

# ADITYA ENGINEERING COLLEGE

An Autonomous Institution

## ACADEMIC REGULATIONS (AR19) FOR B.TECH. (REGULAR)

(Revised on 22/9/21)

Applicable to the students of B.Tech.(Regular) admitted from the academic year 2019-20 onwards

### 1. AWARD OF B. TECH. DEGREE

A student will be declared eligible for the award of B. Tech. Degree if he fulfills the following academic regulations.

- 1.1 If he pursued a Program of study in not less than four and not more than eight academic years. After eight academic years from the year of his admission, he shall forfeit his seat in B.Tech. and his admission stands cancelled.
- 1.2 The student shall register for 160 credits and secure all the 160 credits.
- 1.3 The medium of instruction for the entire under graduate program will be in English only.

### 2. PROGRAMS OF STUDY

The following programs of study are offered at present as specializations for the B. Tech. program with English as a medium of Instruction.

S. No	Branch	Program code	Short Name
01	Civil Engineering	01	CE
02	Electrical and Electronics Engineering	02	EEE
3	Mechanical Engineering	03	ME
04	Electronics and Communication Engineering	04	ECE
05	Computer Science and Engineering	05	CSE
06	Information Technology	12	IT
07	Mining Engineering	26	Min.E
08	Petroleum Technology	27	PT
09	Agricultural Engineering	35	Ag.E

### 3. EVALUATION - DISTRIBUTION AND WEIGHTAGE OF MARKS

- 3.1 The performance of a student in each semester shall be evaluated course-wise with a maximum of 100 marks for both Theory and Practical courses. The Mandatory Courses, Employability Skills, Engineering Exploration Project, Socially Relevant

Project, Internship, Project Part – I shall be evaluated for 100 marks and Project Part – II shall be for 200 marks.

- 3.2 For theory courses, the distribution shall be 40 marks for Sessional examinations and 60 marks for the Semester End Examinations (SEE). There shall be 2 Sessional examinations during the semester. The Sessional marks shall be awarded by giving a weightage of 80% for best of the two Sessional examinations and 20% for the other Sessional examination. The I Sessional examination (Descriptive, Objective and Assignment) is conducted for first 2 ½ units of syllabus and II Sessional examination for the remaining 2 ½ units for each course in a semester. The weightage of Sessional marks for 40 consists of Descriptive - 24, Objective -10 (20 Multiple choice questions with a weightage of ½ mark each) and Assignment - 06 (Design, Analysis, Simulation, Algorithms, Drawing, Quiz, Term paper, Tutorial, Surprise test, Seminar, Case study, Lab activity, Minor Project, etc. as the case may be and for Physics-Virtual lab, for Mathematics - MATLAB).

For Assignment, the nature of test will be intimated by the concerned faculty member at the beginning of the semester. The descriptive examination is conducted for 90 minutes and the objective examination is for 20 minutes. Each descriptive examination question paper shall contain 3 questions of equal marks and all questions need to be answered. The Objective examination marks conducted for 10 and descriptive examination marks conducted for 24 are to be added to the assignment of 06 marks for finalizing Sessional marks of 40.

Example:

$$\text{Sessional Marks} = (\text{Best Sessional Marks} \times 0.8 + \text{other Sessional Marks} \times 0.2)$$

- 3.3 The End examination is conducted for 60 marks for a duration of 180 minutes, which contains ten questions, two questions are from each unit and each question may have sub-questions. The student has to write one question from each unit. Each question carries 12 marks.
- 3.4 For practical courses, there shall be continuous evaluation during the semester for 40 Sessional marks and 60 End examination marks. The Sessional 40 marks shall be awarded as, continuous evaluation -15 marks, Observation and Record -10 marks and laboratory Exam -15 marks. The End examination shall be conducted by the concerned faculty and external examiner appointed by the Principal.
- 3.5 For design and/or drawing, (such as Engineering Drawing, Machine Drawing) and estimation courses, the distribution shall be 40 marks for Sessional evaluation (20

marks for continuous evaluation, and 20 marks for Sessional examination) and 60 marks for End examination. There shall be two Sessional examinations in a Semester. The Sessional marks shall be awarded by giving a weightage of 80% for the best of two Sessional examinations and 20% for the other Sessional examination.

