2026

Regulations for Under Graduate Engineering Programme

B.Tech.

NARASARAOPETA ENGINEERING COLLEGE (AUTONOMOUS),
Narasaraopet – 522601.www.nrtec.in

Permanently Affiliated to

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA
Kakinada – 533003, Andhra Pradesh, www.jntuk.edu.in

B.Tech (Regular-Full time)
(Effective for the students admitted into I year from the Academic Year 2026-27 and onwards)

&

B.Tech (Lateral Entry Scheme)
(Effective for the students admitted into II year through Lateral Entry Scheme from the Academic Year 2027 – 28 and onwards)

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Academic Regulations (R26) for B. Tech (Regular-Full time)

(*Effective for the students admitted into I year from the Academic Year **2026-27** onwards*)

Jawaharlal Nehru Technological University Kakinada is having constituent, affiliated and autonomous Institutions offering Undergraduate, Postgraduate and Ph.D programmes to the students admitted in this University in different disciplines.

These regulations have to be followed by all affiliated and autonomous Institutions mandatorily. However, these regulations have to be followed by autonomous institutions with necessary approval from concerned Academic Senate and Board of Governors.

1. Introduction

The B.Tech., B.Tech. with Minor, and B.Tech. with Honours programmes are designed in accordance with the broad academic framework and curricular principles of AICTE, APSCHE, UGC and NEP 2020, with an emphasis on Outcome Based Education (OBE), multidisciplinary learning, experiential learning, innovation, research, entrepreneurship, employability, and holistic development.

The curriculum comprises Basic Sciences, Humanities, Social Sciences, Management, Engineering Sciences, Professional Core, and Professional Electives including industry-oriented courses, Open/Interdisciplinary Electives, and emerging areas, along with laboratories, internships, projects, and other experiential-learning components. The curriculum progressively develops students' knowledge, technical skills, professional competencies, ethical values, communication abilities, and capability to address real-world engineering and societal challenges.

The programme structure broadly progresses through three stages:

Phase I-Foundation:

- Provides a strong foundation in Mathematics, Basic Sciences, Humanities and Social Sciences, communication, computational thinking, and fundamental engineering concepts. Phase II-Engineering Foundation:
- Focuses on Engineering Sciences and foundational engineering practices in Interdisciplinary Subjects, Industry 4.0 technologies, Computer programming to improve their logical skills, Artificial Intelligence and Machine learning, Practical exposure to relevant Engineering workshops, and other common engineering courses, supported by laboratories and hands-on learning.

Phase III-Professional Learning:

- Provides discipline-specific Professional Core and Professional Elective courses that develop competencies to learn basic principles and concepts in their professional core subjects, problem identification, analysis, modelling, design, development, experimentation, and implementation, with exposure to contemporary technologies and industry practices.

The curriculum promotes experiential and practice-based learning through laboratories, miniprojects, design activities, internships, industry/community interaction, field-based learning, and major projects. It also provides flexibility through Professional Electives, Open/Interdisciplinary Electives, Minor, Honours, and other approved academic pathways, enabling students to pursue multidisciplinary and specialized areas aligned with their interests and career aspirations.

Students are progressively introduced to research methodology, innovation, design thinking, entrepreneurship, emerging technologies, computational tools, experimentation, technical documentation, and professional communication. Internships and projects providing opportunities to apply theoretical

knowledge to practical and real-world problems and develop teamwork, leadership, problem-solving, and project-management skills.

The curriculum is periodically reviewed and revised through the Board of Studies and other statutory academic bodies, considering the guidelines of AICTE, APSCHE, UGC and NEP 2020, accreditation requirements, industrial requirements, emerging technologies, societal requirements, and stakeholder feedback.

The curriculum follows Outcome Based Education, with Course Outcomes (COs) appropriately aligned with Programme Outcomes (POs) and Programme Specific Outcomes (PSOs). Teachinglearning and assessment processes are designed to facilitate progressive attainment of the expected graduate competencies.

The course structure, syllabi, credit requirements, academic progression, internship and project requirements, and provisions for B.Tech., B.Tech. with Minor and B.Tech. with Honours shall be governed by the applicable University Regulations and approved academic framework. The student is having the option to consider either one minor / Honour (or) two minors (or) One minor and Honour along with Regular B.Tech programme, depending on his interest and satisfying the regulations. The detailed curriculum and syllabi shall be made available through the official University website: jntuk.edu.in.

