

# ACADEMIC REGULATIONS (R-21)

## For the Bachelor of Technology (B. Tech)



**With effect from the Academic year 2021-22**

**VIDYA JYOTHI INSTITUTE OF TECHNOLOGY**

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## Definitions of Key Words

**Academic Year:** An academic year is referred to as the period consisting of two consecutive semesters, each with 16 -18 weeks (90 instructional days) followed by semester examinations.

**Course:** A plan of study of a particular subject leading to an examination. All the courses need not carry the same weight. A course may be designed to comprise of lectures/ tutorials/ laboratory work/ field work/ outreach activities/ project work/viva/ seminars/ assignments/ presentations etc. or a combination of some of these.

**Choice Based Credit System (CBCS):** Choice Based Credit System (CBCS) is the programme in which the students have a choice to choose from the prescribed courses and the entire assessment is graded-based on a credit system.

**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.

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

**Credit:** A unit by which the course work is measured. It determines the number of hours of instructions required per week. One credit is equivalent to one hour of teaching (lecture or tutorial) or two hours of practical work/ field work per week.

**Credit Point:** It is the product of Grade Point and Number of Credits for a course.

**Semester Grade Point Average (SGPA):** It is a measure of performance of the work done by the student in a semester. It is the ratio of total credit points secured by a student in various courses registered in a semester and the total course credits taken during that semester. It shall be expressed up to 2nd decimal place.

**Cumulative Grade Point Average (CGPA):** It is a measure of overall cumulative performance of a student of all the semesters. The CGPA is the ratio of total credit points secured by a student in various courses in all semesters and the sum of the total credits of all courses in all the semesters. It is expressed up to 2nd decimal place.

**Programme:** An Educational Programme leading to the award of a degree.

### **B. Tech. with Minor degree:**

A student will be eligible to get B. Tech. with Minor Degree, if he/she completes an additional 18 credits. These should be acquired through registered courses as per the respective courses offered by the Institution or through MOOCs as equivalent to the courses offered by the Institute.

### **B.Tech (Honors)**

The B. Tech. (Honors) programs are proposed to choose for an area of specialization among various emerging technologies in order to be a domain expert. A student will be eligible for B. Tech. (Honors) Degree, if he/she acquires an additional 20 credits. These should be acquired through registered courses as per the respective courses offered by the Institute or through SWAYAM MOOCs as equivalent to the courses offered by the Institute.

**Transcript or Grade Card:** Based on the grades earned, a grade certificate shall be issued to all the registered students after every semester. The grade card will be displaying the course details (code, title, number of credits, grade secured) along with SGPA of that semester and CGPA earned till that semester.

**Types of Courses:** The Courses in under B. Tech, program may be of three kinds' viz., Core, Elective and Mandatory.

**Core Course: -**

There may be a Core Course in every semester and are to be compulsorily studied by a student and is essential requirement for a given Programme.

**a) Elective Course: -**

Elective Course is a course which can be chosen by the students from a pool of subjects. In general, the elective course is,

- Supportive to the discipline of study
- Providing an expanded scope of the course subjects
- Nurturing student's proficiency/ skill.
- In case an elective is "Discipline centric" and is offered by the student's department itself, the elective is called **Professional elective**.
- On the other hand, if the elective is offered by the other departments or if the choice is given to the students to choose from other disciplines, the elective is called an "**Open Elective**."

**b) Mandatory Courses (Non-Credit Courses)**

AICTE considers that the Course work of certain subjects is essential and as such for the award of a B.Tech degree a pass in these subjects is made mandatory. Therefore, such types of courses are referred to as Mandatory **courses**. As the AICTE also feels that only a familiarity with the subject content of these courses is essential, only a pass in each of these courses is required. Therefore, these subjects are included in the curriculum as non-Credit courses.



# VIDYA JYOTHI INSTITUTE OF TECHNOLOGY

(An Autonomous Institution)

Aziznagar Gate, C.B. Post, Hyderabad - 500 075, Telangana

## ACADEMIC REGULATIONS FOR B.Tech.

WITH EFFECT FROM ACADEMIC YEAR 2021-22 (R-21)

- 1 **Under-Graduate Degree Programme in Engineering: Vidya Jyothi Institute of Technology** offers a 4-year (8 Semesters) **Bachelor of Technology (B.Tech.)** degree programme, under Choice Based Credit System (CBCS) in the following Branches of Engineering.

S. No	Branch
I	Civil Engineering
II	Electrical and Electronics Engineering
III	Mechanical Engineering
IV	Electronics and Communication Engineering
V	Computer Science and Engineering
VI	Information technology
VII	Artificial Intelligence
VIII	Computer Science and Engineering (Data Science)

*\*Regulations applicable to any new courses introduced in later years*

## 2 ELIGIBILITY FOR ADMISSION

- 2.1 Admission to the Under Graduate (UG) program shall be made either on the basis of the merit rank of the candidate obtained in the entrance test conducted by the Telangana State Government (EAMCET) and on the basis of any other order of merit approved by the Government from time to time including admissions under Management/NRI Category.
- 2.2 The Government orders with regard to the admissions in vogue shall prevail.
- 2.3 The candidate should have passed the prescribed qualifying examination on the date of Admission.
- 2.4 The medium of instruction is **English**.

### **3 B.Tech PROGRAMME STRUCTURE**

**3.1** A student after securing admission shall complete the B.Tech. programme in a minimum period of four academic years (8 semesters), and a maximum period of eight academic years (16 semesters) starting from the date of commencement of First year First semester, failing which the student shall forfeit seat in B.Tech course. Each student shall secure 160 credits (with CGPA  $\geq 5$ ) required for the completion of the Under Graduate Programme and the award of the B.Tech. Degree.

**3.2** UGC/ AICTE specified definitions/ descriptions are adopted appropriately for various terms and abbreviations used in these academic regulations/ norms, which are listed below.

#### **3.2.1 Semester Scheme**

Each Under Graduate Programme is of 4 academic years (8 semesters) with the academic year divided into two semesters each, each Semester having - 'Continuous Internal Evaluation (CIE)' and 'Semester End Examination (SEE)' under Choice Based Credit System (CBCS) as indicated by UGC, and the Curriculum/ Course structure as suggested by AICTE are followed.

#### **3.2.2 Credit Courses**

All Subjects/ Courses are to be registered by the student in a semester to earn credits which shall be assigned to each Subject/Course in a L: T: P: C (lecture periods: tutorial periods: practical periods: credits) structure based on the following general pattern.

- One credit for one hour/ week/ semester for one theory/ lecture (L) courses or Tutorials (T) and,
- One credit for two hours/ week/ semester for laboratory/ practical (P) Courses.

Courses like Gender Sensitization, Environmental Science, Induction Program are mandatory courses. These courses will not carry any credits.

#### **3.2.3 Subject/ Course Classification**

The College has followed almost all the guidelines issued by AICTE/ UGC

All Subjects/ Courses offered for the UG Programmes in Engineering (B.Tech.) are broadly classified as follows.

The groups of the subjects shall be as given in the table hereunder along with the credits suggested by AICTE.

S. No.	Subject Categories
1	Humanities and Social Sciences (HS) Subjects: English, Management and the Courses dealing with Personality Development
2	Basic Sciences (BS) Subjects including Mathematics, Physics and Chemistry
3	Engineering Sciences (ES): Engg. Workshop, Drawing, Fundamentals of Computer Science and Courses dealing with the basics of Electrical/Electronics/Mechanical Engineering
4	Professional Core (PC) Subjects: Courses dealing with the concerned Engineering Branch
5	Professional Elective (PE) Subjects: The students opt electives offered by the Department
6	Open Elective (OE) Subjects: Courses offered by other branches representing technically important subjects from emerging areas.
7	Project Work, Seminar and/or Internship in Industry or elsewhere along with Mini project.
8	Mandatory Courses (MC)
9	Minor/ Honors Courses
<b>Total Number of Credits</b>	

### B. Tech Year wise distribution of credits

S. No.	Year	Semester	Regular Curriculum	
			Credits	Total Credits
1	1 <sup>st</sup> Year	I	18/20	<b>38</b>
		II	20/18	
2	2 <sup>nd</sup> Year	I	2	<b>40</b>
		II	2	
3	3 <sup>rd</sup> Year	I	2	<b>42</b>
		II	2	
4	4 <sup>th</sup> Year	I	2	<b>40</b>
		II	1	
<b>Total No. of Credits</b>				<b>160</b>

#### **4. COURSE REGISTRATION/ DROPPING**

- 4.1 Each student has to compulsorily register for course work at the beginning of each semester as per the schedule mentioned in the academic calendar. It is absolutely necessary for the student to register for Courses in time.
- 4.2 A student would be allowed to register for an Additional Course only if the student satisfies the prerequisites.
- 4.3 Departments will notify at the time of registration about the minimum number of students to be enrolled for a particular Open Elective to be offered.
- 4.4 Any student may be barred from registering for any course on disciplinary grounds.
- 4.5 **Open Electives:** The students have to choose three Open Electives (OE-I, II& III) from the list of open electives given. However, the student cannot opt for an Open Elective Subject offered by his own (parent) department.
- 4.6 **Professional Electives:** The students have to choose four Professional Electives (PE-I to IV) from the list of Professional Electives given.

