

ACADEMIC REGULATIONS

For
UG PROGRAMMES

2012-13

Version 1.2

(w.e.f. June 2015)



GMR Institute of Technology

An Autonomous Institute Affiliated to JNTUK, Kakinada

Rajam- 532 127, Srikakulam (Dt.)

WWW.GMRIT.ORG

Institute- Vision

To be among the most preferred institutions for engineering and technological education in the country...

An institution that will bring out the best from its students, faculty and staff – to learn, to achieve, to compete and to grow – among the very best...

An institution where ethics, excellence and excitement will be the work religion, while research, innovation and impact, the work culture

Institute- Mission

- To turnout disciplined and competent engineers with sound work and life ethics
- To implement outcome based education in an IT-enabled environment
- To encourage all-round rigor and instill a spirit of enquiry and critical thinking among students, faculty and staff
- To develop teaching, research and consulting environment in collaboration with industry and other institutions

Vision For all the Departments

To be a nationally preferred department of learning for students and teachers alike, with dual commitment to research and serving students in an atmosphere of innovation and critical thinking

Mission for all the Departments

- To provide high-quality education in ---- Engineering to prepare the graduates for a rewarding career in --- Engineering and related industries, in tune with evolving needs of the industry
- To prepare the students to become thinking professionals and good citizens who would apply their knowledge critically and innovatively to solve professional and social **problems**

Department of Chemical Engineering

Programme Educational Objectives

1. Acquire the fundamental principles of science and chemical engineering with modern experimental and computational skills.
2. Ability to handle problems of practical relevance to society while complying with economical, environmental, ethical, and safety factors.
3. Demonstrate professional excellence, ethics, soft skills and leadership qualities

Department of Civil Engineering

Programme Educational Objectives

1. Engage in ongoing learning and professional development through self-study, continuing education in civil engineering and in other allied fields.
2. Apply engineering skills, critical thinking and problem solving skills in engineering practices or tackle social, technical and business challenges.
3. Demonstrate ethical attitude, soft skills, team spirit and leadership

Department of Computer Science and Engineering

Programme Educational Objectives

1. Acquire logical and analytical skills with a solid foundation in core areas of computer Science & Information Technology
2. Accomplish with advanced training in focused areas to solve complex real-world engineering problems and pursue advanced study or research.
3. Demonstrate professional and ethical attitude, soft skills, team spirit, leadership skills and execute assignments to the perfection.

Department of Electronics & Communications Engineering

Programme Educational Objectives

1. Excel in their technical and professional careers with the spirit of learning to learn, think and live by acquiring solid foundation in Science and engineering.
2. Contemplate real life problems, design and develop novel products that are technically sound, economically feasible and socially acceptable.
3. Embrace ethical attitude and exhibit effective skills in communication, management, teamwork and leadership qualities

Department of Electrical & Electronics Engineering

Programme Educational Objectives

1. Engage in ongoing learning and professional development through self study, continuing education in Electrical & Electronics Engineering and also in their allied fields.
2. Apply their engineering skills, exhibiting critical thinking and problem solving skills in professional engineering practices or tackle social, technical and business challenges.
3. Adopt ethical attitude and exhibit effective skills in communication, management, teamwork and leadership qualities.

Department of Mechanical Engineering

Programme Educational Objectives

1. Graduates will be engaged in ongoing learning and professional development through self-study, continuing education in mechanical engineering and also in other allied fields.
2. Graduates will apply their engineering skills, exhibiting critical thinking and problem solving skills in professional engineering practices or tackle social, technical and business challenges.
3. Graduates will adopt ethical attitude and exhibit effective skills in communication, management, teamwork and leadership qualities.

Department of Information Technology

Program Educational Objectives

1. Ability to solve real life and professional problems with the knowledge of fundamental concepts and engage in continuous learning by upgrading skills
2. Capacity to comprehend, analyze, design, implement and test applications exploring the art of research among graduates
3. Demonstrate professional excellence, ethics, soft skills and leadership qualities

Programme Outcomes

At the end of the Programme, a graduate will be able to

1. Apply the knowledge of basic sciences and fundamental engineering concepts in solving engineering problems.
2. Identify and define engineering problems, conduct experiments and investigate to analyze and interpret data to arrive at substantial conclusions.
3. Propose an appropriate solution for engineering problems complying with functional constraints such as economic, environmental, societal, ethical, safety and sustainability.
4. Perform investigations, design and conduct experiments, analyze and interpret the results to provide valid conclusions.
5. Select/develop and apply appropriate techniques and IT tools for the design & analysis of the systems.
6. Give reasoning and assess societal, health, legal and cultural issues with competency in professional engineering practice.
7. Demonstrate professional skills and contextual reasoning to assess environmental/societal issues for sustainable development.
8. Demonstrate Knowledge of professional and ethical practices.
9. Function effectively as an individual, and as a member or leader in diverse teams, and in multi-disciplinary situations.
10. Communicate effectively among engineering community, being able to comprehend and write effectively reports, presentation and give / receive clear instructions.
11. Demonstrate and apply engineering & management principles in their own / team projects in multidisciplinary environment.
12. Recognize the need for, and have the ability to engage in independent and lifelong learning.