1.1 Organizational Structure for Academic Administration

The academic programmes of the University are governed by Rules and Regulations approved by the Academic Senate from time to time. The Academic Senate is a statutory and supreme body that governs all academic matters of the Institute, and the rulings of Senate Chairperson (Vice-Chancellor) are final in regard to all academic issues. A definite time schedule is set by the Senate for various academic activities, through an Academic Calendar issued at the beginning of each academic year.

The Academic Senate continuously assesses the academic programmes and makes appropriate revisions/ modifications/ improvements as and when required through Board of Studies. The Director Academics is the Convener for the committee. Similarly, the performance and evaluation related issues of the Academics are monitored by the Academic Senate. Convener of the committee is designated from among Senate members.

1.2 Academic Calendar

The academic activities of the University are regulated by the Academic Calendar approved by the Academic Senate, and released at the beginning of each academic year. It is mandatory for students / faculty/ Principals' of affiliated, constituent Units, to strictly adhere to the academic calendar for completion of academic activities. The Academic Calendar can be noted in University website: www.jntuk.edu.in

2. Curriculum / Programme of Study

2.1 Curriculum

Every Department has a prescribed course structure which, is known as the Curriculum. It prescribes the courses, labs and other requirements for award of the degree and sets out the nominal sequence semester-wise. It also gives the syllabus and a list of textbooks, reference books and online material for each course. The Curriculum details are made available at the Institute website.

2.2 Semester

The University follows a credit-based semester system, comprising two regular semesters in each academic year. Autumn semester (Semester I / Odd Semester) generally commences in July/August, while the Spring semester (Semester II / Even Semester) commences in January. During the summer vacation (May–June), students may be engaged in industry internships, research internships, community-based

learning, or other approved experiential-learning activities, as prescribed in the respective programme regulations. The credits shall be allocated as per the regulations.

2.3 Course Credit Structure

In general, a certain quantum of academic work measured in terms of credits is laid down as the requirement for a particular degree. A student earns credits by satisfactorily clearing courses / other academic activities every semester. The credits associated with a course / other academic activity is dependent on the number of contact hours.

2.3.1 Theory and Laboratory Courses

Courses are broadly classified as Theory Courses and Laboratory Courses. Theory courses consist of lecture (L) and tutorial (T) hours, but may have attached practical / practice (P) hours in special cases. Laboratory courses consist of practical hours, but may have attached tutorial hours in special cases. Credit (C) for a course is obtained by multiplying the number of hours of instruction per week in that course, by one (1) for lecture and tutorial hours, and by ½ (0.5) for laboratory hours, i.e., C = L + T + 0.5*P. Two examples of credit calculation are shown below:

Theory Course					La oratory Course			
L	T	P	C		L	T	P	C
3	0	0	3		0	0	3	1.5

In the Courses of Study, if a theory course is shown as, say, CE304 Soil Mechanics II: 3 0 0 3, it means that CE304 is the course code, Soil Mechanics II is the course title and 3 0 0 3 corresponds to L T P C, i.e., Lectures, Tutorials, Practical and Credits, respectively. Other academic activities consist of a Seminar, Projects, which carry credits. Mandatory Non-credit Courses e.g., NSS/ NCC / Sports / Yoga, Indian constitution, Environmental Sciences, Research Methodology, other courses for societal relevance awareness / knowledge to implement their domain knowledge for further improvement of society in which the student gets the award of Satisfactory or Un-Satisfactory grades based on regulations provided.

3. Minimum Credit Requirements for the Award of Undergraduate Degree

A student shall be eligible for the award of the B.Tech. degree upon satisfying the following requirements:

1. The student shall complete the programme in not less than four academic years and not more than eight academic years from the date of admission.
2. The student shall register and successfully earn 164 credits prescribed for the B.Tech. Programme, and secures a CGPA of not less than 5.0.
3. Students, who fail to fulfil all the academic requirements for the award of the degree within eight academic years from the year of their admission, shall forfeit their admission in B.Tech. programme and their admission stands cancelled, automatically.