#### **5. ELECTIVE COURSES TO BE OFFERED**

- 5.1 An Elective Course may be offered to the students, only if a minimum of 30 students opt for it.
- 5.2 More than one faculty member may offer the same subject (lab/ practical may be included with the corresponding theory subject in the same semester) in any semester.

#### **6. ATTENDANCE REQUIREMENTS**

- 6.1 A student is eligible to write the Semester End examinations only if the student acquires a minimum of 75% of attendance in class work aggregate of all the Subjects/Courses in that Semester.
- 6.2 Shortage of attendance in aggregate up to 10% (65% and above, and below 75%) in each semester may be condoned by the college academic council on genuine medical grounds, based on the student's representation with supporting evidence. To be submitted by the student as and when such requirement arises but not at the end of semester.
- 6.3 A stipulated fee shall be payable towards condonation of attendance shortage.
- 6.4 Shortage of attendance below 65% in aggregate shall in no case be condoned.
- 6.5 Students, whose shortage of attendance is not condoned, are not eligible to write semester end examinations of that semester. Such students are detained and their registration for the examination stands cancelled.
- 6.6 A student detained due to shortage of attendance in a semester may seek re-admission into

that semester, as and when offered, within four weeks from the date of the commencement of class work with the academic regulations of the batch into which he/she gets admitted. (if there are any Professional Electives and/ or Open Electives, the same may also be re-admission if offered. However, if those Electives are not offered in later semesters, then alternate Electives may be chosen from the same set of elective subjects offered under that category.)

## 7. ACADEMIC REQUIREMENTS

The following academic requirements have to be satisfied, in addition to the attendance requirements mentioned in item no.6

- 7.1 A student shall be deemed to have satisfied the academic requirements and earned the credits allotted to each theory/ practical/ design/ drawing subject if student secures not less than 35% (25 Marks out of 70 Marks) in the semester end examination, and a minimum of 40% (40 Marks out of 100 Marks) in the sum total of the CIE (Continuous Internal Evaluation) and SEE (Semester End Examination) taken together; in terms of letter grades, this implies securing 'C' grade or above in that subject/course.
- 7.2 A student shall be deemed to have satisfied the academic requirements and earned the credits allotted to Industry Oriented Mini Project/ Summer Internship and Seminar, if the student secures not less than 40% marks (i.e., 40 out of 100 allotted marks) in each of them. The student is deemed to have failed, if student (i) does not submit a report on Industry Oriented Mini Project/ Summer Internship, or does not make a presentation of the same before the evaluation committee as per schedule, or (ii) does not present the seminar as required in the IV Year I Semester, or (iii) Secures less than 40% marks in Industry Oriented Mini Project/ Summer Internship and Seminar Evaluations.

A student may reappear once for each of the above evaluations, when they are scheduled Again; if the student fails in such 'one reappearance' evaluation also, the student has to reappear for the same in the next subsequent semester, as and when it is scheduled.

### 7.3 Promotion rules

S. No.	Promotion	Conditions to be fulfilled
1	First year First Semester to First year Second Semester	Regular course of study of First year First semester and shall satisfy attendance requirements.



2	First year Second semester to Second year First semester	Regular course of study of first year Second Semester and shall satisfy attendance requirements.  (i) Must have secured at least 19 credits out of 38 credits i.e., 50% credits up to first year second semester from all the relevant regular and supplementary examinations, whether the student takes those Examinations or not.
3	Second year First semester to Second year Second semester	Regular course of study of Second year First semester and shall satisfy attendance requirements.
4	Second year Second semester to Third year First semester	Regular course of study of Second year Second semester and shall satisfy attendance requirements.  (i) Must have secured at least 46 credits out of 78 credits i.e., 60% credits up to second year second semester from all the relevant regular and supplementary examinations, whether the student takes those Examinations or not.
5	Third year First semester to Third year Second semester	Regular course of study of Third year First semester and shall satisfy attendance requirements.
6	Third year Second semester to Fourth year First semester	Regular course of study of Third year Second semester shall satisfy attendance requirements.  (i) Must have secured at least 72 credits out of 120 credits i.e., 60% credits up to third year second semester from all the relevant regular and supplementary examinations, whether the student takes those examinations or not.
7	Fourth year First semester to Fourth year Second semester	Regular course of study of fourth year first semester and shall satisfy attendance requirements.

7.4 A Student (i) shall register for all Courses/ Subjects covering 160 Credits as specified and listed in the course structure, (ii) fulfils all the attendance and academic requirements for 160 credits, (iii) earn all 160 credits by securing SGPA  $\geq 5.0$  (in each semester), and CGPA (at the end of each successive semester)  $\geq 5.0$ , (iv) passes all the mandatory courses, to successfully complete the under graduate programme. The performance of the student in these 160 credits shall be taken into account for the calculation of 'the final CGPA (at the end of under graduate programme), and shall be indicated in the grade card of IV-year II-semester.

- 7.5 A student eligible to appear in the end semester examination for any subject/ course, but absent for it or failed (there by failing to secure 'C' grade or above) may reappear for that subject/ course in the supplementary examination as and when conducted. In such cases, internal marks (CIE) assessed earlier for that subject/ course will be carried over, and added to the marks to be obtained in the SEE supplementary examination for evaluating performance in that subject.
- 7.6 A student detained in a semester due to shortage of attendance may be re- admitted in the same semester in the next academic year for fulfillment of academic requirements. The academic regulations under which a student has been readmitted shall be applicable. However, no grade allotments or SGPA/ CGPA calculations will be done for the entire semester in which the student has been detained.
- 7.7 When a student is detained due to lack of Credits in any year, he may be readmitted after fulfillment of the Academic Requirements, with the Academic Regulations of the Batch into which he gets readmitted. If there are any Professional Electives/Open Electives, the same may also be re-registered if offered. However, if those Electives are not offered in later Semesters, then alternate Electives may be chosen from the same set of Elective Subjects offered under that category.
- 7.8 A student detained due to lack of credits, shall be promoted to the next academic year only after acquiring the required credits. The academic regulations under which the student has been readmitted shall be applicable to him.
- 7.9 Student, who fails to earn 160 credits as indicated in the course structure within eight academic years from the year of his/her admission, shall forfeit the seat in B. Tech. course and admission stands cancelled.
- 7.10 A student with a final CGPA (at the end of the UGP)  $< 5.00$  will not be eligible for the Award of the Degree.

## **8. EVALUATION - DISTRIBUTION AND WEIGHTAGE OF MARKS**

- 8.1** The performance of a student in each Semester shall be evaluated Subject-wise (irrespective of Credits assigned) with a maximum of 100 marks for Theory or Practical's or Seminar or Drawing/ Design or Industry oriented Mini-Project or Minor Course, etc; however, the B.Tech. Project Work (Major Project) will be evaluated for 200 Marks. These evaluations shall be based on 30% CIE (Continuous Internal Evaluation) and 70% SEE (Semester End Examination) and a Letter Grade corresponding to the percentage marks obtained shall be given.
- 8.2** For theory and lab courses the distribution shall be 30 marks for Continuous Internal Evaluation (CIE) and 70 marks for the Semester End Examination (SEE).

### **8.3 Continuous Internal Evaluation (CIE)**

The CIE for Theory Courses has the following two components comprising of 30 marks

#### **1. Midterm examination**

For theory subjects, during the semester there shall be 2 midterm examinations. Each midterm examination will be conducted for 20 marks and consists of Part-A (Short Answer Questions) for 6 marks and Part-B (Long Answer Questions) for 14 marks with duration of 90 Minutes. First midterm examination shall be conducted for 2.5 units of syllabus and second midterm Examination shall be conducted for remaining 2.5 units.

## 2. Quizzes

There shall be a total of five quizzes of 10 marks each. The quiz is to be conducted at the end of each of the five units. The average of the best of four quizzes shall be taken as the final marks secured by each of the candidate for 10 marks.

**8.4** The average marks secured by a student in I and II Mid-term shall be considered as the final marks secured by the student towards Continuous Internal Midterm Evaluation in the theory subject.

**8.5** In case a few students are absent due to health reasons or any other unavoidable circumstances, or if a student wish to improve his/her performance in the internal marks a third mid-term examination will be conducted on payment of fees fixed by the examination branch. The test will be conducted in all the units of the subject.

a) **Semester End Examinations (SEE):** The Semester End Examination will be conducted for 70 marks which consist of two parts viz. i). Part-A for 20 marks, ii). Part-B for 50 marks. Part-A is compulsory, which consists of ten questions (numbered from 1 to 10) two from each unit carrying 2 marks each. Part-B consists of five questions (numbered from 11 to 15) carrying 10 marks each. Each question drawn from a separate unit of the syllabus and having an “either” “or” choice (that means there will be two questions from each unit and the student shall have to answer any one of them).

