

GAYATRI VIDYA PARISHAD COLLEGE OF ENGINEERING

(AUTONOMOUS)

MADHURAWADA , VISAKHAPATNAM-530048

AFFILIATED TO JNTU-KAKINADA



**COLLEGE OF ENGINEERING
(AUTONOMOUS)**

REGULATIONS, COURSE STRUCTURE AND SYLLABI OF B.TECH. PROGRAMME (UNDER AUTONOMOUS STATUS)

**Effective from 2015-16 Admitted Batch
Under Choice Based Credit System**

RE-ACCREDITED BY NAAC WITH 'A' GRADE WITH A CGPA OF 3.47/4.00



Vision

*To evolve into and sustain as a Centre of
Excellence in Technological Education
and Research with a holistic approach.*

Mission

To produce high quality engineering graduates with the requisite theoretical and practical knowledge and social awareness to be able to contribute effectively to the progress of the society through their chosen field of endeavour.

To undertake Research & Development, and extension activities in the fields of Science and Engineering in areas of relevance for immediate application as well as for strengthening or establishing fundamental knowledge.

FOREWORD

The GVP college of Engineering (Autonomous) has entered into a new phase as it completed one cycle of autonomy. Recently the Autonomy has been extended for six more years(2014-2020) by UGC, the affiliating University JNTU-K. The experiences with the experiments and innovations brought into the curriculum with the help of autonomy are proving successful and encouraging.

The paradigm shift in the curriculum design has been brought into the system in 2013 in the form of Out Come Based Education (OBE) and the systems and processes are stabilized in this regard.

Recently, the Choice Based Credit System (CBCS) has been introduced along with the grading system as per the guidelines of UGC, to offer more choice, facilitate the cross mobility and uniformity across the country.

The concepts of Skill Based Lab Electives (SBLE), Industrial Lectures (IL), Open Electives (OE), Free Electives (FE) are also introduced. More number of Electives are also introduced in the form of Basic Science Electives, Humanities and Social Science Elective, Engineering Science Elective along with six Professional Electives(PE) to facilitate the students to select from the breadth and depth of the concepts ranging over concerned Engineering discipline as well as allied areas and of individual interest.

I thank all the expert members, Industry representatives, University representatives and all other members on Boards of Studies, Academic Council who helped us in bringin a good shape to the curriculum.

I also thank the members of the Governing Body for their constant support and guidance in all our academic endeavors.

I hope together with these changes, the curriculum will be more beneficial to the students to make them ready to face the society and the challenges ahead.

Principal



ACADEMIC REGULATIONS FOR B.TECH. PROGRAMMES

Under Choice Based Credit System from 2015-16

The selection for category A and B seats shall be as per Govt. of Andhra Pradesh rules.

The duration of the programme for the Degree of Bachelor of Technology will be four academic years, with two semesters in each year. However if a student cannot complete within 4 years, he/she can do so by taking more time but not more than 8 years from the year of first admission.

1. Structure of the Programme:

Sem- ester	No. of courses		Credits
I	5 THEORY + 3 LABS / 4 LABS	$4*4 + 6*3 + 6*2 + 3$ (Drawing)	49
II	5 THEORY + 4 LABS / 3 LABS		
III	6 THEORY + 2 LABS	$2*4 + 4*3 + 2*2$	24
IV	5 THEORY + 2 LABS + PE-I	$2*4 + 3*3 + 2*2 + 3$	24
V	5 THEORY + 2 LABS + PE-II	$1*4 + 4*3 + 2*2 + 3$	23
VI	3 THEORY + 2 LABS + PE-III + PE-IV + IL	$3*3 + 2*2 + 3 + 3 + 1$	20
VII	2 THEORY + 2 LABS + PE-V + PE-VI + SBLE-I + FE-I	$2*3 + 2*2 + 3 + 3 + 1 + 1$	20
	Industry-Oriented Mini Project (after VI Semester)	2	
VIII	OE-I + OE-II + PROJECT WORK + SW + SBLE-II + FE-II + MC	$3 + 3 + 10 + 1+1+1+1$	20
TOTAL			180

PE-Professional Elective, **IL**-Industry lectures, **SBLE**-Skill Based Lab Elective, **FE**-Free Elective, **OE**-Open Elective, **SW**-Social Work, **MC**-Mandatory course.

