00	5.00
Sri S Venkata charyulu	0.00	3.00	3.00
Sri V Gajendra	5.00	5.00	0.00
Sri V Mallikarjun Reddy	5.00	5.00	5.00
Sum	40.00	70.00	78.00
N	28.00	27.00	27.00
Assessment of FRP = 2 × Sum/N	2.86	5.19	5.78

Average assessment 4

6 Facilities and Technical Support (75)

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	7	For conducting class work	Exclusive	72 for each	State-of-art infrastructure, Wi-Fi
HOD Room	1	For Head of the Department	Exclusive	1	PC, Laptop with Wi-Fi, scanner, printer, LCD
Faculty Rooms	2	For Department faculty	Exclusive	35	Modern infrastructure, Wi-Fi
Seminar Halls	1	For conducting workshops, Guest lectures and departmental meetings	Exclusive	72	With modern teaching aids
Conference Hall	1	For conducting conferences and technical events	Exclusive	150	Modern infrastructure
Tutorial Rooms	2	For conducting tutorial and remedy classes	Exclusive	72	Modern teaching aids
Laboratories	11	For conducting practical sessions	Exclusive	36 for each	Modern equipment and licensed softwares with LAN and Wi-Fi

6.1 Classrooms in the Department (20)

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

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

No. of Class rooms : 6+1
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
4201 4204 4208 4212 4224 4112 4424	Class Room	Exclusive	Class rooms are equipped with good infrastructure and are well designed to give ideal teaching and learning environment.

4218 4219	Tutorial room	Exclusive	Tutorial rooms with a seating capacity of 60 students are available for special and remedial classes
4412	Seminar Hall	Exclusive	Air conditioned hall equipped with modern teaching aids and PA System.

6.1.2 Teaching aids---multimedia projectors, etc (5)

(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.

Different Teaching aids used in GRIET:

Visual Aids:

White board

- The written matter on the board is meant to attract the attention and it stays visually for a long time to the student
- It acts as a prompt and a reminder of the on-going lecture. Thus acts as a reinforcing tool in TLC.
- It is used simultaneously along with other aids which may last a short period visually.
- It helps in step-wise/sequentially depict a process or derive formulae.
- It makes the student put his or her understanding on the board, upon an invitation of the teacher in front of the audience.

- The summary of the lecture is captured on the board, reinforcing the teaching objective.

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.

1. 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.

2. 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.

4. 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)

(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.
- On the whole at GRIET, the class / tutorial rooms, seminar halls are designed in a way that they provide a conductive environment which is needed for 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
4201	95sq.mt / 72	Good	Excellent	Excellent	State-of-art infrastructure, necessary gadgets
4204	80sq.mt / 72				
4208	85sq.mt / 72				
4212	146sq.mt / 72				
4224	95sq.mt / 72				
4112	146sq.mt / 72				
4424	95sq.mt / 72				

6.2 Faculty Rooms in the Department (15)

6.2.1 Availability of individual faculty rooms (5)

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

- Halls are portioned into cubicles for accommodating 1-3 faculty members in each 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	Room size in sq.mt
4213	87
4113	67

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

(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	White/ Black Board	Computer/ Internet Facilities	Cupboards	Amenities/facilities
4213	Yes	Wi-Fi and Laptops	Adequate in number	Desktop computer, scanner, printer, water purifier, refrigerator and kitchenette
4113	Yes			

6.2.3 Usage of room for counseling/discussion with students (5)

(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
4213	Yes	Yes
4113		

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
Fluid Mechanics	Exclusive	132sq.mt, 36	10	Excellent	Available
Surveying I	Exclusive	95sq.mt, 36	10	Excellent	Available
Computer Aided Drafting of Buildings	Exclusive	120sq.mt, 36	10	Excellent	Available
Strength of Materials	Exclusive	245sq.mt, 36	12	Excellent	Available
Hydraulics & Hydraulic Machinery	Exclusive	132sq.mt, 36	10	Excellent	Available
Surveying II	Exclusive	95sq.mt, 36	10	Excellent	Available
Concrete Technology	Exclusive	160sq.mt, 36	12	Excellent	Available
Geotechnical Engineering	Exclusive	245sq.mt, 36	13	Excellent	Available
Engineering Geology	Exclusive	85sq.mt, 36	11	Excellent	Available
Environmental Engineering	Exclusive	85sq.mt, 36	14	Excellent	Available
Irrigation Design & Drawing	Exclusive	120sq.mt, 36	10	Excellent	Available
Highway materials	Exclusive	85sq.mt, 36	10	Excellent	Available
Remote Sensing & GIS	Exclusive	120sq.mt, 36	10	Excellent	Available
STAAD	Exclusive	120sq.mt, 36	10	Excellent	Available