**8.6 Practical Courses:** For practical Courses, there shall be a Continuous Internal Evaluation (CIE) during the Semester for 30 internal marks, and 70 marks are assigned for Practical Semester End Examination (SEE).

Throughout the semester the student will be evaluated as follows:

- Preparation of lab – 5 Marks
- Observation– 5 Marks
- Completion of Experiment– 5 Marks
- Record – 5 Marks
- Internal Laboratory Exam– 10 Marks

For practical courses shall be a continuous evaluation during the Semester for 30marks. Out of the 30 marks for internal evaluation, day-to-day work in the laboratory shall be evaluated for 20 marks and internal practical examination shall be evaluated for 10 marks conducted by the concerned laboratory teacher.

**8.7 The Practical End Semester Examination** shall be conducted with an External Examiner and the lab faculty for 70 marks. The external examiner shall be appointed by the Director/ Principal/ Dean Exams from the panel of examiners recommended by Chairman, Board of Studies in respective branches.

## 8.8 Design and Drawing

For the subject having design and/ or drawing, (such as Engineering Graphics, Engineering Drawing, and Machine Drawing), the distribution shall be 30 marks for Internal Evaluation (20 marks for day-to-day work and 10 marks for internal tests) and 70 marks for Semester End Examination. There shall be two internal tests in a semester and average of two examinations shall be considered for the award of marks for internal examination.

### **8.9 Industry –Oriented Mini-Project**

There shall be an industry-oriented mini-Project, to be taken up during the vacation after III year II Semester examination. However, the mini project and its report shall be evaluated in the IV year I Semester at the time of practical exams. The industry oriented mini project shall be submitted in a report form and should be presented before the committee, which shall be evaluated for 100marks. The committee consists of an External Examiner, Head of the department, and the Supervisor of mini project and a senior faculty member of the department. There shall be no internal marks for industry oriented mini project.

### **8.10 Seminar Presentation**

There shall be a seminar presentation in IV-year II Semester. For the seminar, the student shall collect the information on a specialized topic and prepare a technical report, showing his understanding of the topic, and submit it to the department. It shall be evaluated by the departmental committee consisting of Head of the Department, Seminar Supervisor and a Senior Faculty member. The seminar report shall be evaluated for 100 marks. There shall be no SEE or external examination for the seminar.

If the student fails to present the Seminar as required in the IV-year II Semester He may reappear for the seminar when they are scheduled again (within one month); if he fails in such 'one reappearance' evaluation also, he has to reappear for the same in the next subsequent Semester, as and when it is scheduled.

### **8.11 Comprehensive Viva-Voce**

There shall be a Comprehensive Viva-Voce in IV-year II semester. The Comprehensive Viva-Voce will be conducted by a committee consisting of Head of the Department and two Senior Faculty members of the department and is evaluated for 100 marks. The Comprehensive Viva-Voce is intended to assess the students understanding of the subjects student studied during the

B.Tech course. There will be no External Examiner for the Comprehensive Viva-Voce.

### **Distribution of Marks Internal Valuation/ External Valuation**

<b>Subject</b>	<b>Internal Valuation Marks</b>	<b>External Valuation Marks</b>	<b>Total Marks</b>
Theory Engineering Drawing	30	70	100

Mini Project	0	100	100
Seminar	100	0	100
Major Project	60	140	200
Comprehensive Viva-Voce	100	0	100

## 8.12 Project work

Out of a total of 200 marks for the major project work, 60 marks shall be for Internal Evaluation and 140 marks for the End Semester evaluation. The End Semester evaluation (viva-voce) shall be conducted by committee. The committee consists of an External Examiner, Head of the Department, the Supervisor of project and a senior faculty member of the department. The topics for industry oriented mini project, seminar and project work shall be different from each other. The evaluation of project work shall be conducted at the end of the IV-year II Semester. The internal evaluation of the project work shall be on the basis of two seminars given by each student on the topic of his/ her project to the respective supervisor.

8.13 Candidates shall be permitted to apply for recounting/revaluation of SEE scripts within 2 weeks from the date of release of results, with a payment of prescribed fee.

8.14 No marks or letter grades shall be allotted for Mandatory/Non-Credit Courses. Only Pass/Fail shall be indicated in Grade Card.

## 9 B.Tech with Minor Program

The Institution has introduced the **Bachelor of Technology in a particular specialization with minor program** (For eg., *B. Tech. in Electronics & Communication Engineering with Minor in AI&ML*) from AY. 2021-22.

The Bachelor of Technology (B.Tech.) with minor programs offered by VJIT focuses on the fundamental principle of Engineering, where the development of critical & analytical thinking and the ability to develop a distinctive approach to any given problem statement shall be the driving factor that fuels the pedagogic discourse.

A student will be eligible to get B. Tech. with Minor Degree, if he/she completes an additional 18 credits. These should be acquired through registered courses as per the respective courses offered by the Institute or through MOOCs courses as mentioned Annexure-I, as equivalent to the courses offered by the Institute.

**Details are given in the Annexure –I**

## 10. B.Tech (Honors)

The B. Tech. (Honors) programs are proposed to choose for an area of specialization among various emerging technologies in order to be a domain expert. A student will be eligible to get B. Tech. (Honors) Degree, if he/she completes an additional 20 credits. These should be acquired through registered courses as per the respective courses offered by the institution or through SWAYAM MOOCs as equivalent to the courses offered by the Institute.

Details are given in the Annexure -II

## 11. GRADING PROCEDURE

11.1 Grades will be awarded to indicate the performance of students in each theory subject, laboratory/ practical's, seminar, Industry Oriented Mini Project, and project Stage –I &II. Based on the percentage of marks obtained (Continuous Internal Evaluation plus Semester End Examination, both taken together) as specified item7 and 8 of above, a corresponding letter grade shall be given.

11.2 As a measure of the student's performance, a 10-point Absolute Grading System using the following Letter Grades and corresponding percentage of marks shall be followed.

Letter Grade	Performance	Grade Points	% of marks Secured (Class Intervals)
O	Outstanding	10	Greater than or equal to 90%
A+	Excellent	9	80% and less than 90%
A	Very Good	8	70% and less than 80%
B+	Good	7	60% and less than 70%
B	Average	6	50% and less than 60%
C	Pass	5	40% and less than 50%
F	Fail	0	Below 40%
AB	Absent	0	Absent

11.3 A Student who has obtained an 'F' grade in any subject shall be considered 'failed' and is required to reappear as a 'supplementary student' in the semester End Examination as and when conducted. In such cases, Internal Marks in those subjects will remain the same as those obtained earlier.

11.4 To a student who has not appeared for a semester end examination in any subject, 'Ab' grade will be allocated in that subject, and he is deemed to have 'failed'. A Student will be required to reappear as a 'Supplementary Student' in the Semester End Examination, as and when conducted. In this case also, the internal marks in those subjects will remain the same as those obtained earlier.

11.5 A letter grade does not indicate any specific percentage of marks secured by the student, but it indicates only the range of percentage of marks.

11.6 In general, a student shall not be permitted to repeat any subject/course(s) only for the sake of 'Grade Improvement' or 'SGPA/CGPA Improvement'. However, he has to repeat all the Subject/Courses pertaining to that Semester when he is detained due to shortage of attendance.

11.7 A student earns grade point (GP) in each subject/ course, on the basis of the letter grade secured in that subject/ course. The corresponding 'credit points' (CP) are computed by multiplying the grade point with credits for that particular subject/course.

**Credit points (CP) = grade point (GP) x credits .... For a subject/course**

The Grade Point Average (GPA) will be calculated according to the formula:

$$GPA = \frac{\sum C_i G_i}{\sum C_i}$$

Where  $C_i$  = Number of credits allotted to the  $i^{\text{th}}$  Subject and  $G_i$  = Grade points allotted for all courses passed in that semester

11.8 The student passes the Subject/ Course only when he gets  $GP \geq 5$  (P Grade or above).

11.9 The Semester Grade Point Average (SGPA) is calculated by dividing the sum of credit points ( $\sum CP$ ) secured from all subjects/ courses registered in a semester, by the total number of credits registered during that semester. SGPA is rounded off to two decimal places. SGPA is thus computed as

$$SGPA = \frac{\sum \text{Course Credits}(C_i) \times \text{Grade Points}(G_i)}{\sum \text{Course Credits}(C_i)}$$

Where  $C_i$  = Number of credits allotted to the  $i^{\text{th}}$  Subject

$G_i$  = Grade points allotted for all courses passed in that semester

$\sum C_i$  = Total number of credits for all courses registered in that semester

And 'i' is the subject indicator index (takes into account all subjects in a semester).