Each course is normally assigned a certain number of credits as follows:
3 credits for 3 lecture periods per week and one credit for one tutorial period per week.

2 credits for 3 laboratory periods per week.

2 credits for Industry oriented Mini Project.

10 credits for project work.

1 credit for Participation in Social Service for a minimum of 32 hours.

2. **Registration:**

A student shall register for courses in each semester according to the choice provided and subjects offered by the concerned department.

3. **Attendance Requirements:**

It is desirable for a candidate to put up 100% attendance in the class in all the courses (except free electives). However, a candidate shall be permitted to appear for the end semester examination provided he/she records a minimum of 75% attendance for each course in any semester. However, condonation for shortage of attendance may be given on Medical grounds, if a certificate to the extent is submitted to the HOD when the candidate first returns to the classes. Certificates submitted afterwards shall not be entertained on any count. Shortage of attendance between 65-74% will be condoned on payment of fee as fixed by the competent authority and the student concerned will be permitted to take the end semester examination. Attendance may also be condoned as per the State Government rules for those who participate in prestigious sports, co- and extra-curricular activities provided their attendance is in the minimum prescribed limits for the purpose and as recommended by the authority concerned.

Attendance will be indicated in the marks memo by a letter code as follows:

Grading of Attendance:

90% and above A (Very Good)

75% to 89% B (Good)

65% to 74% C (Satisfactory)

Below 65% D (Detained)

A student who gets less than 65% (D Grade) attendance in a maximum of two credit courses in any semester shall not be permitted to take the end semester examination in which he/she falls short. If a student gets less than 65% (D Grade), his/her registration for those subjects will be treated as cancelled. The student should re-register and repeat those subjects as and when offered next.

A student shall acquire at least C grade in attendance to be eligible to appear for the end-semester examination in the subject concerned.

If a student gets D grade in more than two courses (including additional courses except one credit courses) in any semester he/she shall be detained and has to repeat the entire semester.

In order to promote the self learning component, the students are permitted to earn a maximum of 18 credits through online courses such as MOOCs etc. However, the courses shall be chosen from Professional electives, Open electives, Free electives as notified by the respective Boards of Studies (BoS).

Letter grade 'E' shall be awarded in case of attendance for online courses to those students who opt to earn credits through valid certificate directly from external agencies and corresponding letter grades A, B, C, D shall be awarded to those who attend online courses facilitated by the college.

A student who completes all attendance requirements up to IV semester may be permitted to register for additional courses available in VIII semester, excluding project, subject to a

maximum of 4 credits in each of V, VI and VII semesters to facilitate the students do internship during the entire VIII semester in an Industry / organization.

4. Method of Evaluation:

The performance of a student in each semester shall be evaluated subject-wise with a maximum of 100 marks for each theory, practical/drawing, Industry lectures, Industry-oriented mini-project, Project work and social work.

4.1 Theory (3 or 4 Credits):

The assessment shall be for 30 marks through Continuous Internal evaluation and 70 marks through end-semester examination of three hours duration.

4.2 Continuous Internal evaluation:

The 30 internal marks are awarded as follows

Two tests 20 marks

Four assessments by atleast any two
of the following methods 10 marks

(Assignment/Quiz/Term paper/ Tutorial /Surprise test/ Seminar/ Open book test/ Case study/Lab activity/projects etc.) as notified by the concerned faculty at the beginning of the semester.

The internal marks for tests (20 marks) shall be computed as, the weighted average of the two tests at 2:1 with the higher score carrying a weightage of 2. The remaining 10 internal marks shall be computed as the average of marks obtained in the four assessments.

4.3 End semester examination:

An end semester examination shall be conducted for 70 marks. For 80% of the theory courses, the question paper shall be set externally and valued both internally and externally. A chief examiner appointed for each course shall monitor the valuation process. If the difference between the first and second valuations is less than or equal to 10 marks, the better of the two valuations shall be awarded. If the difference between the first and second

valuation is more than 10 marks, the chief examiner shall value the script. The marks given by the chief examiner shall be final. For the remaining 20% of the theory courses (to be notified by the Principal), the end semester evaluation shall be totally internal.