4. Opportunities for Additional Learning: MINOR, HONOURS

4.1 Award of B.Tech. Degree with Minor

Minor is an additional credential a student may earn if s/he does 18 credits worth of additional courses in a discipline other than her/his discipline of B.Tech. degree of his admission. All the affiliated / autonomous institutes of the University offer minors in their disciplines, and shall prescribe a specific set of courses and/or projects necessary for earning a minor in that discipline.

A student must pre-register for a minor course which is finally allotted on the basis of highest CGPA. S/he accumulates credits by registering for the required courses, and if the requirements for a particular minor are met within the prescribed time limit for the programme, the minor will be awarded. This will be mentioned in the Degree Certificate e.g., "*Bachelor of Technology in Civil Engineering with Minor in CSE*." This will also be reflected in the transcript, along with the list of courses studied.

Since the number of students to be admitted for each of the Minor programme is limited, one has to compete with the rest of the students to get admitted in Minor Programme. If 18 credits are not completed for Minor then Minor will not be awarded. The individual course credits earned, however, will be reflected in the separate grade sheet. For the award of the minor, all requirements towards the basic degree and the minor have to be completed within the stipulated period of the programme one registers for.

A student shall be eligible for the award of the B.Tech. degree with a Minor upon satisfying the following requirements:

1. May register before commencement of II-I Semester and classwork commences from II-I semester of the B.Tech degree.
2. Registration for the Minor programme shall be optional.
3. Successfully complete an additional 18 credits prescribed for the Minor programme, simultaneously with the B.Tech. programme.
4. Students may be permitted to continue Minor programme, even if there are backlog subjects either in regular B.Tech programme, (or) in Minor programme, after registration.
5. Students may opt for on-line courses (approved by the University) for minor programme.

For detailed guidelines, please see the standalone section enclosed.

4.2 Award of B.Tech. Degree with Honours

Honours is an additional credentials a student may earn if s/he opts for the extra 18 credits needed for this in her/his own discipline. The concerned department specifies the set of courses for earning Honours. Honours is not indicative of class. Students can accumulate credits by registering for Honours courses prescribed by the department in advanced areas / research oriented subjects.

On successful accumulation of 18 credits at the end of the programme, this will be mentioned in the Degree Certificate e.g., "*Bachelor of Technology in Mechanical Engineering with Honours or Bachelor of Technology in Mechanical Engineering with Honours in Thermal Engineering.*" This will also be reflected in the Grade sheet, along with the list of courses taken. For the award of the Honours to B.Tech., students, all requirements towards the basic degree and the Honours have to be completed within the stipulated period of the programme. A student shall be eligible for the award of the B.Tech. degree with Honours upon satisfying the following requirements:

1. May register before commencement of III-I Semester of the B.Tech degree and Class work commences from III-I semester only
2. Registration for the Honours programme shall be optional.
3. Successfully complete an additional 18 credits prescribed for the Honours programme, simultaneously with the B.Tech. programme.
4. Student having a CGPA of 7.50 till II year – I Semester, is eligible to register for Honours Programme.
5. Students may opt for on-line advanced / research oriented courses (if approved by the

University) for Honours' programme.

For detailed guidelines, please see the standalone section enclosed.

Note:

Students shall continue the Minor and / or Honours, even if the student has backlogs after registration of the Minor (or) Honours programme. However, student has to complete the courses in line with B.Tech programme, admitted.

No additional fee is to be collected for Minor and / or Honours programmes by the Institution.

4.3 More than one Minor / Honours for students

Students can opt for earning additional minor/s (i.e. Honour and a minor, OR if time table permits, two minors). Students should discuss this with their faculty mentors since completing more than one minor / Honours would involve significant overload.

5. Structure of the Undergraduate Programme

The total course structure for B.Tech. Degree Programme typically consists of the following components:

a) Basic Science Courses (BSC)
b) Humanities and Social Sciences including Management Courses (HSC)
c) Engineering Science Courses (ESC)
d) Professional Core Courses (PCC)
e) Professional Elective Courses (PEC)
f) Interdisciplinary Open Electives Courses (OEC)
g) Mandatory Non-Credit courses (MNC)
h) Project / Mini Project / Community Service Project / Industry internships **Note:**
i) Open Elective Courses can be in any of the following areas:

a. Basic Sciences
b. Engineering Science Courses
c. Humanities, Social Sciences and Management
d. Any approved course as approved by the University

ii) A student will not be permitted to register open elective course offered by the parent department.