11.10 The Cumulative Grade Point Average (CGPA) is a measure of the overall cumulative performance of a student in all semesters considered for registration. The CGPA is the ratio of the total credit points secured by a student in all registered courses in all semesters, and the total number of credits registered in all the semesters. CGPA is rounded off to two decimal places. CGPA is thus computed from the I year II semester onwards at the end of each semester as per the formula

$$CGPA = \frac{\sum \text{Course Credits}(C_j) \times \text{Grade Points}(G_j)}{\sum \text{Course Credits}(C_j)}$$

Where

$C_j$  = Number of credits allotted to the  $j^{\text{th}}$  Subject

$G_j$  = Grade points allotted for all courses passed up to that semester

$\sum C_j$  = Total number of credits for all courses registered until that semester

And 'j' is the subject indicator index (takes into account all subjects until the semester)

After registration and completion of I year I semester, the SGPA of that semester itself may be taken as the CGPA, as there are no cumulative effects.

#### Illustration of calculation of SGPA:

Course	Credits	Letter Grade	Grade Points	Credit Points
Course 1	4	A	8	4x8=32
Course 2	4	O	10	4 x 10=40
Course 3	4	C	5	4x5=20

Course 4	3	B	6	3x6=18
Course 5	3	A+	9	3x9=27
Course 6	3	C	5	3x5=15
	21			152

$$SGPA = 152/21 = 7.24$$

### 11.11 Illustrative Example:

An illustrative example given in below Table indicates the use of the above two equations in calculating SGPA and CGPA, both of which facilitate the declaration of academic performance of a student, at the end of a semester and at the end of successive semesters respectively. Both of them shall be normally calculated up to the second decimal position, so that the CGPA, in particular, can be made use of in awarding a rank for the student's performance in a class or college. If two students get the same CGPA, the tie should be resolved by considering the number of times a student has obtained higher SGPA; But, if it is not resolved even at this stage, the number of times a student has obtained higher grades like O, A, B etc shall be taken into account in rank ordering of the students in a class.

Year and Semester	Course No.	Credits	Grade	Grade Points	Credit Points
I Year I Semester	XX101	5	A	8	40
I Year I Semester	XX102	4	F	0	00
I Year I Semester	XX103	3	A+	9	27
I Year I Semester	XX104	4	F	0	00
I Year I Semester	XX105	5	C	5	25
I Year I Semester	XX106	5	P	4	20
Total		26(18*)			112
<b>SGPA = 112/26=4.31 CGPA =4.31</b>					
I Year II Semester	XX107	5	B+	7	35
I Year II Semester	XX108	4	A	8	32
I Year II Semester	XX109	3	C	5	15
I Year II Semester	XX110	5	P	4	20
I Year II Semester	XX111	4	A+	9	36
I Year II Semester	XX112	2	F	0	00
I Year II Semester	Xx113	2	A	8	16
I Year II Semester					
Total		25(23*)			154
<b>SGPA = 154/25=6.16 CGPA = 266/51 =5.22</b>					

\*Total No. of credits excluding those with 'F'; this is particularly important to keep track of the number of credits earned by a student up to any semester.

The above illustrated calculation process of CGPA will be followed for each subsequent semester until 8<sup>th</sup> semester. The CGPA obtained at the end of 8<sup>th</sup> semester will become the final CGPA secured for entire B.Tech. Programme.

11.12 For merit ranking or comparison purposes or any other listing, only the 'rounded off' values of the CGPA will be used.



11.13 For calculations listed in regulations 11.7 to 11.10, performance in failed subjects/ courses (securing F grade) will also be taken into account, and the credits of such subjects/ courses will also be included in the multiplications and summations. After passing the failed subject(s) newly secured letter grades will be taken into account for calculation of SGPA and CGPA. However, mandatory courses will not be taken into consideration.

SGPA and CGPA of a semester will be mentioned in the semester Memorandum of Grades if all subjects of that semester are passed in first attempt. Otherwise, the SGPA and CGPA shall be mentioned only on the Memorandum of Grades in which sitting he passed his last exam in that semester.

## 12. EARNING OF CREDITS

A student shall be considered to have completed a Course successfully and earned the credits if he/she secures an acceptable letter grade in the range 'O' to 'P'. Letter grade 'F' in any Course implies failure of the student in that Course and no credits earned.

## 13. PASSING STANDARDS

13.1 A student shall be declared successful or 'passed' in a Semester, only when he gets a SGPA  $\geq$  5.00 (at the end of that particular Semester).

13.2 In the case of the student reappearing the examination such cases, his Internal Marks (CIE Marks) in those Subject(s) will remain same as those obtained earlier. In these considerations, the newly secured Letter Grades will be recorded and taken into account for calculation of SGPA and CGPA, only if there is an improvement.

13.3 A Student shall be declared successful or 'passed' in any Non-Credit Subject/ Course, if he secures a minimum of P grade.

13.4 After the completion of each Semester, a Grade Card or Grade Sheet (or Transcript) shall be issued to all the registered students of that semester, indicating the Letter Grades and Credits earned. It will show the details of the courses registered (Course Code, Title, No. of Credits, Grade Earned etc.), Credits earned, SGPA, and CGPA.

## 14. DECLARATION OF RESULTS

14.1 Computation of SGPA and CGPA are done using the procedure listed in 11.7 TO 11.10.

14.2 For final percentage of marks equivalent to the computed final CGPA, the following formula may be used.

$$\% \text{ of Marks} = (\text{final CGPA} - 0.5) \times 10$$

## 15. AWARD OF DEGREE

15.1 A student who registers for all the specified subjects/ courses as listed in the course structure and secures the required number of 160 credits (with CGPA  $\geq$  5.0), within 8 academic years from the date of commencement of the first academic year, shall be declared to have '**qualified**' for the award of B.Tech. degree in the chosen branch of Engineering selected at the time of

admission.

15.2 A student who qualifies for the award of the degree as listed in item-12.1 shall be placed in the following classes.

CGPA	Class Awarded	From the CGPA secured from 160 credits
$\geq 8.00$	First Class with Distinction	
$\geq 6.50 - < 8.00$	First Class	
$\geq 5.50 - < 6.50$	Second Class	
$\geq 5.00 - < 5.50$	Pass Class	

15.3 The marks obtained in Internal Evaluation (CIE) and Semester End Examination (SEE) will be shown in the memorandum of marks.

15.4 For the purpose of awarding first Class with Distinction (CGPA  $\geq 8.0$ ), the student must obtain the minimum required CGPA within 4 academic years or within 3 academic years in case of Lateral Entry candidates by clearing all the courses in single attempt.

15.5 Candidates with disciplinary action pending/ prevented from writing the end semester examinations due to reason in any semester are not eligible for the award of First Class with Distinction. Such candidate's even if the CGPA  $\geq 8.0$  shall be placed in first class.

15.6 For the purpose of awarding First, Second and Pass Class, CGPA obtained in the examinations appeared within the maximum period allowed for the completion of course shall be considered as per the regulations.

15.7 A student with final CGPA (at the end of the UGP)  $< 5.00$  will not be eligible for the award of the Degree.

## 16. CONSOLIDATED GRADE CARD

A consolidated grade card containing credits & grades obtained by the candidates will be issued after completion of the four years B. Tech Program.

## 17. WITHHOLDING OF RESULTS

If the student has not paid the fees to the College at any stage, or has dues pending due to any reason whatsoever, or if any case of indiscipline is pending, the result of the student may be withheld, and the student will not be allowed to go into the next higher semester. The award or issue of the degree may also be withheld in such cases and the matter will be referred to College Academic Committee for final decision.

## 18. TRANSITORY REGULATIONS

18.1 Discontinued, detained for attendance, detained for want of credits, or failed students are eligible for readmission as and when the course is offered during the subsequent academic year as per the college admission procedures.

18.2 Students on transfer from a non- autonomous or from an autonomous college shall complete all

the courses of the concerned programme not covered in the earlier organization. However, he/she should take the remaining courses in the programme along with the other students.

18.3 There shall be no branch transfers after the cut-off date of admissions made in the B.Tech. I year.

## 19. TRANSCRIPTS

After successful completion of the total programme of study, a Transcript containing performance of all academic years will be issued as a final record. Duplicate transcripts will also be issued if required after the payment of requisite fee.

## 20. SUPPLEMENTARY EXAMINATIONS

In addition to the Regular end semester examinations, Supplementary Examinations for the previous semesters will be conducted along with End Semester Examinations. A student can appear for any number of supplementary examinations till he/she clears all courses which he/she could not clear in the first attempt. However, the maximum stipulated period cannot be relaxed under any circumstances.

## 21. GRADUATION CEREMONY

21.1 The College shall have its own annual Graduation Ceremony for the award of degrees to students completing the prescribed academic requirements in each case, in consultation with the University and by following the provisions in the Statute.