- 3.6 For Mandatory Courses, during a semester there shall be one examination for 100 marks for a duration of 180 minutes in which a student should get minimum 40% of the marks for satisfactory, otherwise the student performance is considered as not satisfactory. The examination is conducted at the department level by covering the topics of all units, which contains five 20 marks questions with internal choice from each unit and each question may have sub-questions. If a student fails to get satisfactory marks or is absent for examination, he has to write the examination in that course when conducted next.
- 3.7 For Employability Skills (which includes Aptitude and Soft Skills) as a Mandatory Course, during a semester, there shall be an evaluation for 100 marks at the department level. For Aptitude, an examination is conducted for 100 minutes with 100 questions carrying 50 marks (multiple choice questions weightage of ½ mark each). For Soft Skills, an activity-based examination is conducted for 50 marks. The marks obtained for Employability Skills is the sum of marks obtained in Aptitude and Soft Skills together for 100. The student should get a minimum of 40% of the marks for satisfactory grade; otherwise the student performance is considered as not satisfactory. If a student fails to get satisfactory marks or is absent for examination, he has to write the examination in that course when conducted next.
- 3.8 For Employability Skills (which includes Aptitude and Soft Skills) as a credit course, the examination is conducted for 100 marks in which 40 marks are conducted for Sessional examination and 60 marks for Semester End Examination. There shall be two sessional examinations during the semester. For Aptitude, Sessional examination is conducted for 40 minutes with 40 questions (multiple choice questions weightage of ½ mark each) carrying 20 marks and for Soft Skills, Sessional examination is conducted as activity-based for 20 marks. The Sessional Marks for Employability Skills is the sum of marks obtained in Aptitude and Soft Skills together for 40. The final Sessional marks shall be awarded by giving 80% weightage for the best of two Sessional examinations and 20% weightage for other

Sessional examination. The Semester End Examination for Aptitude is conducted for 120 minutes with 120 questions (multiple choice questions weightage of ¼ mark each) carrying 30 marks and for Soft Skills, an activity-based examination is conducted for 30 marks by the concerned teacher and external examiner appointed by the Principal.

- 3.9 Engineering Exploration Project is offered to the First year students of all engineering disciplines. The motivation of including this in the curriculum is to make the students practice creative problem solving method – Design Thinking which fosters collaboration and solve problems in human-centered ways. It enables the students to exercise and identify design opportunities through various phases with the help of hands-on activities. Obtaining a best solution for an identified problem involves a non-linear, iterative process which seeks to understand users, challenges assumptions, redefine problems and creative innovative solutions to prototype and test. The students are encouraged to explore real-world problems and expected to take charge of their own learning, work together in teams towards the problem. The students have to write their observations in Activity Cards at the end of each task given in syllabus and submit a final report along with working prototype.

For Engineering Exploration Project, 100 marks are awarded, out of which 40 marks shall be for Sessional evaluation and 60 marks for Semester End Examination. The Sessional evaluation shall be based on 2 presentations given by each student. For the Semester End Examination, the student shall submit a report and give a presentation before the PRC\*, which shall be evaluated for 60 marks.

\*The Project Review Committee (PRC) consists of Head of the Department, Supervisor and a senior faculty member of the department.

- 3.10 For Socially Relevant Project, the students have to identify social problems existing in any geographical area/village and try to solve them technically or suggest people the necessary solutions for solving these problems. The work has to be carried out for a minimum period of 3 days. Every student has to submit a report regarding the work carried out and undergo a viva-voce examination by the PRC, which shall be evaluated for 100 marks. A student has to secure atleast 40% of marks to pass the course.
- 3.11 For Internship, the students can undergo Industrial Training / Internship / Research projects in National Laboratories/Academic Institutions after completion

of IV Semester End Examination during summer/winter breaks for a minimum period of 2 weeks. However, the Internship shall be evaluated in VII Semester. A student shall submit a report and present his work before the PRC, which shall be evaluated for 100 marks. A student has to secure atleast 40% of marks to pass the course.