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

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

(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
GIS & IDD Lab	Exclusive	120sq.mt, 36	10+10	Excellent	Available
CAD & STAAD Lab		120sq.mt, 36	10+10		
Strength of Materials Lab		245sq.mt, 36	12		
Concrete Technology Lab		160sq.mt, 36	10		
Highway Materials Lab		85sq.mt, 36	10		
Fluid Mechanics Lab		132sq.mt, 36	10		
Geotechnical Engineering Lab		245sq.mt, 36	13		
Environmental Engineering Lab		85sq.mt, 36	14		
Engineering Geology Lab		85sq.mt, 36	10		
Surveying Lab		95sq.mt, 36	10 +10		
Hydraulics and Hydraulic Machines Lab		132sq.mt, 36	12		

Mapping of Laboratories with POs

Name of the Laboratory	Program Outcomes											
	a	b	c	d	e	f	g	h	i	j	k	l
Fluid Mechanics Lab		x	x	x								
Surveying Lab - I		x	x	x					x			
Computer Aided Drafting of Building Lab		x		x	x						x	
Strength of Materials Lab			x	x						x		
Hydraulics and Hydraulic Machinery Lab			x	x	x							
Surveying Lab – II		x			x			x				
Concrete Technology Lab		x	x				x					
Geotechnical Engineering Lab	x	x		x					x			
Engineering Geology Lab					x	x	x					
Environmental Engineering Lab			x	x			x					
Irrigation Design & Drawing			x		x	x	x					
Highway Materials Lab			x	x								x
Remote Sensing & GIS Lab				x	x	x					x	
STAAD Lab				x	x							x

6.3.2 Availability of computing facilities in the department (5)

(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
Computer Aided Drafting of Building Lab	4205	50	Excellent	AutoCAD	1,2,3
Irrigation Design & Drawing	4205	50	Excellent	AuotCAD	1,2,3
Remote Sensing & GIS	4207	50	Excellent	GIS software	1,2,3
STAAD	4207	50	Excellent	STAAD	1,2,3

6.3.3 Availability of laboratories with technical support within and beyond working hours (5)

(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 6.00 P.M	YES
III	9.00 A.M to 3.00 P.M	8.00 A.M to 6.00 P.M	YES
IV	11.00 A.M to 5.00 P.M	8.00 A.M to 6.00 P.M	YES

Name of the Laboratory	Working Hours	Work carried out in beyond working hours	Lab In-charge	Lab Faculty
GIS & IDD Lab	8:00 A.M to 6:00 P.M	Mini/Major Projects	K. Ranjit Kumar	B.Shanmukeshwara Babu /Y.Kamal Raj
CAD & STAAD Lab	8:00 A.M to 6:00 P.M	Mini/Major Projects	V. Siva Reddy	A.Srinivasa Reddy/T.Srinivas
Strength of Materials Lab	8:00 A.M to 6:00 P.M	Mini/Major Projects	P. Venkat Raju	R.Ramya Swetha
Concrete Technology Lab	8:00 A.M to 6:00 P.M	Mini/Major Projects	K.Laxmaiah	GVV Satyanarayana
Highway Materials Lab	8:00 A.M to 6:00 P.M	Mini/Major Projects	D. Peddi Raju	G.Karteek
Fluid Mechanics Lab	8:00 A.M to 6:00 P.M	Mini/Major Projects	G. Ramakrishnam Raju	S.Venkata Charyulu
Geotechnical Engineering Lab	8:00 A.M to 6:00 P.M	Mini/Major Projects	R.J.V Sita Rama Raju	Dr. C.Lavanya
Environmental Engineering Lab	8:00 A.M to 6:00 P.M	Mini/Major Projects	S. Meena	OSD Hima Bindu
Engineering Geology Lab	8:00 A.M to 6:00 P.M	Mini/Major Projects	R.J.V Sita Rama Raju	B.Shanmukeshwara Babu
Surveying Lab	8:00 A.M to 6:00 P.M	Mini/Major Projects	P.S.R.P.S.S.S. Vardhani	S.P.Raju
Hydraulics and Hydraulic Machines Lab	8:00 A.M to 6:00 P.M	Mini/Major Projects	G. Ramakrishnam Raju	S.Venkata Charyulu