21.2 The College shall institute Prizes and Awards to meritorious students, for being given away annually at the Graduation Ceremony.

## 22. TERMINATION OF THE PROGRAM

The admission of a student to the program may be terminated and the student may be asked to leave the Institute in the following circumstances:

22.1 The student fails to satisfy the requirements of the program within the maximum period stipulated for that program.

22.2 The student fails to satisfy the norms of discipline specified by the institute from time to time.

## 23. NON-CREDIT COURSES (Mandatory Courses)

23.1. Requirement of 75% attendance as per the college regulations is compulsory of completing the Mandatory courses.

23.2. Specified number of Mandatory Courses among the designated ones is compulsory requirement for all the students for the award of B.Tech.Degree.

23.3. Although these courses do not carry any credits, performance in these subjects is evaluated following the procedure adopted for other subjects with the same marks. However, their performance will be indicated in the student's memo of marks as Satisfactory/ Unsatisfactory.

### MALPRACTICES RULES DISCIPLINARY ACTION FOR/IMPROPER CONDUCT IN EXAMINATIONS

	Nature of Malpractices/Improper conduct	Punishment
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	If the student:	
1. (a)	Possesses or keeps accessible in examination hall, any paper, note book, programmable calculators, cell phones, pager, palm computers or any other form of material concerned with or related to the subject of the examination (theory or practical) in which student is appearing but has not made use of (material shall include any marks on the body of the student which can be used as an aid in the subject of the examination)	Expulsion from the examination hall and cancellation of the performance in that subject only.
(b)	Gives assistance or guidance or receives it from any other student orally or by any other body language methods or communicates through cell phones with any student or persons in or outside the exam hall in respect of any matter.	Expulsion from the examination hall and cancellation of the performance in that subject Only of all the students involved. In case of an outsider, he will be handed over to the police and a case is registered against him.
2.	Has copied in the examination hall from any paper, book, programmable calculators, palm computers or any other form of material relevant to the subject of the examination (theory or practical) in which the student is Appearing.	Expulsion from the examination hall and cancellation of the performance in that subject only.
3.	Impersonates any other student in Connection with the examination.	The student who has impersonated shall be Expelled from examination hall. The student is also debarred and forfeits the seat. The performance of the original student who has been impersonated, shall be cancelled in all the subjects of the examination (including practical's and project work) already appeared and shall not be allowed to appear for examinations of the remaining subjects of that Semester/ year. The student is also debarred for two consecutive semesters from class work and All Examinations. The continuation of the course by the student is subject to the academic regulations in connection with Forfeiture of seat. If the imposter is an outsider, he will be handed over to the police and a case is registered against him.

4.	<p>Smuggles in the answer book or additional sheet or takes out or arranges To send out the question paper during the examination or answer book or additional sheet, during or after the Examination .</p>	<p>Expulsion from the examination hall and cancellation of performance in that subject and all the other subjects the student has already appeared including practical examinations and project work and shall not be permitted for the remaining examinations of the subjects of that Semester/ year. The student is also debarred for two consecutive semesters from class work and All Examinations. The continuation of the course by the student is subject to the academic Regulations in connection with Forfeiture of seat.</p>
5.	<p>Uses objectionable, abusive or offensive language in the answer paper or in letters to the examiners or writes to the examiner requesting him to award pass Marks.</p>	<p>Cancellation of the performance in that subject.</p>
6.	<p>Refuses to obey the orders of the chief superintendent/assistant superintendent / any officer on duty or misbehaves or creates disturbance of any kind in and around the examination hall or organizes a walk out or instigates others to walk out, or threatens the officer-in charge or any person on duty in or outside the examination hall of any injury to his person or to any of his relations whether by words, either spoken or written or by signs orb visible representation, assaults the officer-in- charge, or any person on duty in or outside the examination hall or any of his relations, or indulges in any other act of misconduct or mischief which result in damage to or destruction of property in the examination hall or any part of the college campus or engages in any other act which in the opinion of the officer on duty amounts to use of unfair means or misconduct or has the tendency to disrupt the orderly conduct of the examination.</p>	<ol style="list-style-type: none"> <li>1.In case of students of the college, they shall be expelled from examination halls and cancellation of their performance in that subject and all other subjects the student(s) has (have) already appeared and shall not be permitted to appear for the remaining examinations of the subjects of that Semester/ year.</li> <li>2.The students also are debarred and forfeit their seats. In case of outsiders, they will be handed over to the police and a Police case is registered against them.</li> </ol>
7.	<p>Leaves the exam hall taking away answer script or intentionally tears off the script or any part thereof inside or outside the examination hall.</p>	<ol style="list-style-type: none"> <li>1.Expulsion from the examination hall and cancellation of performance in that subject and all the other subjects the student has already appeared including practical examinations and project work and shall not be permitted for the remaining examinations of the subjects of that Semester/ year.</li> <li>2.The student is also debarred for two consecutive semesters from class work and All University examinations. The continuation of the course by the student is subject to the academic regulations in connection with Forfeiture of seat.</li> </ol>

8.	Possesses any lethal weapon or firearm in the examination hall.	<p>1. Expulsion from the examination hall and cancellation of the performance in that subject and all other subjects the student has already appeared including practical examinations and project work and shall not be permitted for the remaining examinations of the subjects of that Semester/ year.</p> <p>2. The student is also debarred and forfeits the seat. Police case will be registered.</p>
9.	If student of the college, who is not a student for the particular examination or any person not connected with the college indulges in any malpractice or improper conduct mentioned in clause 6 to 8.	<p>Expulsion from the examination hall and cancellation of the performance in that subject and all other subjects the student has already appeared including practical examinations and project work and shall not be permitted for the remaining examinations of the subjects of that Semester/ year. The student is also debarred and forfeits the seat.</p> <p>Person(s) who do not belong to the college will be handed over to the police and, a police case Will be registered against them.</p>
10.	Comes in a drunken condition to the examination hall.	Expulsion from the examination hall and cancellation of the performance in that subject and all other subjects the student has already appeared for including practical examinations and project work and shall not be permitted for the remaining examinations of the subjects of That semester/ year.
11.	Copying detected on the basis of internal evidence, such as, during Valuation or during special scrutiny.	Cancellation of the performance in that subject and all other subjects the student has appeared for including practical examinations and project work of that semester/year Examinations.
12.	If any malpractice is detected which is not covered in the above clauses 1 to 11 shall be reported to the Principal for further action to award a suitable Punishment.	

**Malpractices identified by squad or special invigilators:** Punishment to the students as per the above guidelines.

## **24. General**

24.1 Wherever the words “he”, “him”, “his”, occur in the regulations, they include “she”, “her”, “hers”.

24.2 Where the words “Subject” or “Subjects”, occur in these regulations, they also imply “Course” or “Courses”.

24.3 The academic regulation should be read as a whole for the purpose of interpretation.

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

24.5 The Institution may change or amend the Academic Regulations, course structure or syllabi at any time, and the changes or amendments made shall be applicable to all students with effect from the date notified by the Institution.

## ACADEMIC REGULATIONS FOR B. TECH LATERAL ENTRY STUDENTS

Applicable for the students admitted into II-year B. Tech. (Lateral Entry Scheme) from the Academic Year 2022-23.

### 1. Eligibility for award of B. Tech. Degree (LES)

- 1.1 The LES candidates shall pursue a course of study for not less than three academic years and not more than six academic years.
- 1.2 The candidate shall register for 122 credits and secure 122 credits by securing a minimum CGPA of  $\geq 5$  of B.Tech. II to IV year for the award of B.Tech. Degree.
- 1.3 The student(s), who fail to fulfill the requirement for the award of the degree in six Academic years from the year of admission, shall forfeit their seat(s). The attendance regulations of B. Tech. (Regular) shall be applicable to B.Tech.(LES).

### 2. Promotion Rule

- 2.1 A student shall be promoted from B.Tech., II Year to III Year if he/she gets at least a minimum of 24 out of 40 credits, up to II-year II semester, from all the examinations, whether or not the candidate takes the examinations.
- 2.2 A student shall be promoted from III year to IV year if he/she gets a minimum of 49 out of 82 credits, up to III-year II semester, from all the examinations, whether or not the candidate takes the examinations.
- 2.3 A student shall register and put-up minimum attendance in all 122 credits and earns all 122 credits to be eligible for the award of B. Tec degree.
- 2.4 A student, who fails to earn 122 credits as indicated in the course structure within six academic years, shall forfeit his/her admission in B.Tech. Course.