Academic Regulations for B.Tech Program

R 1.0: Eligibility for Admission and Duration of the Course:

The total seats available as per the approved intake are grouped into two categories viz. category A and Category B with a ratio of 70:30 as per the state government guidelines vide G.O No.52.

a) The admissions for category A and B seats shall be as per the guidelines of Andhra Pradesh State Council for Higher Education (APSCHE) in consonance with government reservation policy.

- Under Category A: 70% of the seats are filled through EAMCET counseling.
- Under Category B: 30% seats are filled based on 10+2 merit in compliance with guidelines of APSCHE.

b) The course duration for the award of the Degree in **Bachelor of Technology** will be four academic years, with two semesters in each year. However if a student is unable to complete the course within 4 years, s/he can do so by giving more attempts but within 8 consecutive academic years from the date of admission.

c) Academic Calendar

For all the eight semesters a common academic calendar shall be followed in each semester by having sixteen weeks of instruction, one week for the conduct of practical exams and with three weeks for theory examinations and evaluation. Dates for registration, sessional and end semester examinations shall be notified in the academic calendar of every semester. The schedule for the conduct of all the curricular and co-curricular activities shall be notified in the planner.

d) Admission eligibility-Under Lateral Entry Scheme

Students with diploma qualification have an option of direct admission into 2nd year B.Tech (Lateral entry scheme). Under this scheme 20% seats of sanctioned intake will be available in each

course as supernumary seats. Admissions to this three year B Tech later entry program will be through ECET. The maximum period to complete B.Tech under lateral entry scheme is six consecutive academic years from the date of joining.

R 2.0 Curriculum and Course structure:

The curriculum shall comprise of Core courses and Elective courses, Laboratory Course, Audit Course, Term Paper, Mini Project, Internship, Project work. The list of elective subjects may include subjects from allied disciplines also.

Each Theory & Laboratory course carries credits based on the number of hours/week as follows:

- 4 credits per theory course with 4 periods per week
- 2 credits per laboratory course with 3 periods per week

R 2.1 Credit distribution for courses offered

Sl. No.	Course	Credits
1	Theory Course	4
2	Laboratory Course	2
3	Audit Course	0
4	MOOCs Course	2
4	Term Paper	2
5	Mini Project	2
6	Internship	2
7	Project	12

R 2.2 Semester wise Course break-up

For Four year regular program

Year	Semester	No. of Theory Courses	No. of Lab Courses	Total Credits
I	1 st Semester	5	3	26
	2 nd Semester	5	3	26
II	3 rd Semester	5	2	24
	4 th Semester	5	2	24
III	5 th Semester	5	3	26
	6 th Semester	5+ 1*	2+1#	26
IV	7 th Semester	5	2+ 1##+1**	28
	8 th Semester	3	Project work	24
Total		38+ 1*	20+Project work	204

For Three year lateral entry program:

Year	Semester	No. of Theory Courses	No. of Lab Courses	Total Credits
II	3 rd Semester	5	2	24
	4 th Semester	5	2	24
III	5 th Semester	5	3	26
	6 th Semester	5+ 1*	2+1#	26
IV	7 th Semester	5	2+ 1##+1**	28
	8 th Semester	3	Project work	24
Total		28+ 1*	14+Project work	152

* Audit Course, #Term Paper **Mini Project, ## Internship

R 2.3 Course wise break-up for the total credits

For Four year regular program

Total Theory Courses (32 Core Courses + 6 Elective Courses)	: 38 @ 4 credits each	= 152
Total Laboratory Courses	: 17 @ 2 credits each	= 34
Term Paper with self study report	: 1 @ 2 credits	= 2
Mini Project with self study report	: 1 @ 2 credits	= 2
Internship with self study report	: 1 @ 2 credits	= 2
Project work	: 1 @ 12 credits	= 12