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

(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 (sq. mt.)	Overall ambience
Fluid Mechanics	Venturimeter, Orifice meter, Bernoullis, Notch, Pipe	Maintained by Skilled lab technician & Skilled	2	132	Qualified faculty, staff with good condition of Lab equipment has created an ambience

	friction etc.	Professional			for learning
Surveying I	Chain surveying, Compass, Plane table, Levelling, etc	Maintained by Skilled lab technician & Professional	2	95	Qualified faculty, staff with good condition of Lab equipment has created an ambience for learning
Computer Aided Drafting of Building	Computers with Design and Analysis software	Maintained by Skilled lab technician & Skilled computer Hardware Professional	1	120	Qualified faculty, staff with good condition of Lab equipment has created an ambience for learning
Strength of Materials	UTM, Hardness testing equipment, computerized material property testing machines	Maintained by Skilled lab technician & Skilled Professional	1	245	Qualified faculty, staff with good condition of Lab equipment has created an ambience for learning
Hydraulics & Hydraulic Machinery	Turbines, Pumps, Jet flows, hydraulic jump, etc.	Maintained by Skilled lab technician & Professional	2	132	Qualified faculty, staff with good condition of Lab equipment has created an ambience for learning
Surveying II	Theodolite, Levelling, Total Station, etc.	Maintained by Skilled lab technician & Professional	2	95	Qualified faculty, staff with good condition of Lab equipment has created an ambience for learning
Concrete Technology	Consistency, compressive strength, workability, specific gravity, Vee-bee, etc	Maintained by Skilled lab technician & Professional	2	160	Qualified faculty, staff with good condition of Lab equipment has created an ambience for learning
Geotechnical Engineering	Grain size, CBR, Consolidation, compaction, permeability, direct shear,	Maintained by Skilled lab technician & Professional	2	245	Qualified faculty, staff with good condition of Lab equipment has created an ambience for learning

	etc.				
Engineering Geology	Minerals, Rocks, Geological Maps, etc.	Maintained by Skilled lab technician & Professional	1	85	Qualified faculty, staff with good condition of Lab equipment has created an ambience for learning
Environmental Engineering	pH, Turbidity, conductivity, BOD, COD, Chlorine demand, etc	Maintained by Skilled lab technician & Professional	1	85	Qualified faculty, staff with good condition of Lab equipment has created an ambience for learning
Irrigation Design & Drawing	Computers with CAD software for irrigation design and drawings	Maintained by Skilled lab technician & Skilled computer Hardware Professional	1	120	Qualified faculty, staff with good condition of Lab equipment has created an ambience for learning
Highway materials	Crushing value, Impact value, Abrasion, Ductility, etc.	Maintained by Skilled lab technician & Professional	2	85	Qualified faculty, staff with good condition of Lab equipment has created an ambience for learning
Remote Sensing & GIS	Computers with GIS software for digitization	Maintained by Skilled lab technician & Skilled computer Hardware Professional	1	120	Qualified faculty, staff with good condition of Lab equipment has created an ambience for learning
STAAD	Computers with STAAD Pro. software for design and analysis	Maintained by Skilled lab technician & Skilled computer Hardware Professional	1	120	Qualified faculty, staff with good condition of Lab equipment has created an ambience for learning

6.4 Technical Manpower Support in the Department (15)

Name of the	Design	Pay	Exclusive	Date of	Qualificatio	Now	Other	Responsib

technical staff	ation	scale	/ shared work	joining	n At Joining		technical skills gained	ility
G. Ramakrishnam Raju	Lab Assistant	6700-55600	Exclusive	24.11.1997	I.T.I (Fitter)	I.T.I (Fitter)	Training on Drilling, Milling and Lathe operations	FM/HHM Lab
P. Venkat Raju	Mechanic	6700-55600	Exclusive	16.11.1997	I.T.I (Carpenter)	I.T.I (Carpenter)	Training on Surface Finishing, UTM	SM Lab
P.S.R.P.S.S.S. Vardhani	Lab Assistant	6700-55600	Exclusive	08.11.2010	Diploma (civil Engg)	Diploma (civil Engg)	Training on Total Station Survey	Surveying Lab
K.Laxmaiah	Lab Assistant	6700-55600	Exclusive	28.07.2014	ITI (Turner)	ITI (Turner)	None	CT/HM Lab
Mr. R.J.V. Sita Rama Raju	Lab Assistant	6700-55600	Exclusive	02.01.2006	ITI	ITI	None	GTE Lab/ EG Lab
Ms. S. Meena	***Lab assistant***	6700-55600	Exclusive	25.06.2014	B.Sc (MPC)	B.Sc (MPC)	None	EE Lab
V.V Siva Reddy	Lab Assistant	6700-55600	Exclusive	27.01.2014	B.Tech (Civil)	B.Tech (Civil)	None	CAD & STAAD Lab
K. Ranjit Kumar	Lab Programmer	6700-55600	Exclusive	11.02.2008	M.Sc (Computer Science)	M.Sc (Computer Science)	None	GIS & IDD Lab
D. Peddi Raju	Lab Assistant	6700-55600	Exclusive	02.02.1998	ITI (draftsman civil)	ITI (draftsman civil)	None	Highway Materials Lab