### 3. Award of Class

A student, who satisfies all the requirements prescribed for the completion of the B.Tech. program, is eligible for the award of the said degree, in any one of the following four classes:

CGPA	Class Awarded	From the CGPA secured from 122 credits
$\geq 8.00$	First Class with Distinction	
$\geq 6.50 - < 8.00$	First Class	
$\geq 5.50 - < 6.50$	Second Class	
$\geq 5.00 - < 5.50$	Pass Class	

4. All the other regulations as applicable to B. Tech. 4-year degree course (Regular) will hold good for B.Tech. (Lateral Entry Scheme).
5. The malpractice rules and procedures for evaluating the SGPA and CGPA mentioned under points 9 - 24, are also applicable to the Lateral Entry students.



# Annexure-I

## **B. Tech with Minor Program**

VJIT has always been emphasizing to orient the students towards the technologies that shall drive the world in the years to come; the Institution has introduced the **Bachelor of Technology in a particular specialization with minor program** (*For eg., B. Tech. in Electronics & Communication Engineering with Minor in AI&ML*) from AY. 2021-22.

The Bachelor of Technology (B.Tech) with minor programs offered by VJIT focuses on the fundamental principle of Engineering, where the development of critical & analytical thinking and the ability to develop a distinctive approach to any given problem statement shall be the driving factor that fuels the pedagogic discourse.

### **B. Tech. with Minor degree:**

A student will be eligible to get B. Tech. with Minor Degree, if he/she completes an additional 18 credits. These should be acquired through registered courses as per the respective courses offered by the Institute or through MOOCs as equivalent to the courses offered by the Institute.

### **The key features of the B.Tech with Minor program being:**

- The student can identify **only one area** of specialization along with his/her basic engineering degree.
- The no. of courses for Minor program is limited to 2 in a semester along with normal courses.
- In addition to the traditional B.Tech. program which is a 4-Year (8 Semester program) offering 160 course credits, additional **18 Credits**(minimum) to be completed as part of the **B.Tech with Minor program** between the **5<sup>th</sup>** and **8<sup>th</sup>** semester within the same period of 4-Year B. Tech. program.
- To successfully complete the **B.Tech with Minor program** the student shall need to clear the examinations for the additional 18 Credits. These credits can be acquired adopting advanced subjects in the offered specialization/interdisciplinary studies, etc.

The following are the recommended areas for Minor programs:

S. No.	Minor Program	Eligible branch of students	@ Offering Department	Award of Degree
1	Construction Engineering & Management	All branches, except B. Tech. Civil Engg.	Civil Engg.	“B. Tech. in <u>branch name</u> with Minor in Construction Engineering & Management
2	Robotics	All branches, except B. Tech. Mech. Engg	Mech. Engg.	“B. Tech. in <u>branch name</u> with Minor in Robotics
3	Electric Vehicles	All branches, except B. Tech. EEE	EEE	“B. Tech. in <u>branch name</u> with Minor in Electric Vehicles
4	Sustainable Energy	All branches, except B. Tech. EEE	EEE	“B. Tech. in <u>branch name</u> with Minor in Sustainable Energy
5	IoT	All branches, except B. Tech. ECE	ECE	“B. Tech. in <u>branch name</u> with Minor in IOT”
6	CSE	All branches, except B. Tech. CSE	CSE	“B. Tech. in <u>branch name</u> with Minor in CSE
7	IT	All branches, except B. Tech. IT	IT	“B. Tech. in <u>branch name</u> with Minor in IT
8	AI&ML	All branches, except B. Tech. AI	AI	“B. Tech. in <u>branch name</u> with Minor in AI&ML
9	Business & Innovation Management (B&IM)	All branches of B.Tech.	MBA	“B. Tech. in <u>branch name</u> with Minor in B&IM

### Rules & Regulations for B. Tech. with Minor Degree

1. The duration and all the academic regulations are on par with regular 4-Years B. Tech. program. A student completes/earns all the required credits of a course, if he/ she registers for the course and obtains a passing grade.
2. Only Students having earned all the credits at the end of the third semester (i.e., end of 2<sup>nd</sup>Year I-semester) without active backlogs are eligible to register for Minor program, in the fifth semester only.
3. For B. Tech with Minor, a student needs to earn additional minimum 18 credits (over and above the required 160 credits for B. Tech degree) as per the Minor program course structure.
4. Course registration fee per course should be met by the students only. The registration fee per credit is Rs.1000/-.
5. After registering for the Minor programme, if a student fails in any registered course and unable to earn all the required 18 credits in a specified duration (twice the duration of the course), he/she shall not be awarded Minor degree. However, if the student earns all the required credits of 160 for B. Tech., he/she will be awarded only B. Tech degree in the concerned discipline. There is no transfer of credits from Minor program courses to regular B. Tech. degree course & vice versa.
6. These 18 credits (minimum) are to be earned from:
  - Additional Courses offered in the specialization by the concerned department.
  - MOOC courses offered by SWAYAM MOOCs as notified/approved by the university (minimum 3 credits each) from time to time.

- Any expenses incurred for the MOOCs course to be met by the students only.
7. Online courses registered shall be certified ones with grading/marks/pass. Only Pass-grade/ pass-marks/ pass or above grade/marks shall be considered for inclusion of grades.
  8. If the MOOC course is a pass course without any grades, the grade to be assigned as per the main regulations.
  9. Prior to registration to MOOC courses, formal approval of the courses, by the University based on the organization of the programme, syllabus coverage, detailed duration of the programme, nature of evaluation etc. is needed.
  10. The additional courses (for minimum of 18 credits) may be from the departments offering courses/subjects for the Minor degree. These subjects can be considered as advanced courses in that specialization/interdisciplinary courses etc.
  11. However, the choice to opt/ take the Minor program is purely on the choice of the students in a particular engineering stream. Only top 50% of the total class in each specialization, based on their overall percentage of marks without active backlogs up to 3<sup>rd</sup> semester (II-year I Semester), are eligible to register for Minor program courses/ subjects.

**Requirement for the Award of B.Tech with Minor Degree:**

- a) A student may opt for B.Tech with Minor degree if she/he has no active backlogs till 3<sup>rd</sup> semester.
- b) For B. Tech with Minor, a student needs to earn additional 18 credits (minimum over and above the required 160 credits for B. Tech degree) as per his/her registered Minor program.
- c) Student should take permission of registration for the B.Tech with Minor program from Head of the department & faculty/course in-charge before commencement of 3<sup>rd</sup> Year I Semester or 5<sup>th</sup> Semester.
- d) To successfully complete the B.Tech with Minor program the student shall need to clear the examinations for the additional 18 Credits. The examinations shall be conducted as per the AICTE as well as University guidelines.
- e) The student shall be given a choice of withdrawing all the courses registered and/or credits earned for Minor courses/degree; and in that case the student will be awarded only B. Tech. degree in the concerned specialization on earning the required credits of 160 in a specified duration.

The following are the course structure of B.Tech Minor programs offered by various departments:

## Course Structure of B.Tech Minor Programs offered by Various Departments

### Department of Civil Engineering

#### B.TECH MINOR IN CONSTRUCTION ENGINEERING & MANAGEMENT

S. No.	Year/ Semester	Course	L	T	P	Credits
1	III-I	Principles of Surveying/ <b>MOOCS</b>	3	0	0	3
2	III-I	Surveying Lab	0	0	3	1.5
3	III-II	Essentials of building planning / <b>MOOCS</b>	3	0	0	3
4	III-II	Computer aided Building planning Lab	0	0	3	1.5
5	IV-I	AI applications in construction practices	3	0	0	3
6	IV-I	Construction Management/ <b>MOOCS</b>	3	0	0	3
7	IV-II	Mini Project	0	0	6	3
<b>Total Credits</b>						<b>18</b>

**Department of Mechanical Engineering**

**B.TECH MINOR IN ROBOTICS**

<b>S. No.</b>	<b>Year/ Semester</b>	<b>Course Title</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>Credits</b>
1	III-I	Principles of Robotics	3	0	0	3
2		SCI Lab for Robotics Lab	0	0	3	1.5
3	III-II	Microcontrollers for Robotics	3	0	0	3
4	IV-I	Advanced Robotics (or) SWAYAM course on Introduction to Robotics	4	0	0	4
5		Robotic Simulation Lab	0	0	3	1.5
6	IV-II	Implementation of Robotic Systems	3	0	0	3
7		Mini Project	0	0	4	2
<b>Total Credits</b>						<b>18</b>

**Department of Electrical & Electronics Engineering**

**B.TECH MINOR IN SUSTAINABLE ENERGY**

S. No.	Year/ Semester	Course Title	L	T	P	Credits
1.	III-I	Energy and its Resources	4	0	0	4
2.	III-II	Climate Change Understanding and Observations	3	0	0	3
3.	III-II	Energy and its Resources Lab	0	0	3	1.5
4.	IV-I	Energy Storage for Renewable	3	0	0	3
5.	IV-II	<b>Electives</b> 1. Electronics for Renewable 2. Solar Energy Technologies and System Design 3. Solar Energy System Installations and Maintenance	3	0	0	3
6.	IV-II	Energy Systems Lab	0	0	3	1.5
7.	IV-II	Internship/Mini Project	0	0	4	2
<b>Total Credits</b>						<b>18</b>