The following table presents the distribution of credits by category wise. Table.1.

Allotment of courses in each category by AICTE and JNTUK

S. No	Category	AICTE	%	JNTUK	%
1	Humanities and Social Sciences including Management Courses	06	3-4%	06-09	3-6%
2	Basic Science Courses	24	14-15%	21-24	12-15%

3	Engineering Science courses including workshop, drawing, basics of electrical/mechanical/ computer etc.	20	12-13%	21-24	12-15%
4	Professional core courses	58	35-36%	57-60	34-37%
5	Professional Electives & Industry oriented courses	26	15-16%	24-27	15-16%
6	Multidisciplinary Open Electives Courses	12	7-8%	09-12	6-7%
7	Project work and internship in industry or appropriate workplace/ academic and research institutions in India/abroad	16	9-10%	16	10%
8.	Indian Knowledge System	02	1-2%	0	0%
9.	Non-credit Mandatory course (includes Indian Knowledge System)	0	0	0	0%
		164		164	

Broad classification of various subjects

Table: 2 Broad Classification of Subjects

S.No.	Classification	Course Category	Description
1.	Foundation Courses	Foundation courses	Includes Mathematics, Physics and Chemistry; humanities, social sciences and management courses
2.	Core Courses	Professional Core Courses (PCC)	Includes subjects related to the parent branch of Engineering
3.	Elective Courses	Professional Elective Courses (PEC)	Includes elective subjects related to the parent branch of Engineering
		Open Elective Courses (OEC)	Elective subjects which include interdisciplinary subjects or subjects in an area outside the parent branch of Engineering
		Industry oriented courses	Interdisciplinary / job-oriented / domain courses which are relevant to the industry
4.	Project and Internships	Project	Project / Industry oriented Full Semester Internship (VIII semester)
		Summer Internship	Summer Internships – Industry Internship / Mini Project / Community Service Project (between II year and III Year and also between III year and IV year)
5.	Mandatory Courses	Non-credit courses	Covering with society relevance, viz., Universal Human Values, Environmental Science, Constitution of India, Indian Knowledge System, Research Methodology & Intellectual Property Rights.

6. Programme Pattern

a. The B.Tech. (Regular) programme shall have duration of four academic years, having eight semesters (Two semesters for each academic year, Autumn and Spring semesters).

b. A mandatory three-week Student Induction Programme shall be conducted before the commencement of the first semester, as per AICTE guidelines mentioned in Table, covering physical activities, creative arts, Universal Human Values, literary and proficiency modules, expert lectures, local visits, departmental orientation, innovation, and related activities.
c. The curriculum provides enhanced flexibility through maximum of Professional Electives and Open and Industry oriented courses
d. Professional Electives enable specialization within the chosen discipline, while Open Electives promote interdisciplinary learning. Students shall avoid selecting electives with substantially overlapping course content.
e. Industry oriented Courses shall be offered, comprising multiple domain / interdisciplinary courses aligned with industry requirements and one course in Soft skills.
f. Students shall complete mandatory Community Service Project / internships / mini projects of at least six to eight weeks each at the end of the second and third years.
g. The final semester shall include a full-time industry internship / project work, in addition to open electives.
h. Students with a good academic record satisfying the University norms may pursue Minor or Honours programmes as per the regulations.
i. Institutions shall facilitate the use of Virtual Labs (https://www.vlab.co.in) to supplement laboratory learning through remote experimentation, as per the acceptance of the University authorities, for specialized subjects. However, all the laboratories must be available physically for Core laboratory courses in the Institution.
j. Each student shall be assigned a Faculty Advisor to provide guidance on course registration, MOOCS, academic progress, career planning, placements, higher studies, GATE, and other competitive examinations.

7. Role of The Faculty Advisor

The students are expected to consult the Faculty Advisor on any matter relating to their academic performance and the courses they may take in various semesters. The Faculty Advisor guides the students to complete their courses of study for the required degree. For effective utilization of the opportunities for additional academic accomplishments, the planning of an individual's academic journey needs careful consideration, and hence constant consultation with the Faculty Advisors are imperative. The Faculty Advisor is the person whom the parents/ guardians should contact for performance related issues of their wards.