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

(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	Fluid Mechanics	G Rama Krishnam Raju	Lab Assistant
2	Surveying I	P.S.R.P.S.S.S. Vardhani	Lab Assistant
3	Computer Aided Drafting of Building	V.V Siva Reddy	Lab Assistant
4	Strength of Materials	P Venkata Raju	Lab Assistant
5	Hydraulics & Hydraulic Machinery	G Rama Krishnam Raju	Lab Assistant
6	Surveying II	P.S.R.P.S.S.S. Vardhani	Lab Assistant
7	Concrete Technology	K.Laxmaiah	Lab Assistant
8	Geotechnical Engineering	Mr. R.J.V. Sita Rama Raju,	Lab Assistant
9	Engineering Geology	Mr. R.J.V. Sita Rama Raju,	Lab Assistant
10	Environmental Engineering	Ms. S. Meena	Lab Assistant
11	Irrigation Design & Drawing	K. Ranjit Kumar	Lab programmer
12	Highway materials	D. Peddi Raju	Lab Assistant
13	Remote Sensing & GIS	K. Ranjit Kumar	Lab Programmer
14	STAAD	V.V Siva Reddy	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. He is eminent non-teaching faculty, helps 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 Fluid Mechanics and Hydraulic Machinery Lab. He is eminent non-teaching faculty, helps students in labs, mini and major projects.
	**Mr. K. Lakshmaiah**, completed ITI (turner) in 1980 and BA (Public Administration) from BR Ambedkar Open University in 1994. Worked as machine operator in Hyderabad Allwyn during 1986-2003 and Densen Hydraulics Ltd (2005-2014). He has very good experience in operation and maintenance of machines and equipment. He has joined GRIET as technician in July 2014. His experience is useful to students in operating the equipment in concrete and highway materials labs.
	**Mrs. PSRPSSS Vardhani**, completed Diploma in Civil Engineering in 1991. She has joined as Technician in Survey lab in November 2010. She is helpful to students in doing Survey field work. Before joining this organization she worked with many civil engineering consultants.
	**Mr. K. Ranjit Kumar**, joined GRIET in 2008. He did his M. Sc Computer Science and conversant with all software and hardware operations and familiar with software. His knowledge of computer is helpful to students.
	**Mr V. Venkata Shiva Reddy,** obtained his B.Tech in Civil Engineering with distinction from K.S.R.M college of Engineering, kadapa in the year 2013 affiliated to S.V. University, Tirupati. He has one and half years of experience. He is expert in handling labs Remote sensing & GIS and STAAD.
	**Mr. R.J.V. Sita Rama Raju**, completed ITI. He joined as Lab Assistant in GRIET, 2006. He is eminent non-teaching faculty, helps students in labs.

	**Ms. S. Meena**, Obtained B.Sc (MPC) from BGBS Women's College under Andhra University in 2014. She joined as a Lab Assistant in GRIET in 2014.

6.4.2 Incentives, skill-upgrade, and professional advancement (5)

(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)

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	2014-2015	2013-2014	2012-2013	2011-12
Sanctioned intake strength in the institute (N)	1110	1110	930	900
Number of students admitted on merit basis (N1)	699	745	610	597
Number of students admitted on management quota/otherwise (N2)	306	308	259	254
Total number of admitted students in the institute (N1 + N2))	1005	1053	869	851

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	2014-2015	2013-2014	2012-2013	2011-12
1-10000	50	114	145	167
10000-50000	449	452	347	332
50000-100000	148	131	77	71
100000-150000	28	31	28	15
150000-200000	12	9	12	9
200000 and above	0	4	1	3
Admitted with State Government Norms based on Percentage in Intermediate Course	318	312	259	254

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	07-01-2004	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	25-08-2014	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	08-11-2005	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	100 100	0 0	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	12-01-2003	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	50	50	0
V. Lakshmi Prasanna	MA, M.Phil (Ph.D)	Asst. Professor	28-07-2008	Basic Sciences	75	25	0
Nirmalya Kumar Mohanty	M.Sc, M.Tech	Asst. Professor	19-07-2007	Basic Sciences	100	0	0
P. Sujeetha	MA (Ph.D)	Asst. Professor	12-09-2007	Basic Sciences	75	25	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	0	100	0
R. Lakshmi Kanthi	MA (Ph.D)	Asst. Professor	07-02-2009	Basic Sciences	75	25	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	17-12-2010	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	75	25	0
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	06-10-2013	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	B.Tech, PGDM	Asst.Professor	12-01-2014	Basic Sciences	100	0	0
Ms. S.Rama	M.Sc	Asst Professor	09-02-2014	Basic Sciences	100	0	0
Mr. Yesu M	M.Sc	Asst Professor	27-08-2014	Basic Sciences	100	0	0