**B.TECH MINOR IN ELECTRIC VEHICLES**

S. No.	Year/ Semester	Course Title	L	T	P	Credits
1.	III-I	Electric Vehicle and Energy Systems	4	0	0	4
2.	III-II	Power Electronics and Control of Electric Machines	3	0	0	3
3.	III-II	Simulation Lab	0	0	3	1.5
4.	IV-I	Automotive Transmission and Communication	3	0	0	3
5.	IV-II	<b>Electives</b> 1. Electric Vehicle Dynamics and Testing 2. Battery Charging Technology for EVs 3. Electric Vehicle: Safety and Regulations and Future of EVs	3	0	0	3
6.	IV-II	Electric Mobility Lab	0	0	3	1.5
7.	IV-II	Internship/Mini Project	0	0	4	2
<b>Total Credits</b>						<b>18</b>

Department of Electronics & Communication engineering

**B.TECH MINOR IN IOT**

S. No.	Year/ Semester	Course Title	L	T	P	Credits
1	III-I	Embedded Sensors and IOT Architectures	4	0	0	4
2	III-I	Essentials of Python Programming Laboratory	0	0	3	1.5
3	III-II	IOT Communication Protocols	3	0	0	3
4	III-II	Smart Technologies	3	0	0	3
5	IV - I	Fog & Edge Computing for IoT	3	0	0	3
6	IV - I	IoT Automation with Raspberry-PI Laboratory	0	0	3	1.5
7	IV - II	Mini Project	0	0	4	2
<b>Total Credits</b>						<b>18</b>

**Department of Computer Science and Engineering**

**B.TECH MINOR IN CSE**

<b>S. No.</b>	<b>Year/ Semester</b>	<b>Course Title</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>Credits</b>
1	III-I	Computer System Architecture	3	0	0	3
2	III-I	Data Structures	3	0	0	3
3	III-I	Data Structures Lab	0	0	3	1.5
4	III-II	Data Warehousing and Data Mining	3	0	0	3
5	III-II	Data Warehousing and Data Mining Lab	0	0	3	1.5
6	IV-I	Artificial Intelligence	3	0	0	3
		Linux Programming				
		Software Testing Methodologies				
		E-Commerce				
7	IV-II	Mini Project	0	0	6	3
<b>Total Credits</b>						<b>18</b>



**Department of Information Technology**

**B.TECH MINOR IN IT**

<b>S. No.</b>	<b>Year/ Semester</b>	<b>Course Title</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>Credits</b>
1	III-I	Fundamentals of Algorithms	3	0	0	3
2	III-I	Algorithms Lab	0	0	3	1.5
3	III-II	Foundations of Cloud Computing	3	0	0	3
4	IV-I	Fundamentals of Database Management Systems	3	0	0	3
5	IV-I	Fundamentals of Database Management Systems Lab	0	0	3	1.5
6	IV-II	Principles of Artificial Intelligence Big Data Analytics Internet of Things Blockchain Technologies (or) Swayam Course on Big Data Computing	3	0	0	3
7	IV-II	Mini Project				3
<b>Total Credits</b>						<b>18</b>

**Department of Artificial Intelligence**

**B.TECH MINOR IN AI & ML**

S. No.	Year/ Semester	Course Title	L	T	P	Credits
1	III-I	Foundations of Artificial Intelligence	3	0	0	3
2	III-I	Python Programming Lab	0	1	3	2.5
3	III-II	Foundations of Machine Learning	3	0	0	3
4	III-II	Foundations of Machine Learning Lab	0	0	3	1.5
5	IV-I	Basics of Deep Learning	2	0	0	2
6	IV-I	Basics of Deep Learning Lab	0	0	2	1
7	IV-II	<b>Electives:</b>  1. Principles of Natural Language Processing 2. Introduction to Computer Vision 3. Soft Computing 4. Introduction to Artificial Neural Networks	3	0	0	3
8	IV-II	Mini Project	0	0	0	2
<b>Total Credits</b>						<b>18</b>

**Department of Management Studies**  
**B.Tech Minor in Business & Innovation Management (B & IM)**

S. No.	Year/ Semester	Course Title	L	T	P	Credits
1	III - I	Foundations of Management	4	0	0	4
2	III - II	Innovation & Design Thinking	3	0	0	3
3	III - II	Design thinking and Ideation Laboratory	0	0	3	1.5
4	IV - I	Business Ideation Business Models	3	0	0	3
5	IV - I	Business Plan Development	0	0	3	1.5
6	IV - II	<b>Any ONE of the following subjects:</b> 1. Project management 2. Market Research 3. Legal Aspects of Business 4. Technology Management (if not studied in the regular course)	3	0	0	3
7	IV - II	<b>Mini Project</b> Field Study Report/ Feasibility report on New ventures/ Pitfalls of entrepreneurship	0	0	4	2
<b>Total Credits</b>						<b>18</b>

# Annexure-II

## B.Tech (Honors)

The B. Tech. (Honors) programs are proposed to choose for an area of specialization among various emerging technologies in order to be a domain expert. A student will be eligible to get B. Tech. (Honors) Degree, if he/she completes an additional 20 credits. These should be acquired through registered courses as per the respective courses offered by the University or through SWAYAM MOOCs as equivalent to the courses offered by the Institute.

### 1. Objectives

The key objectives of offering **B. Tech. (Honors)** programs are:

- To expand the domain knowledge of the undergraduate students.
- To increase educational and professional skills required for pursuing higher studies or research in the area of interest.
- To acquire more knowledge as per industry requirement for better employment.

The key features of the **B.Tech. (Honors)** program being:

- The student can identify **only one area** of specialization along with his/her basic engineering degree.
- The no. of courses registered for honors is limited to TWO in a semester along with normal courses.
- In contrast to a traditional B. Tech. program which is a 4 Year (8 Semester program) offering 160 course credits, the **B. Tech. (Honors)** program is a 4 Year program (8 Semester program) offering 180 course credits.
- The additional **20 Credits** (Minimum, and maximum 20 credits) to be completed as part of the **B. Tech. (Honors)** program is to be spaced out between the **5<sup>th</sup>** and **8<sup>th</sup>** semester.
- To successfully complete the **B. Tech. (Honors)** program the student shall need to clear the examinations for the additional 20 Credits. These credits can be acquired opting advanced subjects in the offered specialization/ research/ interdisciplinary studies, etc.

### 2. Proposed Specialization Details

As per AICTE guide lines 2021-22, some of the VJIT proposed B. Tech. (Honors) programs are given below in each major discipline:

S. No.	Honors Program	Eligible branch of students	@ Offering Department	Award of Degree
1.	Structural Engineering	B. Tech. Civil Engg.	Civil Engg.	“B. Tech. (Honors) in <u>branch name</u> with Specialization in Structural Engineering
2.	CAD/ CAM	B. Tech. Mech. Engg.	Mech. Engg.	“B. Tech. (Honors) in <u>branch name</u> with Specialization in CAD/CAM
3.	Power Systems	B. Tech. EEE	EEE	“B. Tech. in <u>branch name</u> with Minor in Power Systems
4.	ECE	B. Tech. ECE	ECE	“B. Tech. (Honors) in <u>branch name</u> with Specialization in ECE
5.	CSE	B. Tech. CSE	CSE	“B. Tech. (Honors) in <u>branch name</u> with Specialization in CSE

### 3. Rules and Regulations for B. Tech. (Honors) Degree

1. The duration and all the academic regulations are on par with regular 4-Years B. Tech. program. A student will be awarded B. Tech. (Honors) degree, if he/she completes & earns all the required credits of a course for the registered courses and obtains a passing grade.
2. The department concerned shall have at least one M.Tech (Preferably NBA accredited) in the concerned stream, for B.Tech. (Honors) registration.
3. Only Students having earned all the credits with CGPA of **7or above** at the end of the third semester (i.e., end of 2<sup>nd</sup> Year I Sem.) are eligible to register for B.Tech. (Honors), in the fifth semester only.
4. For B. Tech. (Honors), a student needs to earn additional minimum 20 credits (over and above the required 160 credits for B. Tech degree) relevant to her/his discipline as per the course structure.
5. Course registration fees per course should be met by the students only. The registration fees per credit is Rs.1000/-.
6. After registering for the B.Tech. (Honors) programme, if a student fails in any registered course and unable to earn all the required 20 credits in a specified duration, he/she will not be eligible for obtaining B.Tech. (Honors) degree.
7. There is NO reduction in total no. of credits offered in the concerned regulations and NO credit transfer from normal courses to honors courses and vice versa.
8. These 20 credits are to be earned from:

- Additional Courses offered in the same specialization by the concerned department. Course registration fee per course should be met by the students only as per the norms of the University.
  - Courses offered by NPTEL/ SWAYAM MOOCs as notified/approved by the university (minimum 3 credits each) from time to time. The duration of courses shall be a minimum of 12-14 weeks. The assessment and certification of the NPTEL/SWAYAM MOOCs courses shall be as per the prescribed norms of the NPTEL and approved by the Institute
  - Any expenses incurred for the NPTEL/SWAYAM MOOCs course should be met by the students only.
9. Online courses registered shall be certified ones with grading or marks or pass/ fail. Only Pass- grade/ pass-marks/ pass or above grade/marks shall be considered for inclusion of grades.
  10. If the MOOC course is a pass course without any grades, the grade to be assigned as per the main regulations.
  11. The additional courses (for minimum of 20 credits) may be from the same department as the undergraduate major. These subjects can be considered as advanced courses in that specialization/ research/ interdisciplinary courses etc.
  12. However, the choice to opt/take the Honors program is purely on the choice of the students in a particular engineering stream. Only top 30% of the total class in each specialization, based on their overall percentage of marks in first attempt (without fail in any subject) up to 3<sup>rd</sup> semester (II-year I Semester), and are eligible to register for honors program courses/ subjects.