- 3.12 For Project Part – I, 100 marks are awarded. A student has to submit a report on the Problem Statement and Literature Survey phases of the Project. The other phases of the Project shall be carried out in Project Part – II. The Evaluation of Project Part - I shall be done by the PRC based on two presentations and a report submitted by each student on the topic of his project. A student has to secure atleast 40% of marks to pass Project Part - I.
- 3.13 For Project Part – II, 200 marks are awarded, out of which 80 marks shall be for Sessional Evaluation and 120 marks for the End Examination. The Sessional Evaluation shall be done by the PRC based on two presentations given by each student on the topic of his project. The End Examination (Viva-Voce) shall be conducted by the committee that consists of an External Examiner (appointed by Principal from the panel of three members given by HOD), Head of the Department and Supervisor of the Project.
- 3.14 Students can opt for Full Semester Internship (FSI) at industries in their VIII semester to get practical insight relevant to their core branch of engineering under the guidance of internal and external expert from the college and Industry respectively. To facilitate the students to learn the semester courses during FSI and to inculcate the habit of self-learning in compliance with the UGC guidelines, MOOCs (Massive Open Online Courses) have been introduced. There shall be Discipline Centric Elective Courses that can be done through MOOCs. Students can learn these elective courses of VIII semester through MOOCs by registering and participating in the courses (Minimum of 12 weeks) online under any recognized MOOCs platform like SWAYAM/NPTEL etc. with the approval of the Head of the Department.
- 3.15 The Head of the Department shall appoint one mentor for each of the MOOCs offered. The student needs to register for the course in MOOCs portal in the previous semester. During the course, the mentor monitors the student's assignment submission at the end of every week. The student needs to submit all the assignments given and needs to take final exam at the proctor centre. The

student needs to earn a certificate by passing the exam. The student will be awarded the credits given in the curriculum only upon submission of the certificate. In case a student does not pass the courses registered through MOOCs, the same or alternative equivalent course may be registered again through MOOCs in the next semester with the recommendation of HOD.

#### **4. ATTENDANCE REQUIREMENTS**

- 4.1 A student shall be eligible to write the Semester End Examinations if he acquires a minimum of 50% of attendance in each course and 75% of attendance in aggregate of all the courses.
- 4.2 Condonation of shortage of attendance in aggregate up to 10% (65% and above and below 75%) on medical grounds in a semester may be granted by the College Academic Committee and a student can be condoned for a maximum of three times only.
- 4.3 Shortage of Attendance below 65% in aggregate shall not be condoned.
- 4.4 Students whose shortage of attendance is not condoned in any semester are not eligible to write their End examinations of that semester.
- 4.5 A medical certificate and a fee of Rs. 500/- shall be payable towards condonation for the shortage of attendance.
- 4.6 A student will be promoted to the next semester if he satisfies the attendance requirement of the present semester.
- 4.7 If any student fulfills the attendance requirement in the present semester, he shall not be eligible for re-admission into the same semester.
- 4.8 A student who has shortage of attendance in a semester may seek re-admission into that semester when offered within 4 weeks from the date of the commencement of classwork.

#### **5. MINIMUM ACADEMIC REQUIREMENTS**

The following academic requirements have to be fulfilled by the students in addition to the attendance requirements mentioned in item no.4.

- 5.1 A student is deemed to have passed a course and earns the credits allotted to that course by securing not less than 35% of marks in the End examination, and a minimum 40% of marks of the total marks (sum of Sessional marks and End examination marks).

- 5.2 A student will be promoted from IV semester to V semester, if he fulfills the academic requirement of 50% of the credits up to IV semester from all the examinations, whether or not the student take the examinations.
- 5.3 A student shall be promoted from VI semester to VII semester if he fulfills the academic requirements of 50% of the credits up to VI semester from all the examinations, whether or not the students takes the examinations.
- 5.4 All the credit courses shall be considered for the calculation of SGPA and CGPA.

## 6. PROGRAM PATTERN

- 6.1 The entire program of study is for four academic years and all the years are in semester pattern.
- 6.2 A student is eligible to appear for the End examination in a course, but absent from it or has failed in the End examination, may write the examination in that course when conducted next.
- 6.3 When a student is detained for lack of credits/shortage of attendance, he may be re-admitted into the same semester in which he has been detained.

## 7. AWARD OF DEGREE AND CLASS

After a student has satisfied the requirements prescribed for the completion of the program and is eligible for the award of B. Tech. degree, he shall be placed in one of the following four classes:

Class Awarded	CGPA Secured from 160 Credits
First Class with Distinction	$\geq 7.75$ (Without any supplementary appearance)
First Class	$\geq 6.75$
Second Class	$\geq 5.75$ to $< 6.75$
Pass Class	$\geq 4.75$ to $< 5.75$

### 7.1 Cumulative Grade Point Average (CGPA)

The following procedure is to be adopted to compute the Semester Grade Point Average (SGPA) and Cumulative Grade Point Average (CGPA).