4.4 Theory/Lab (1 Credit):

For all Free Electives (Theory), Skill Based Lab Electives and Mandatory Course (Theory), the evaluation shall be totally internal and carried out for 100 marks at the end of the course. Skill Based Labs shall be conducted from V semester on thrust areas each for a period of 24 hours. Students shall register and put up a minimum of 75% attendance. Based on the performance in examination to be conducted for 100 marks after all lab sessions, grade shall be awarded.

4.5 Practical / Drawing (2 or 3 credits):

Practical / drawing shall be evaluated for 100 marks, out of which 50 marks are for external examination and 50 marks are for internal evaluation. The 50 internal marks are distributed as 25 marks for day-to-day work in two cycles and 25 marks for internal examination. The internal examination shall be conducted by the teacher concerned and another faculty member of the same department once for each cycle of instruction period and average of the two shall be considered for award of marks. A minimum of 10 out of 12 to 16 experiments/exercises shall be completed in a semester.

4.6 Industry Oriented Mini Project:

The industry oriented mini project shall be initiated after IV semester and completed before the start of the VII semester. The mini project work shall be atleast for a period of 4 weeks and a report has to be submitted at the beginning of the VII semester. The assessment shall be carried out for 100 marks during VII semester by an internal evaluation committee comprising Head of the Department and two faculty of the department including the project Supervisor.

4.7 Project:

The project work shall be spread over the entire VIII semester and of somewhat innovative in nature, with research / industry orientation. A project batch shall comprise of not more than four students. A mid-term evaluation is conducted on the progress by Head of the Department and the supervisor for 25 marks. On completion of the project, a second evaluation is conducted before the report is submitted for another 25 marks. The final evaluation shall be based on the report submitted and a viva-voce examination for 50 marks by an external examiner.

4.8 Industry lectures:

Lecture(s) by expert(s) from industry will be arranged for a period of atleast 16 hours during V and VI semesters. Students shall register and put up a minimum of 75% attendance. Based on the performance in examination(s) to be conducted for 100 marks after the lecture(s), grade shall be awarded. This grade will be reflected in VI semester marks memo.

4.9 Social work:

A student can initiate the social work from I semester onwards and has to complete a minimum of 32 hours of social work by the end of VII semester and shall submit the detailed report at the beginning of VIII semester. The assessment shall be for 100 marks based on quality and quantum of the work carried out and the quality of the report submitted.

4.10 Academic Requirements:

- a. In case of theory courses having both internal and end semester examination, a student is deemed to be failed if he secures less than 25 marks in the end semester examination or less than 40 marks from both internal and end semester examination put together. For all other courses having only end examination, a student is deemed to be failed if he secures less than 40 marks.
- b. In case of Practical / Drawing / Project having both internal and end semester examination / evaluation, a student is deemed to be failed if he secures less than 25 marks in the end semester

examination or less than 50 marks from both internal and end semester examination put together. For SBLEs/Mini Projects/SW having examination/evaluation at the end, a student is deemed to be failed if he secures less than 50 marks.

4.11 Supplementary examinations:

Supplementary examinations for the odd semester shall be conducted with the regular examinations of even semester and vice versa.

In case a student fails in online courses/ industry lecture(s), he/she may be permitted to register for another course /lecture(s), if the same is not available. In such case, the internal marks secured earlier are nullified.

5. Promotion Criteria:

A student shall be promoted from IV to V semester, if he/she registered atleast **97 credits** and **pass** in courses corresponding to **atleast 67 credits** at the end of IV semester, from I, II, III semester regular and supplementary examinations and regular examinations of IV semester.

A student shall be promoted from VI to VII semester, if he/she registered atleast **140 credits** and **pass** in courses corresponding to **atleast 98 credits** (including credits acquired from additional courses registered during V and VI semesters) at the end of VI semester, from I to V semester regular and supplementary examinations and regular examinations of VI semester.

6. Make-up classes:

For students detained due to shortage of attendance in a course, Make-up programme shall be announced at the beginning of every semester. The announcement of courses offered for the make-up programme is at the discretion of the Principal. A student shall have to register within the time stipulated by paying the prescribed fee. The number of total contact hours and method of evaluation for any make-up program shall be the same as those for a regular semester.

It is desirable for a candidate to put up 100% attendance in all the courses registered for the make-up programme. However, 25% concession in attendance may be permitted at the discretion of the principal based on the merits of the individual case duly supported by proper evidence. No further condonation of attendance on par with the regular semester shall be permitted. If a candidate fails to satisfy the attendance requirement in a course registered during make-up programme, then he has to repeat the course in the subsequent make-up programme when offered next.