Mr. M.Srinivas	M.Sc	Asst Professor	22-09-2014	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	30-04-2015	Basic Sciences	100	0	0
Ms. M.Pushpa Latha	M.A	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. Rimy Kulshreshtha	M.A	Asst.Professor	06-12-2015	Basic Sciences	100	0	0
Ms T Sabitha	M.A	Asst.Professor	06-12-2015	Basic Sciences	100	0	0
Ms G Bhuvaneshwari	M.A	Asst.Professor	06-12-2015	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.Chandrasheka r	M.E	Asst.Professor	07-11-2007	EEE	100	0	0
G. Sandhya Rani	M.Tech	Asst.Professor	11-07-2011	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.E	Asst.Professor	12-08-2014	EEE	50	50	0
V V S Madhuri	M.Tech	Asst. Professor	30-06-2011	EEE	50	50	0
G. Satyanarayana	M.Tech	Asst. Professor	23-10-2006	IT	50	50	0
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	100	0	0
K.P Sirisha	M.E	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
A. Sowmya	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)

7.1.1 Assessment of First Year Student Teacher Ratio (FYSTR) (10)

Data for first year courses to calculate the FYSTR:

Year	No. of faculty members(considering fractional load)	FYSTR	Assessment=(10 x 15)/FYSTR(Max. is 10))
2012-2013	65	14.31	10
2013-2014	75	14.8	10
2014-2015	75	14.8	10

Average assessment **10**

7.1.2 Assessment of Faculty Qualification Teaching First Year Common Courses (15)

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
2012-2013	10	27	28	37	10.62
2013-2014	11	38	33	45	10.73
2014-2015	13	36	33	45	11.00

Average assessment **10.78**

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)

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

Laboratory description	Space, number of students	Software Used	Type of experiments	Quality of instruments	Laboratory manuals
Engineering Chemistry Lab – 1	85 sqm / 30	NIL	10 experiments in Volumetric and analytical	Excellent	Available
Engineering Chemistry Lab – 2	80 sqm / 30	NIL	10 experiments in Volumetric and analytical	Excellent	Available
Engineering Chemistry Lab – 3	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 – 2	80 sqm / 30	DevC, Turbo C, Linux with Ubuntu,	30 experiments in C language	Excellent	Available
Computer programming and Data Structures Lab – 3	85 sqm / 30	DevC, Turbo C, Linux with Ubuntu,	30 experiments in C language	Excellent	Available
Computer programming and Data Structures Lab – 4	85 sqm / 30	DevC, Turbo C, Linux with Ubuntu,	30 experiments in C language	Excellent	Available
Computer programming and Data Structures Lab – 5	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 – 2	134 sqm / 30	NIL	9 experiments in Letterings, Projections, views	Excellent	Available
Engineering Workshop – 3	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-2	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)

(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	Oral & Technical Presentations, Vocabulary building, Writing skills, Interview skills	Excellent	Students are guided & monitored by the instructor

7.2 Teaching – Learning Process (40)

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

(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 : 30
- Number of subjects with tutorials: 1st Year…….2nd Year……..3rd Year……4th Year…….
  1st year: 66 2nd Year: 80 3rd year: 77 4th year: 55

Tutorial Classes for the Year 2014-15:

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)

(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)

(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, Alumni 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:

Feedback form consists of 10-13 questions. 2. Each question consists of the grading 5-1. 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 an academic session once after a month of subject coverage and second 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 visits the 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 7

Faculty with top feedback grade are appreciated by the department, incentives of the current year are based on the past feedback reports. Faculties with bad feedback are sent to the Faculty Development Programs.

7.2.4 Scope for self-learning (5)

(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)

(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:

- The Institute Library, a vast repository of volumes and titles
- Department Library, a specialized repository of volumes and titles and projects.
- e-learning Tools
  - Digital Libraries (IEEE, ACM, NPTEL)
  - e-lessons by faculty on college portal
  - CDs, Video bank in the library
- 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)

(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 of CG&C
- 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
2012-13	132	119	251
2013-14	123	91	214
2014-15	111	18	129

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
2012-13	434
2013-14	407
2014-15	440

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
2012-13	1. Student Competition on 'Entrepreneurship challenge' 2. Lecture by Patent Awareness 3. MSME Program on Entrepreneurship	1. Mr. VV Hitheswar successfully launched YQ Software Ltd. 2. Eight students joined family business in 2011-12 3. Thirteen students joined family business in 2012-13
2013-14	1. Organized a guest lecture by eminent and entrepreneur Mr. Srikanth of sunfield energy pvt.Ltd on 23.10.2013 2. An interactive session with CEO of Fortune Automobiles Mr. Nirav Modi on 22.11.2013 3. 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	1. Organized a seminar on importance	1. motivated the students

	of entrepreneurship on 27-8-2014 and Assistant Director MSME was chief guest 2. Conducted " idea tree" on 19-2-2015 3. 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. 4. GRIET established incubation centre with Micro Small Medium Enterprise(MSME) 5. 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	2. selected 2 ideas to be presented for Financial assistance to MSME 3.thiry faculty participated in this program 4.encouraging students to become entrepreneurs