For three year lateral entry program

Total Theory Courses (22 Compulsory Courses + 4 Elective Courses)	: 28 @ 4 credits each	= 112
Total Laboratory Courses	: 11 @ 2 credits each	= 24
Term Paper	: 1 @ 2 credits	= 2
Mini Project	: 1 @ 2 credits	= 2
Internship	: 1 @ 2 credits	= 2
Project work	: 1 @ 12 credit	= 12

R 3.0 Division of marks for Internal and External assessment

Course	Marks for Internal Assessment	Marks for External Assessment
Theory	30	70
Laboratory	25	50
Term Paper	25	50
Mini Project	25	50
Internship	25	50
Project work	60	140

R 4.0 Evaluation Methodology:

R 4.1 Theory Course:

Each theory course will be evaluated for a total of 100 marks, consisting of 30 marks for internal assessment and 70 marks for semester end examination. Out of 30 marks allotted for internal assessment during the semester, 20 marks will be awarded by taking average marks scored in best two sessional examinations out of three sessional examinations conducted in a semester. The balance 10 marks shall be awarded based on conduct of ONE comprehensive quiz examination at the end of the semester.

R 4.1.1 MOOCs Course:

Meeting with the global requirements, to inculcate the habit of self learning and in compliance with UGC guidelines, m, MOOC (Massive Open Online Course) courses have been introduced as electives.

- a) The proposed MOOCs courses would be additional choices in all the elective groups subject to the availability during the respective semesters and respective departments will declare the list of the courses at the beginning of the semester.
- b) Course content for the selected MOOCs courses shall be drawn from respective MOOCs links or shall be supplied by the department. Course will be mentored by faculty members and Assessment & evaluation of the courses shall be done by the department.
- c) There shall be ONE Mid Sessional Examination (Quiz exam for 20 marks) after 8 weeks of the commencement of the course and semester end evaluation (Descriptive exam for 30 marks) shall be done along with the other regular courses.
- d) Two credits will be awarded upon successful completion of each MOOCs course. Students need to complete two such MOOCs courses to compensate any elective course having four credits.

R 4.2 Laboratory Course:

- a) Each lab will be evaluated for a total of 75 marks consisting of 25 marks for internal assessment and 50 marks for semester end lab examination. Out of 25 marks of internal assessment, continuous lab assessment will be done for 15 marks for the day to day performance and 10 marks for the final internal lab assessment. The semester end lab examination for 50 marks shall be conducted by two Examiners, one of them being laboratory class Teacher as internal examiner and an external examiner nominated by the Principal from the panel of experts recommended by HOD.
- b) All the drawing related courses are evaluated in line with lab courses. The distribution shall be 25 marks for internal evaluation (15 marks for day – to –day work, and 10 marks for internal tests) and 50 marks for semester end lab examination. There shall be two internal tests for 10 marks each in a semester and the average shall be considered.

R 4.3 Audit Courses:

- a) Audit course is one among the compulsory courses and does not carry any credits. List of the audit courses will be notified at the beginning of the third semester for all students and the student has to choose one audit course for self-study mode at the beginning of third semester. By the end of sixth semester, all the students (regular and lateral entry students) shall complete one of the audit courses, preferably from the liberal arts with acceptable performance. An indicative list of the Audit courses is shown below:
 - i. Professional ethics
 - ii. Intellectual Property Rights
 - iii. Any foreign Language
 - iv. Journalism
 - v. Political Science
 - vi. Finance
 - vii. Legal Sciences
 - viii. Social Sciences

- ix. English for Special purposes
 - x. Fine Arts
 - xi. Clinical psychology
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- b) Audit course will be evaluated by conducting an on-line test for duration of 90 minutes and will be conducted at the respective departments.
 - c) The students will have total four chances to clear the audit course beginning from third semester. Further, the student has an option to change the audit course in case if s/he is unable to clear the audit course in the first two chances. However, the audit course should be completed by 6th semester and its notification will be given in the 6th semester marks memo. Its result shall be declared with “Satisfactory” or “Not Satisfactory” performance.
 - d) In case if any student is unable to clear the Audit course in four chances the case may be referred to Academic Council for appropriate action.

R 4.4 Term Paper

The Term Paper is a self study report and shall be carried during 6th semester along with other lab courses. Every student will take up this term paper individually and submit a report. The scope of the term paper could be an exhaustive literature review choosing any engineering concept with reference to standard research papers or an extension of the concept of earlier course work in consultation with the term paper supervisor. The term paper reports submitted by the individual students during the sixth semester will be evaluated for a total of 75 marks consisting of 25 marks for internal assessment and 50 marks for semester end examination. Internal assessment shall be done by the term paper supervisor. Semester end examination for 50 marks shall be conducted by two Examiners, one of them being term paper supervisor as internal examiner and an external examiner nominated by the Principal from the panel of experts recommended by HOD.