The method of internal evaluation in the case of make-up programme is same as B.Tech. regular programme. For the courses registered in the make-up programme, the internal marks secured earlier go null and marks obtained in the latest make-up programme shall be final. The grades for the courses registered during the make-up programme shall be earned from the end semester examinations following the corresponding regular semester.

No student can register for more than two courses. Withdrawal from a make-up program after registration will not entitle for any refund of fees.

7. Entrepreneurship:

7.1 Gap Year - concept of Student Entrepreneur in Residence:

Outstanding students who wish to pursue entrepreneurship full time can take a break of one year, after the first year with prior approval from the Principal. This may be extended to two years at the most and these two years would not be counted for the time for the maximum time for graduation. The Gap Year facility may be given to ensure syllabus continuity at the time of re-joining after an appraisal process by an incubator where the student is attached.

- 7.2 Student's entrepreneurs working on a Start-up idea from first year of college may be permitted to convert their Start-up project as their final year project towards degree completion. Mentors assigned by Incubators established may be allowed to conduct Viva Voce. Project reports certified by the Incubators may be considered for the award of credits.

- 7.3 Students may be permitted to undertake their Industrial Seminar / Lecture, Project Seminar and Industrial Visit at Technology Business Incubators where required facilities are being setup and subject to adherence to evaluation procedures of GVPCE(A) by the mentors.
- 7.4 Provision for grace marks and attendance may be given on case to case basis upto 5% and 20% respectively in every semester for student Start-up teams which have at least one woman as a cofounder, approved by competent authorities. Such grant is at the discretion of the Principal.

8. Grading System:

Absolute grading system shall be followed for the award of grades.

Grade Point: It is a numerical weight allotted to each letter grade on a 10-point scale.

Letter Grade: It is an index of the performance of students in a said course. Grades are denoted by letters O, A+, A, B+, B, C, P and F.

Based on the marks secured, a Grade Point is awarded for each theory course / lab course / project work / SW / SBLE / IL / MC along with a corresponding Letter Grade as per the following:

Grades and Grade Points

Marks Range		Letter Grade	Grade Point
Theory (including FEs, ILs, MC)	Practical, Drawing, Project (including SBLEs, SW, Mini Project)		
90-100	90-100	O (Outstanding)	10
80-89	80-89	A+ (Excellent)	9
70-79	70-79	A (Very Good)	8
60-69	60-69	B+ (Good)	7
50-59	*50-59	B (Above average)	6
*40-49	-	C (Average)	5
-	-	F (Fail)	0
-	-	Ab (Absent)	0

* Pass Mark

The award of class and division is as per the following:

First class with distinction	$CGPA \geq 7.75$
First class	$6.75 \leq CGPA < 7.75$
Second class	$5.75 \leq CGPA < 6.75$
Pass class	$CGPA < 5.75$

CGPA to Percentage of Marks Conversion:

Percentage of Marks = $(CGPA - 0.75) * 10$

8.1 Computation of Semester Grade Point Average (SGPA) and Cumulative Grade Point Average (CGPA):

The SGPA is the ratio of sum of the product of the number of credits with the grade points scored by a student in all the courses taken by a student and the sum of the number of credits of all the courses undergone by a student in a semester, i.e.

$$SGPA (S_j) = \frac{\sum(C_i \times G_i)}{\sum C_i}$$

where C_i is the number of credits of the i^{th} course and G_i is the grade point scored by the student in the i^{th} course.

The CGPA is also calculated in the same manner taking into account all the courses undergone by a student over all the semesters of a programme, i.e.

$$CGPA = \frac{\sum(C_i \times S_i)}{\sum C_i}$$

where S_i is the SGPA of the i^{th} semester and C_i is the total number of credits in that semester. The SGPA and CGPA shall be rounded off to 2 decimal points and reported in the transcripts.

Transcript for each semester shall be issued containing letter grades and grade points along with attendance grade, for each of the subjects registered, SGPA of that semester and CGPA up to that semester. Marks will not be displayed on the transcript.

A consolidated transcript indicating the performance in all semesters shall also be issued.

Note: The ranges of marks to award the grade point, CGPA ranges for the award of class or division shall be as decided by the affiliating University.