The role of the Faculty Advisor is outlined below:

a) Guide the students about the rules and regulations governing the courses of study.
b) Advise the students to register for courses as per the curriculum and their academic standing. c) Approve the registration of the students.
d) Pay special attention to weak students and carefully monitor the performance of students recommended for the slow track option.
e) Advise students on Course Adjustment / Drop during the Semester within the stipulated time frame given in the Academic calendar.

f) Advise students seeking a semester drop about rules and regulations laid down for this purpose and recommend these cases to the college, for consideration g) Registration of MOOC courses etc.

8. Registration

Registration at the beginning of each semester, as per the prescribed dates announced in the Academic Calendar, is mandatory for every student till s/he completes her/ his programme. Students are not permitted to re-register for course/(s), which they have already passed. All students' registration has to be approved by Faculty Advisor / HoD / Vice-Principal. Some courses may also require instructor consent.

If the student does not register for maximum of three semesters continuously without the consent of the institution, then the student admission, gets cancelled.

8.1 Semester-Wise registration

The student can register for courses s/he intends to take during a given semester on the basis of the programme for each discipline as given in the Curriculum and as per the advice given by the respective Faculty Advisor. The Faculty Advisor is expected to discuss with the student his/her academic performance during the previous semester and then decide the number and nature of the courses for which s/he can register during the semester within the framework of the guidelines as approved by the Senate. The Faculty Advisor may advise the student to drop one or more courses/ activities based on his/her academic performance in MOOCs.

8.2 Procedure for Registrations

Every college has to maintain a system for online registration and the registration is normally done on the first two days of each semester. The registration schedule is announced in the Academic Calendar. In all circumstances, registration must be completed on or before the prescribed last date for registration.

8.2.1 Late Registration

Only for valid reasons, late registration may be permitted till the date specified in the Academic Calendar, on payment of a late registration fee.

8.2.2 Registration for the first two semesters

In each of the first two semesters, courses common to all branches are generally offered. A student is normally required to register for all the courses listed in the curriculum for these two semesters.

8.2.3 Registration for third and subsequent semesters

The prescribed credits per semester are given in the course structure of the respective programme. From the third semester onwards, registration is dependent on the academic standing of the student. A student may register for additional courses over and above the prescribed credits in the course structure with the approval of Faculty Advisor.

8.3 Registration for Open Elective Courses:

Open Elective course can be any credit course across the Institute provided that:

a) It should not be from the Academic discipline in which the student is admitted.

b) It should not be 'Core' or 'Professional Elective' course in the curriculum on the programme in which the student is registered.

An Open Elective course should be registered in consultation of Faculty Advisor.

8.4 Registration for Mandatory Non-credit Courses

Non-credit requirements are assessed as Satisfactory / Un-Satisfactory subject to the fulfilment of the minimum requirements of these activities and a minimum attendance. These courses are mandatory requirement for the award of degree. Students are expected to complete these requirements as per the schedule.

8.5 Registration for Additional Courses (Minor, Honours etc.)

Any student may register for minor or Honours courses subject to satisfying the pre-requisites for the respective courses. The number of students permitted for Minor courses is to be specified before the registration date by the department, and the allocation is done on the basis of CGPA. Students are permitted to register for Minor courses only during the pre- registration period.

8.6 Registration for Projects

Registration for B.Tech. Projects: Registration for B.Tech. Projects as specified in the curriculum, is similar to that for any other course. The details of allotment of topics, faculty supervisors etc. are specified by the concerned department before the commencement of the semester.

8.7 Minimum Number of Students Required to run a Particular Course

A minimum of 25% students should be registered in a course to be run as an Elective course. If less than 25% students are registered, Head of the department / Faculty Advisor may advise the students to choose other courses offered or MOOCs courses as approved by the University.

9. Continuous Internal Evaluation (CIE) and Semester End Examination (SEE)

Evaluation process

The performance of a student in each semester shall be evaluated course wise with a maximum of 100 marks for each theory / practical course. Summer Internships / mini projects shall be evaluated for 100 marks, Full Internship & Project work in final semester shall be evaluated for 200 marks. However, mandatory courses with no credits shall be evaluated for 100 marks with Continuous internal evaluation only.

A student has to secure not less than 35% of marks in the end semester examination and minimum 40% of marks in the sum total of internal and end semester examination marks to earn the credits allotted to each course.