For Credit Courses:

Range of Marks (%)	Letter Grade	Level	Grade Point
$\geq 90$	O	Outstanding	10
$\geq 80$ to $<90$	A+	Excellent	9
$\geq 70$ to $<80$	A	Very Good	8
$\geq 60$ to $<70$	B+	Good	7

≥ 50 to <60	B	Fair	6
≥ 40 to <50	P	Satisfactory	5
<40	F	Fail	0
	AB	Absent	0

For Mandatory Courses/Non-Credit Courses:

Range of Marks	Letter Grade	Result
≥ 40	S	Satisfactory
< 40	N	Not Satisfactory

### COMPUTATION OF SGPA

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, i.e

$$SGPA(S_i) = \frac{\sum(C_i \cdot G_i)}{\sum(C_i)}$$

Where  $C_i$  is the number of credits of the  $i^{\text{th}}$  course and

$G_i$  is the grade point scored by the student in the  $i^{\text{th}}$  course

### COMPUTATION OF CGPA

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

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

Where  $S_i$  is the SGPA of the  $i^{\text{th}}$  semester and

$C_i$  is the total number of credits in that semester

- ii. The SGPA and CGPA shall be rounded off to 2 decimal points and reported in the transcripts.
- iii. Grade Point Average can be converted into equivalent percentage using

$$\text{Percentage of Marks} = (\text{CGPA} - 0.75) \times 10$$

## 8. MINIMUM INSTRUCTION DAYS

The minimum instruction days for each semester shall be 90 working days.

## 9. TRANSFER OF STUDENTS

- 9.1 The guidelines given by JNTUK / State Government will be followed for students to transfer from one college to other colleges.



9.2 There shall be no branch transfers after the completion of the admission process.

#### **10. WITHHOLDING OF RESULTS**

If the student has any dues in the college or involved in indisciplinary/malpractice/court cases, his result will be withheld.

#### **11. TRANSITORY REGULATIONS**

11.1 Discontinued or detained students are eligible for readmission as and when next offered.

11.2 The re-admitted students will be governed by the regulations under which the student has been admitted.

11.3 In case of transferred students from other Universities/Colleges to AEC, the credits shall be transferred as per the academic regulations and course structure. Students have to obtain the credits of any equivalent courses as prescribed by the college, if required.

#### **12. GENERAL**

12.1 Wherever the words "he", "him", "his", occur in the regulations, they include "she", "her", "hers".

12.2 The academic regulations should be read as a whole for the purpose of any interpretation.

12.3 In case of any doubt or ambiguity in the interpretation of the above rules, the decision of the Academic Council is final.

12.4 The college may change or amend the academic regulations or syllabi as and when the need arises and the changes or amendments made shall be applicable to all the students with effect from the dates notified by the College.

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**ACADEMIC REGULATIONS (AR19) FOR B.TECH. (LATERAL ENTRY)**

Applicable to the students admitted into B.Tech. III semester from the Academic Year 2020-21 onwards

**1. AWARD OF B. TECH. DEGREE**

A student will be declared eligible for the award of B. Tech. Degree if he fulfills the following academic regulations:

- 1.1 If he pursues a course of study in not less than three academic years and not more than six academic years. After six academic years from the year of his admission, he shall forfeit his seat in B.Tech. and his admission stands cancelled.
- 1.2 The student shall register for 121 credits and secure all the 121 credits. All the credit courses shall be considered for the calculation of SGPA and CGPA.
- 1.3 The attendance regulations of B.Tech.(Regular) shall be applicable to B.Tech(Lateral Entry).

**2. PROMOTION RULE**

- 2.1 A student shall be promoted from VI semester to VII semester if he fulfills the academic requirements of 50% of the credits up to VI semester from all the examinations, whether or not the student takes the examinations.

**3. AWARD OF CLASS**

After a student has satisfied the requirement prescribed for the completion of the program and is eligible for the award of B. Tech. degree, he shall be placed in one of the following four classes:

<b>Class Awarded</b>	<b>CGPA Secured from 121 Credits</b>
First Class with Distinction	$\geq 7.75$ (Without any supplementary appearance)
First Class	$\geq 6.75$
Second Class	$\geq 5.75$ to $< 6.75$
Pass Class	$\geq 4.75$ to $< 5.75$

4. All the other regulations applicable to B. Tech Program remain the same for B. Tech. Lateral Entry also.

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