8.2 Minimum Academic Requirement:

A student shall **pass** in all courses corresponding to 180 credits to be eligible for the award of the B.Tech. degree.

8.3 Provision for improvement of CGPA:

A student shall be permitted to improve his class or division from PASS CLASS to SECOND CLASS or SECOND CLASS to FIRST CLASS after successful completion (passing all the courses) of the programme. He / She may be allowed to appear for supplementary examinations and earn grade points for improvement by choosing not more than four subjects of his / her choice. The improvement provision shall be limited to one attempt.

9. General:

- i. Where the words 'he', 'him', 'his', occur, they imply 'she', 'her', 'hers', also.
- ii. The academic regulations should be read as a whole for the purpose of any interpretation.
- iii. In the case of any doubt or ambiguity in the interpretation of the above rules, the decision of the Chairman, Academic Council is final.
- iv. 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 college.



ACADEMIC REGULATIONS FOR B.TECH. PROGRAMMES

(For Lateral Entry students)

Under Choice Based Credit System from 2015-16

L1. Structure of the programme:

Sem- ester	No. of courses	Credits	
III	6 THEORY + 2 LABS	$2*4 + 4*3 + 2*2$	24
IV	5 THEORY + 2 LABS + PE-I	$2*4 + 3*3 + 2*2 + 3$	24
V	5 THEORY + 2 LABS + PE-II	$1*4 + 4*3 + 2*2 + 3$	23
VI	3 THEORY + 2 LABS + PE-III + PE-IV + IL	$3*3 + 2*2 + 3 +$ $3 + 1$	20
VII	Industry-Oriented Mini Project (after VI Semester)	2	20
	2 THEORY + 2 LABS + PE-V + PE-VI + SBLE-I + FE-I	$2*3 + 2*2 + 3 +$ $3 + 1 + 1$	
VIII	OE-I + OE-II + PROJECT WORK + SW + SBLE-II + FE-II + MC	$3 + 3 + 10 +$ $1+1+1$	19
TOTAL			130

PE-Professional Elective, **IL**-Industry lectures, **SBLE**-Skill Based Lab Elective, **FE**-Free Elective, **OE**-Open Elective, **MC**-Mandatory course.

L2. Social Work (SW):

Participation in social work for a minimum of 24 hours is mandatory. The activities are monitored and graded as: EXCELLENT / GOOD / SATISFACTORY

A student shall obtain a minimum of satisfactory grade to be eligible for the award of degree. However, the social work is not included in CGPA computation for lateral entry students.

L3. Promotion Criteria:

A student shall be promoted from VI to VII semester, if he/she registered atleast 91 credits and **pass** in courses corresponding to **atleast 63 credits** at the end of VI semester, from III to V semester regular and supplementary examinations and regular examinations of VI semester.

L4. All other regulations are same as that of the regular students admitted in first year.

L5. General:

- i. Where the words 'he', 'him', 'his', occur, they imply 'she', 'her', 'hers', also.
- ii. The academic regulations should be read as a whole for the purpose of any interpretation.
- iii. In the case of any doubt or ambiguity in the interpretation of the above rules, the decision of the Chairman, Academic Council is final.
- iv. 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 college.



TRANSITORY REGULATIONS

(for students admitted into 2015 Regulations from earlier Regulations)

- 1.1 The student has to continue the course work along with the regular students of the respective semester in which the student gets re-admission.
- 1.2 The student has to register for Substitute / Compulsory subjects offered in place of subjects already studied earlier.
- 1.3 The mode of internal evaluation and end-semester examinations shall be on par with the regular students, i.e., the student has to follow the then mode of internal evaluation and the then question paper model for the end-semester examinations along with the regular students of the respective semester in which the student gets re-admission. The marks secured in the internal and end-semester examinations will be pro-rated in accordance with the regulations under which the student was first admitted.
- 1.4 For the subjects studied under earlier regulations but failed, the student has to appear, pass and acquire credits from the supplementary examinations as and when conducted. The question paper model shall remain same as one in which the student took examination during earlier regulations.
- 1.5 The promotion criteria based on attendance as well as credits shall be in accordance with the regulations under which the student was first admitted.
- 1.6 All other academic requirements shall be in accordance with the regulations under which the student was first admitted.
- 1.7 The decision of the Principal is final on any other clarification in this regard.