Malpractices cases during examination process, will be governed by University examination section, as decided by the committee of experts. The details are presented in Annexure also. The autonomous institutions are advised to follow the same norms prescribed by the University with necessary approval from their Academic council.

Distribution of Marks for CIE and SEE:

Table 3. Maximum marks for CIE and SEE

Assessment Method	Theory courses (Marks)	Lab courses (Marks)
Continuous Internal Assessment (CIE)	40	50
Semester End Examination (SEE)	60	50

Total	**100**	**100**

i. For theory courses, the evaluation shall consist of 40 marks for Continuous Internal Evaluation (CIE) and 60 marks for the Semester-End Examination (SEE), as prescribed in the curriculum.
ii. Practical / Laboratory courses, the evaluation shall consist of 50 marks for CIE and 50 marks for the Semester End Examination (PEE). The evaluation process should be designed to ensure that every student performs and completes all the laboratory experiments/exercises prescribed in the curriculum.
iii. For courses involving two disciplines/branches, the syllabus shall be divided into Part-A and Part-B, each comprising three units. Continuous Internal Assessment shall be 20 marks for each discipline, totalling 40 marks for both discipline. The Semester-End Examination question paper shall also be divided into two parts carrying 30 marks each, as applicable.

Continuous Internal Evaluation (CIE)

i. For theory courses, the CIE will be as follows:
   a. Five quiz tests (one for each unit) (comprising of 10 / 05 short answer questions of one / two marks each respectively) / assignments / presentation / case studies / mini project are to be conducted totalling 50 marks.
   b. Two mid-semester examinations (subjective) shall be conducted during the semester. First Mid based on first 50% of the syllabus, second mid based on remaining 50% of the syllabus. Each mid examination consists of five descriptive / subjective questions carrying 5 marks each totalling 25 marks. The duration of the mid semester examination is 90 minutes. Total of two mid examinations is 50 marks.
   c. The total marks obtained in (a) and (b) are scaled down to 40%.

Note:

 If a student is absent for a mid-semester examination, no re-examination shall be conducted, and zero marks shall be awarded for that mid-semester examination.

Semester End Examination (SEE)

The semester end examinations will be for 60 marks consist of Part-A and Part-B.

Part-A contains FIVE / TEN small questions covering entire syllabus for 10 Marks. Part-B contains FIVE questions carrying 10 marks each. Each of these questions is from one unit and may contain sub-questions. For each question there will be an "either" "or" choice, which means that there will be two questions from each unit and the student shall answer either of the two questions. The duration of the examination is 180 minutes. **Practical Courses / Engineering drawing / Design classes**

a) Continuous Internal Evaluation is considered for Practical courses as follows

b) For practical courses, there shall be a continuous evaluation during the semester for 50 sessional marks and end semester examination shall be for 50 marks.

Internal Evaluation (Laboratory / Engineering Drawing/ Design Classes)

(i) For each experiment: 10 marks (Lab work, Design, Procedure, Viva-voce & record) Evaluated for best 10 experiments out of total experiments totalling to 100 marks.

Total marks are scaled down to 50 marks.

Semester End Examination Evaluation

(Laboratory / Engineering Drawing / Design classes)

The Semester End Examination shall be evaluated for 50 marks.

The semester end examination evaluation pattern to be followed by the examiners should be as Follows: a) Procedure: 15 marks, b) Experimental work & Results: 25 marks, c) Viva voce: 10 marks.

c) There shall be **no external examination for mandatory courses** with zero credits. However, attendance shall be considered while calculating aggregate attendance and student shall be declared to have passed the mandatory course only when he/she secures 40% or more in the internal examinations. In case, the student fails, the re-examination shall be conducted for failed candidates, within the permissible duration of the programme.

The laboratory records and mid semester test papers shall be preserved for a minimum of 3 years in the respective institutions as per the University norms and shall be produced to the Committees of the University as and when the same are asked for (To be shifted to Guidelines for Affiliated and Autonomous Colleges).