7.2.7 Co-curricular and Extra-curricular Activities (5)

(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)
- Hyderabad Management Association (HMA)
- 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)

(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
   - Participated four times in All India Inter University 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
2012-13	Cricket	JNTU Tournament	JNTUH	Winners
	Volley Ball	BIE Tournament	Bharat Institute of Engineering	Winners
	Badminton (Singles)	CBIT Tournament	CBIT	Winners
	Cricket	Nexus Tournament	-	Runners
	Shuttle	JNTU Zonals	JNTUH	Runners
	Table Tennis (Singles)	JNTU Tournament	JNTUH	Runners
	Basket Ball	CMR Tournament	CMR College	Runners
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	HITAM College	Runners

		Tournament		
	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)

8.1 Campus Infrastructure and Facility (10)

8.1.1 Maintenance of academic infrastructure and facilities (4)

(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)

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 d'hôte’ 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)

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

a) Electricity

Description	Qty
Transformers	2

b) Power Backup

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)

8.2.1 Governing body, administrative setup, and functions of various bodies (2)

(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 (A copy of sample is annexed)
			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	Sri. A. Ravindra Babu	Member	
		University Nominee	Dr. A. Damodaram	Member	
		Principal of Institute	Dr. Jandhyala N Murthy	Member-Secretary	

Committee	Chair	Members	
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.	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 arrangements, methods, procedures etc. 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 year (A copy of sample is annexed)
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 (A copy of sample is annexed)

Committee	Chair	Members	
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 (A copy of sample is annexed)
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

Committee	Chair	Members	
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. (A copy of sample is annexed)

Committee	Chair	Members	
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. (A copy of sample is annexed)
Programme Assessment Committee (PAC)	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 coordinator, Module coordinators, and external stake 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. (A copy of sample is annexed)

Committee	Chair	Members	
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. (A copy of sample is annexed)
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)

(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
(d) 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:
Non-Teaching Staff has been recruited based on the guidelines prescribed by state government.

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 Decentralization in working including delegation of financial power and grievance redressal system (3)

(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.
- The Finance aspects are looked after by the Finance Officer and are assisted by the Accountant and Deputy Accountant.

(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.

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 affidavit to the Institute at the time of admissions.

(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

2. Members

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)

(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)

(Instruction: The preceding list of items is not exhaustive. One may add other relevant items if applicable.)

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

Item	Budgeted in CFY	Expenses in CFY	Expenses in CFYm1	Expenses in CFYm2

	2014-2015	2014-2015	2013-2014	2012-2013
Infrastructure built-up	10000000	600000	12572000	2109000
Library	3000000	1772000	1844000	2654000
Laboratory equipment	25000000	25891000	11448000	10620000
Laboratory consumables	20000000	13714000	975000	1537000
Teaching and non-teaching staff salary	180000000	177394000	144049000	116452000
R&D	15000000	10237000	698900	2841000
Training and Travel	5000000	3760000	1957000	2205000
Others	60000000	47703000	52599000	41222000
Total	318000000	281071000	226142900	179640000

8.3.1 Adequacy of budget allocation (4)]

(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)

(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)

(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)

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 CFY 2014-2015	Expenses in CFY 2014-2015	Budgeted in 2013-2014	Expenses in CFYm1 2013-2014	Budgeted in 2012-2013	Expenses in CFYm1 2012-2013
Laboratory equipment	3300000	2280000	3000000	2485000	2500000	2116000
Software	900000	488000	300000	67000	200000	167000
R&D	200000	213000	100000	30000	150000	100000
Laboratory consumables	200000	109000	300000	90000	300000	130000
Maintenance and spares	1100000	1041000	1000000	373000	1000000	477000
Training and Travel	200000	134000	200000	118000	300000	301000
Miscellaneous expenses for academic activities	200000	177000	200000	65000	200000	35000
Total	6100000	4442000	5100000	3228000	4650000	3326000

8.4.1 Adequacy of budget allocation (5)

(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 and policies set out by the institution. The priorities of the organization are:-

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.

For, example, the budget in the year 2014-15, 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)

(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 2014-15, half of the budget amount was spent towards the laboratory equipment like NDT, SCC, Marshall Stability, Relative density etc. as planned and allocated. This is for continuous improvement of laboratories to enhance the technical skills.