R 4.5 Mini Project

The mini project shall be carried out during the 7th semester along with the other laboratory courses by having regular weekly slots. Students will take mini project batch wise and the batches will be divided as per the guidelines issued. The topic of mini project should be so selected enabling the students to complete the work in the stipulated time with the available resources in the respective laboratories. The scope of the mini project could be handling part of the consultancy work, maintenance of the existing equipment, development of new experiment setup or can be a prelude to the main project with a specific outcome. Mini project report will be evaluated in line with lab examinations for 75 marks in total. Assessment will be done by the supervisor/guide for 25 marks based on the work and presentation/execution of the mini project. For the remaining 50 marks subdivision for the report, presentation, execution and viva-voce evaluation shall be done by a committee comprising of the mini project supervisor, Head of the Department and an examiner nominated by the Principal.

R 4.6 Internship

All the students shall undergo the summer internship during summer break after sixth semester. The minimum internship period is four weeks and the students have an option of choosing their own industry/area of interest, which may be related to their respective branch or any other service oriented task. A self study report for the internship shall be submitted and evaluated during the seventh semester and will be evaluated for a total of 75 marks consisting of 25 marks for internal assessment and 50 marks for semester end examination. Internal assessment shall be done by the internship supervisor. Semester end examination for 50 marks shall be conducted by two examiners, one of them being internship supervisor as internal examiner and an external examiner nominated by the Principal from the panel of experts recommended by HOD.

R 4.7 Project work

The final project work shall be carried out during the 8th semester and will be evaluated for 200 marks. Projects will be taken up batch wise and batches will be divided as per the guidelines. Internal evaluation will be done for 60 marks by the Project Review Committee (PRC), comprising of HOD and one faculty member along with the project supervisor, based on the submission/approval of synopsis and two presentations for the progress within the given deadlines. Semester end evaluation will be done for 140 marks by Project Evaluation Committee (PEC) comprising of three members including HOD, project guide and an external examiner nominated by the Principal.

R 4.8 Sessional Examination Pattern for all Theory Courses:

For all the theory courses, three sessional examinations shall be conducted for 20 marks each, during the semester period with the following guidelines.

- a) The schedule for three of sessional examinations will be notified in the academic calendar in the beginning of every semester.
- b) The duration of each test will be one and half hours
- c) Three sessional examinations shall be conducted at the end of the 5th, 11th and 17th week of the semester respectively for the syllabus that will be covered in every 5 weeks.
- d) Students shall answer any four questions out of five questions having at least one question from each unit.
- e) All the students will be notified with the marks secured within one week after the completion of the sessional exams.
- f) Students are permitted for reconciliation with in a period of two working days after the notification of marks.

R 5.0 Attendance Requirements:

- a) It is desirable for a candidate to put on 100% attendance in all the subjects. However, a candidate shall be permitted to appear for the

semester end examination provided s/he maintains a minimum of 75% overall attendance in the semester.

- b) The shortage of attendance on medical grounds can be condoned to an extent of 10% provided a medical certificate is submitted to the Head of the Department when the candidate reports back to the classes immediately after the leave. Certificates submitted afterwards shall not be entertained. Condonation fee as fixed by the college for those who put on attendance between $\geq 65\%$ and $<75\%$ shall be charged before the end examinations. Attendance may also be condoned as per the State Government rules for those who participate in sports, co-curricular and extra-curricular activities provided their attendance is in the minimum prescribed limits for the purpose and recommended by the concerned authority.
- c) In case of the students having over all attendance less than 65% after condonation shall be declared detained and has to repeat semester again.

R 6.0 Promotion Policies:

- a) In four year B.Tech program, a student shall be promoted from 2nd year to 3rd year only if s/he fulfills the academic requirements and earning of minimum 50% of credits up to 2nd year.
- b) In four year B.Tech program, a student shall be promoted from 3rd year to 4th year only if s/he fulfills the academic requirements and earning of minimum 50% credits up to 3rd year.
- c) In three year lateral entry B.Tech program, a student shall be promoted from 3rd year to 4th year only if s/he fulfills the academic requirements and earning of minimum 50% credits up to 3rd year.