#### **Requirement for the Award of B. Tech. (Honors) Degree:**

A student enrolled in a B. Tech. program may also graduate with Honors, provided the student completes all the additional requirements for Honors, as specified by the regulations for the program in which he/she is enrolled. These additional requirements normally should include:

- a) For B. Tech (Honors), a student needs to earn additional 20 credits (minimum, over and above the required 160 credits for B. Tech degree) relevant to the discipline as recommended by the faculty advisor based on the courses offered in course structure for honors degree.
- b) Student should not have received any 'F' grade throughout the program in first attempt (without fail in any subject).
- c) Transfer of credits will not be permitted from regular courses to honors courses and vice versa.

#### **4. Registration**

- 1) At the beginning, just before the start of classes, of each semester, a student shall register for the courses he/ she wishes to take in that semester. A student shall normally be allowed to register for a course only if he/she has passed all the necessary pre-requisites for that course.
- 2) Student should take permission of registration for the B.Tech with Honors program from Head of the department & faculty/ course in-charge before commencement of 3<sup>rd</sup> Year I Semester or 5<sup>th</sup> Semester.
- 3) Registration is compulsory for all students, and is the sole responsibility of the student and must be completed before the last date of registration with necessary course registration fee per subject.

- 4) No student is allowed to register directly and the registration shall be through institute/ department. The registered students list shall be submitted to the university by the concerned principal.
- 5) The institute/ department shall maintain the record of student registered and pursuing the Honors degree.
- 6) The institute/ department shall prepare the time table for the registered Honors courses without any overlap/ clash on other courses the student registered for.
- 7) Minimum class strength (i.e., 33% of intake) is required for offering in-class Honors course.

The following are the course structure of B.Tech Honors programs offered by various departments:

## Course Structure of B.Tech Honors Programs offered by Various Departments

### Department of Civil Engineering

#### B.TECH HONORS IN STRUCTURAL ENGINEERING

S. No	Year/ Semester	Course Title	L	T	P	Credits
1	III-I	Advanced R.C. Design	3	0	0	3
2	III-I	Advanced Concrete Lab	0	0	3	1.5
3	III-II	Structural Dynamics	3	0	0	3
4	III-II	Computer aided structural design Lab	0	0	3	1.5
5	IV-I	Research Methodology	3	0	0	3
6	IV-I	Technical Paper Writing	2	0	0	2
7	IV-II	Cost management of Engineering projects/ one course from MOOCS	3	0	0	3
8	IV-II	Earthquake Resistant Design Of Buildings / one course from MOOCS	3	0	0	3
<b>Total Credits</b>						<b>20</b>



**Department of Mechanical Engineering**

**B.TECH HONORS IN CAD/ CAM**

<b>S. No.</b>	<b>Year/ Semester</b>	<b>Course Title</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>Credits</b>
1	III-I	Industrial Robotics	4	0	0	4
2	III-II	Additive Manufacturing (or) SWAYAM Course on Fundamentals of Additive Manufacturing Technologies	4	0	0	4
3		Robotic Simulation &3D Printing Lab	0	0	3	1.5
4	IV-I	Advanced Finite Element Method	3	0	0	3
5		Technical Paper Writing	0	0	4	2
6	IV-II	Advanced CAD	4	0	0	4
7		CAD/CAM/CAE Lab	0	0	3	1.5
<b>Total Credits</b>						<b>20</b>

**Department of Electrical & Electronics Engineering**

**B.TECH HONORS IN POWER SYSTEMS**

S. No.	Year/ Semester	Course Title	L	T	P	Credits
1	III-I	Honors Elective - 1	3	0	0	3
2	III-II	Research Methodologies	3	0	0	3
3	III-II	Honors Elective - 2	3	0	0	3
4	IV-I	Honors Elective - 3	3	0	0	3
5	IV-I	Honors Elective - 4	3	0	0	3
6	IV-II	Technical Paper Writing	0	0	4	2
7	IV-II	Honors Elective -5	3	0	0	3
<b>Total Credits</b>						<b>20</b>

Honors Electives (E)	Pre-Requisites
Honors Elective - 1	
Waste to Energy Conversion	Power Systems I
Energy and its resources	Power Systems I
Electrical Safety and Quality Management	Power Systems I
Honors Elective - 2	
Advances in Distribution Systems	Power Systems I, Power Systems II
IoT Applications in Electrical Engineering	Basic Electrical Engineering
Energy Storage systems for renewable	Power Systems I
Honors Elective -3	
Smart Cities – Management of Smart Urban	Power Systems I, Power Systems II
Grid Integration of Renewable Energy Systems	Power Systems I, Power Systems II
Grid Integration of Electric Vehicles	Power Systems I, Power Systems II
Honors Elective - 4	
Cyber Security of Smart Grids	Smart Grids Planning and Operation
SCADA and Energy Management Systems	Power Systems I and Power Systems II
Distributed Generation and Micro Grids	Power Systems I and Power Systems II
Honors Elective - 5	
Smart Grid Protection	Smart Grids Planning and Operation
Electrical Safety Management	Basic Electrical Engineering
HVDC Transmission	Power Electronics, Power Systems

**Department of Electronics & Communication Engineering**

**B.TECH HONORS IN ECE**

<b>S. No.</b>	<b>Year/ Semester</b>	<b>Course Title</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>Credits</b>
1	III-I	<b>Honors Elective -1</b>	3	0	0	3
		1. High Speed Electronics				
		2. Nano electronics				
2	III-II	Research Methodologies & Et hi cs	3	0	0	3
3	III-II	<b>Honors Elective – 2</b>	3	0	0	3
		1. Wireless Sensor Networks				
		2. Error Correcting Codes				
4	IV-I	<b>Honors Elective – 3</b>	3	0	0	3
		1. Mixed Signal Processing				
		2. Adaptive Signal Processing				
5	IV-I	<b>Honors Elective – 4</b>	3	0	0	3
		1. Speech and Audio Signal Processing				
		2. Scientific computing				
6	IV-II	Introduction to IOT	3	0	0	3
7	IV-II	Technical Paper Writing	0	0	4	2
<b>Total Credits</b>						<b>20</b>

**Department of Computer Science and Engineering**

**B.TECH HONORS IN CSE**

<b>S. No</b>	<b>Year / Semester</b>	<b>Course to be chosen from/ studied</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>1.</b>	<b>III-I</b>	<b>Honors Elective-1</b> 1. Principles of Programming Languages 2. Software Testing Methodologies 3. Computer Graphics	<b>3</b>	<b>0</b>	<b>0</b>	<b>3</b>
<b>2.</b>	<b>III-II</b>	<b>Research Methodologies</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>3</b>
<b>3.</b>	<b>III-II</b>	<b>Honors Elective-2</b> 1. Foundations of Machine Learning 2. Information Security 3. Software Project Management	<b>3</b>	<b>0</b>	<b>0</b>	<b>3</b>
<b>4.</b>	<b>IV-I</b>	<b>Honors Elective-3</b> 1. Big Data Analytics 2. Internet of Things 3. R Programming	<b>3</b>	<b>0</b>	<b>0</b>	<b>3</b>
<b>5.</b>	<b>IV-I</b>	<b>Honors Elective-4</b> 1. Advanced Databases 2. Neural Networks and Deep Learning 3. Natural Language Processing	<b>3</b>	<b>0</b>	<b>0</b>	<b>3</b>
<b>6.</b>	<b>IV-II</b>	<b>Technical Paper writing</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>
<b>7.</b>	<b>IV-II</b>	<b>Honors Elective-5</b> 1. Introduction to Data Science 2. Image Processing 3. Block Chain Technologies or MOOCS	<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>
<b>Total Credits</b>						<b>20</b>