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)

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)

(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 Computerization for search, indexing, issue/return records Bar coding used

At present the Library Information Center uses in-house developed Library Management Software

- Library services on Internet/Intranet INDEST or other similar membership Archives

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

- **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
11`	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)

Year	Number Of New Titles Added	Number Of New Editions Added	Number Of New Volumes Added
2012-2013	318	44	4000
2013-2014	655	475	4764
2014-2015	395	230	1572

8.5.3 Scholarly journal subscription (3)

Year	No. of Technical Magazines / Periodicals	No. of Total Technical Journals subscribed		Scholarly Journal Titles(in originals, reprints)
		In Hardcopy	In Softcopy	
2014-2015	293	293	6849	6849
2013-2014	300	300	300	300
2012-2013	300	300	8412	300
2011-2012	240	240	35	240

8.5.4 Digital Library (3)

- 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 Lessons;
- Availability of an exclusive server : YES
- Availability over Intranet/Internet : YES
- Availability of exclusive space/room : YES
- Number of users per day : 150

8.5.5 Library expenditure on books, magazines/journals, and miscellaneous contents (5)

Year	Expenditure (in Rs.)				Comments, If Any
	Book	Magazines/Journals (for hard copy subscription)	Magazines/Journals (for soft copy subscription)	Misc. Contents	
2012-2013	15.53	7.8	16.3	-	-
2013-2014	19.06	6	16.2	-	-
2014-2015	15.13	6.75	20.2	2	-

8.6 Internet (5)

(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 : 54 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)

8.7.1 Checks for wiring and electrical installations for leakage and earthing (1)

- 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 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.
- Safety instructions are prominently displayed throughout the college.
- Quarterly maintenance drills are done for awareness and familiarity with hazards and safety actions in case of emergencies.

8.7.3 Safety of civil structure (1)

- 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)

(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)

8.8.1 Availability of counselling facility (1)

(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)

(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, 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)

(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.
- The Medical Center consists of Emergency Medical equipment such as ECG, EMG machines, Pace Maker, Holter Monitor
- It is open throughout college working hours including sports periods.

Continuous Improvement (75)

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)

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	2010-2011(c)	2009-2010(b)	2008-2009(a)	Assessment
Success Index	0.95	0.91	0.88	4.64

9.2 Improvement in Academic Performance Index of Students (5)

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	2010-2011(c)	2009-2010(b)	2008-2009(a)	Assessment
API	0.79	0.80	0.77	3.95

9.3 Improvement in Student-Teacher Ratio (5)

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	2014-2015 (c)	2013-2014 (b)	2012-2014 (a)	Assessment
STR	0.76	0.76	0.72	3.77

9.4 Enhancement of Faculty Qualification Index (5)

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	2014-2015 (c)	2013-2014 (b)	2012-2013 (a)	Assessment
FQI	0.69	0.60	0.61	3.25

9.5 Improvement in Faculty Research Publications, R&D Work and Consultancy Work (10)

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	2014-2015 (c)	2013-2014 (b)	2012-2013 (a)	Assessment
FRP	0..23	0.23	0.25	2.39
FRDC	0.13	0.28	0.15	1.89

9.6 Continuing Education (10)

In this criterion, the institution needs to specify the contributory efforts made by the faculty members by developing course/laboratory modules, conducting short-term courses/workshops, etc., for continuing education during the last three years.

Module Description	Any Other Contributory Institute/Industry	Developed/Organized By	Duration	Resource Persons	Target Audience	Usage and Citation, etc
Certification course on AutoCAD	CAAD Centre	Dept. of Civil Engineering	80 Hours	P.Santi Reddy	B.Tech students	Acquired knowledge in the software
Workshop on Fluid Mechanics	IIT, Bombay	Dept. of Civil Engineering	Two Weeks	Faculty from IIT Bombay	Faculty	Acquired knowledge in Fluid Mechanics
Training Programme on Total Station	Lawrence & Mayo	Dept. of Civil Engineering	One Week		Faculty & Students	To improve knowledge and skill in total station
Workshop on Engineering Mechanics	IIT, Bombay	GRIET	Two Weeks	Faculty from IIT Bombay	Faculty	Acquired knowledge in Engineering Mechanics
STEPS 2014	GRIET	Dept. of Civil Engineering	Two days	Eminent Speakers	Faculty & Students	Acquired knowledge

				from Industry		in sustainable technologies
STEPS 2013	GRIET	Dept. of Civil Engineering	Two days	Eminent Speakers from Industry	Faculty & Students	Acquired knowledge in sustainable technologies
STEPS 2012	GRIET	Dept. of Civil Engineering	Two days	Eminent Speakers from Industry	Faculty & Students	Acquired knowledge in sustainable technologies

9.7 New Facility Created (15)

Automatic Weather Station is installed by Japan University of Tokyo and Kieo in association with Indian Meteorological Department and Indian Institute of Technology, Hyderabad. It continuously monitors temperature, relative humidity, atmospheric pressure, wind speed, wind direction, rainfall, etc.