R 6.1 Scheme for the award of Grade

- a. A student shall be deemed to have satisfied the minimum academic requirements and earn the credits for each theory course, if s/he secures

- i. Not less than 40% marks for each theory course in the semester end exam, and
 - ii. A minimum of 40% marks for each theory course considering both internal and semester end examination.
- b. A student shall be deemed to have satisfied the minimum academic requirements and earn the credits for each Lab/ Term Paper//Mini Project/Internship course/ Project, if s/he secures
 - i. Not less than 50% marks for each Lab/ Term Paper//Mini Project/Internship course/ Project course in the semester end exam,
and
 - ii. A minimum of 50% marks for each Lab/ Term Paper//Mini Project/Internship course/ Project course considering both internal and semester end examination.
- c. On securing credits, Hybrid grading system with combination of absolute and relative grading system is used for SGPA and CGPA calculations
- d. Highest (A+ & A grade – Outstanding & Excellent respectively) and lowest grade (F grade – Fail) are earned and remaining grades are awarded.

R 6.2 Graduation requirements:

The following academic requirements shall be met for the award of the B.Tech. Degree.

- a) Student shall register and acquire minimum attendance in all courses and secure 204 credits for regular program and 152 credits for lateral entry program. However, the CGPA obtained for the best 200 credits and 148 credits respectively shall be considered for the award of Grade/Class/Division.
- b) A student of a regular program who fails to earn 204 credits within eight consecutive academic years from the year of his/her admission with a minimum CGPA of 4.0 shall forfeit his/her degree and his/her admission stands cancelled.

- c) A student of a lateral entry program who fails to earn 152 credits within six consecutive academic years from the year of his/her admission with a minimum CGPA of 4.0 shall forfeit his/her degree and his/her admission stands cancelled.

R 6.3 Award of Degree:

- a) Classification of degree will be as follows:

1. CGPA \geq 7.5	: First Class with Distinction
2. CGPA \geq 6.5 and $<$ 7.5	: Degree with First Class
3. CGPA \geq 5.0 and $<$ 6.5	: Degree with Second Class
4. CGPA \geq 4.0 and $<$ 5.0	: Degree with Pass Class

- b) Degree with Distinction will be awarded to those students who clear all the subjects in single attempt and secure a CGPA \geq 7.5 during his/her regular course of study.

- c) In order to extend the benefit to the students with one/ two backlogs after either 6th semester or 8th semester, GRAFTING option is provided to the students enabling their placements and fulfilling graduation requirements. Following are the guidelines for the Grafting:

1. Grafting will be done among the courses within the semester. Shall draw a maximum of 7 marks from the any one of the cleared courses in the semester and will be grafted to the failed course in the same semester.
2. Students shall be given a choice of grafting only once in the 4 years programme, either after 6th semester (Option#1) or after 8th semester (Option#2).
3. Option#1: Applicable to students who have maximum of TWO theory courses in 5th and/or 6th semesters.
Option#2: Applicable to students who have maximum of TWO theory courses in 7th and/or 8th semesters.
4. Eligibility for grafting:
 - i. Prior to the conduct of the supplementary examination after the declaration of the 6th or 8th semester results.

- ii. S/he must appear in all regular or supplementary examinations as per the provisions laid down in regulations for the courses s/he appeals for grafting.
- iii. The marks obtained by her/him in latest attempt shall be taken into account for grafting of marks in the failed course(s).
- d) Student who clears all the subjects up to 6th semester and wish to improve their CGPA can register and appear for one betterment chance for maximum of any five theory courses upto 6th semester. Betterment chance can be availed along with 7th and 8th semester examinations.
- e) Student who clears all the courses up to 7th semester shall have a chance to appear for Quick Supplementary Examination to clear the failed courses of 8th semester.
- f) By the end of sixth semester, all the students (regular and lateral entry students) shall complete one of the audit courses with acceptable performance.
- g) In case a student takes more than one attempt in clearing a course, the final marks secured shall be indicated by * mark in the marks memo.

All the candidates who register for the semester end examination will be issued memorandum of marks by the Institute. Apart from the semester wise marks memos, the institute will issue the provisional certificate subject to the fulfillment of all the academic requirements.

General:

- a) s/he represents “she” and “he” both
- b) Where the words ‘he’, ‘him’, ‘his’, occur, they imply ‘she’, ‘her’, ‘hers’ also.
- c) The academic regulations should be read as a whole for the purpose of any interpretation.
- d) In the case of any doubt or ambiguity in the interpretation of the above rules, the decision of the Chairman, Academic Council will be final.

The college may change or amend the academic regulations or syllabi from time to time and the changes or amendments made shall be applicable to all the students with effect from the dates notified by the institute.