Self-Compacting Concrete equipment is used to study the workability of self compacting concrete and effect of water-cement ratio and to optimize the dosage of super plasticizers. It achieves compaction into every part of the mould or formwork simply by means of its own weight without any segregation of the coarse aggregate. The fluidity of SCC ensures a high level of workability and durability whilst the rapid rate of placement provides an enhanced surface finish.

Non-Destructive Test equipment is used to calculate the compressive strength and density of concrete with ultrasonic pulse velocity tester, Schmidt's hammer. Non-destructive testing is a group of analysis techniques used to evaluate the properties of a material without causing damage. Non-Destructive Testing methods are used to determine the condition and quality of concrete or to locate objects embedded in concrete, without damaging or destroying the concrete. Also to identify the location and development of cracks and voids which are not visible at the concrete surface but which may affect the structural or durability performance of concrete.

Permeability testing machine is used to study the permeability of concrete under standard air pressure. Permeability was used to evaluate the mixes because low permeability is typically associated with durable concrete pavements. The requirements were initiated to insure that concrete mixes would have good aggregate interlock, low paste content, and low permeability.

Accelerating curing tank is used to accelerating the curing process of concrete. This is useful for research and project works. It is used to get early high compressive strength in concrete. This method is also used to find out 28 days compressive strength of concrete in 28 hours.

Concrete Air Entrainment equipment is used to calculate volume of air entraining in the concrete. The air content is a very important parameter for the behavior of concrete to weathering and to verify the air content variation due to the use of chemical additives to increase the workability of concrete.

Relative Density is a subjective character of sandy deposit. It is expressed as the ratio of actual decrease in volume of voids in a sandy soil to the maximum possible decrease in the volume of voids meaning how far the sand under investigation can be capable to the further densification beyond its natural state. Determination of relative density is helpful in compaction of coarse grained soils and in evaluating safe bearing capacity in case of sandy soils. For very dense gravelly sand, it is possible to obtain relative density greater the one.

Inverted Metallurgical Microscope with digital camera is used to find the atomic structure of minerals and rocks. Thin sheets of minerals and rocks are prepared and examined under the microscope for studying the atomic number and atomic structure of various minerals and rocks.

Parshall Flume is a hydraulic structure which is used to measure surface water and irrigation flows. The Parshall flume is frequently used to measure industrial discharges, municipal sewer flows, and influent or effluent at wastewater treatment plants. Of all the flumes, the Parshall flume is the most recognized and commonly used.

Double Ring Infiltrometer is a device used to measure the rate of water infiltration into soil. The rate of infiltration is determined as the amount of water per surface area and time unit that penetrates the soil. This rate can be calculated on the basis of the measuring results and Darcy's Law.

Marshall Stability Test equipment is done to determine the Marshall stability of bituminous mixture as per ASTM D 1559. Marshall Stability is the resistance to plastic flow of cylindrical specimens of a bituminous mixture loaded on the lateral surface.

Center for Excellence in Life Skills (C.E.L) is initiated and competitions were based on the contents of books on life skills. The engineer must have high self-esteem, high motivation and high unconscious competence for success in worthwhile goals based on sound value system. Developing the attitudinal skills is a continuous process like breathing process and it is not a one-time event.

Center for Water Resources Engineering and Management (CREAM) is initiated and competitions were based and organized under the theme of Water and sustainable development.

Center for Sustainable Technologies for Eco-Social Resilience to Global Climate Change (CST-ERG)" is initiated and competitions were based and organized under the theme of Water and Energy.

Computer Simulation, Optimization, Analysis and Design Lab in Advanced Water Resources Engineering (CARE Lab) is initiated using open source software's in water resource engineering like USGS , ASCE , NIH ,IWMI etc. for the guidance of faculty and students in doing mini and main projects.

Reinforcement detailing model was developed to enhance and facilitate the understanding of reinforcement details of any structure. Also various models of important structures like Metro Rail model, Outer Ring Road model and GRIET Campus Model were developed.

9.8 Overall Improvements since last accreditation, if any, otherwise, since the commencement of the programme (20)

Specify the overall improvement:

- GRIET is recognized as Scientific and Industrial Research Organization (SIRO) by Department of Scientific and Industrial Research (DSIR).
- Accreditation by Tata Consultancy Services (TCS) of 'B' Category.

Specify the Strengths/Weakness	Improvement Brought In	Contributed By	List the PO(s), which are strengthened	Comments, if any
2014-2015	Up gradation of Equipment's for Concrete technology, Highway materials, Geotechnical Engineering Labs	GRIET	b, c, d	To strengthen the laboratory
2013-2014	Improvement in understanding about sustainable technologies	GRIET	g, j, l	Acquired knowledge in sustainable technologies
2012-2013	Improvement in Communication, Listening and Comprehension skill, team building skill, presentation skill	GRIET	h, i, j, k	Various skills are improved
2011-2012	Up gradation of Equipment's for laboratories	GRIET	b, c, d	To strengthen the laboratory