10. Professional Elective Courses (PEC):

i) Professional Elective Courses include industry oriented and skill enhanced courses

ii) Students may opt to complete either the PEC offered by the college or an equivalent certificate course offered by NPTEL / SWAYAM Plus, industries, professional bodies, or other accredited agencies, as permitted by the University.

iii) The list of approved external certificate courses and the corresponding credit/grade conversion methodology shall be approved by the University before the commencement of the semester.

iv) Students enrolled in an approved external certificate course shall be exempted from attending the corresponding PEC and OEC. Attendance for mandatory requirements shall be computed excluding that course, subject to submission of a valid completion certificate which shall be verified by the University authorities through concerned platform

v) Internal and/or external marks awarded through approved external agencies shall be scaled, wherever necessary, in accordance with University regulations. Credits shall be awarded only if the student secures the prescribed minimum qualifying marks after scaling.

vi) The certification of the approved online course completed by the student shall be verified by the university through concerned online platform.

11. Open Elective Courses

National Education Policy 2020 advises to improve the overall personality of the students joining in Higher Education. Thereby, in addition to regular 3 credit courses, it is considered to include '1 or 2' credit courses to encourage the hobbies and leadership qualities. These credits for these courses shall be obtained through SWAYAM / University approved on-line platforms or off-line courses within the University / Institute. The courses suggested are as follows.

- Music Leadership
- Musical Instruments Office Automation
- Vocal (Classical) Web Designing & Development
- Photography Graphic Design and Animation
- Painting and Drawing CAD and Multimedia
- Digital Marketing Financial Markets
- Any other courses as recommended by University / approved by University from time to time

Courses of 4 / 8 / 12 weeks (or min of 30 / 60 hrs of duration) offered by NPTEL / SWAYAM/ SWAYAM+/ Course Era / edX or any other University approved platforms shall be considered.

The students shall opt Open Elective courses offered by the other departments only.

Note:

The student may obtain the required credits in advance i.e., before semester starts, and such credits shall be transferred in the semester, in which Open Elective is in course structure.

Student is having the option to complete '1' and '2' credit courses separately (or) s/he may complete '3' credit course in place of '1' and '2' credit courses, but with approval of University.

12. Massive Open Online Courses (MOOCs):

i. Every student shall successfully complete at least one University-approved MOOC for the award of the degree. MOOCs shall normally be permitted for Professional Electives, Open Electives, and Industry-Oriented Courses. Core courses shall not be offered through MOOCs unless specifically permitted by the University in accordance with prevailing UGC/AICTE regulations.

ii. Students shall register for University-approved MOOCs of 4, 8, or 12 weeks' duration, or as prescribed by the offering agency, with prior approval of the concerned department. A Faculty Advisor nominated by the Head of the Department shall guide and monitor the student's progress.

iii. Credits shall be awarded only upon successful completion of the MOOC, submission/verification of the valid course completion certificate, and fulfilment of the University's credit-transfer requirements. Applicable registration, certification, or examination fees shall be borne by the student.

iv. Students who successfully complete the proctored examination conducted by an approved MOOC provider shall be eligible for credit transfer in accordance with the University's Credit Transfer Policy. Upon approval, the transferred credits shall be accounted for towards the corresponding programme requirements.

v. Students may register for approved MOOCs up to one academic year in advance, subject to departmental approval. Since MOOCs involve continuous learning, assignments, quizzes, and examinations, they shall not be treated as supplementary courses/examinations. The credits shall be considered for the award of the degree only if all requirements are fulfilled on or before the completion of IV B.Tech. II Semester.

vi. Marks/grades awarded by the approved MOOC provider shall be converted / scaled, wherever necessary, as per the University's equivalence and credit-transfer norms. Credits shall be awarded only when the prescribed minimum qualifying grade/marks are secured.

vii. Students shall preferably register for MOOCs assessed through proctored examinations, particularly those offered through SWAYAM/NPTEL or other University-approved platforms. viii. For MOOCs registered in the VIII Semester, the University may conduct the examination, wherever required, to facilitate timely declaration of results. Students may be permitted to appear either in the University-conducted examination or the approved proctored examination of the online platform, subject to University norms.

ix. If a student fails the proctored examination of a MOOC registered in an earlier semester for an approved elective, the University may conduct a supplementary examination, subject to the availability and equivalence of the course syllabus.

x. Course completion certificates issued through SWAYAM, SWAYAM Plus, NPTEL, or other approved platforms shall be verified through the respective online platform, wherever feasible, before credit transfer.

xi. The credits transferable for approved MOOCs shall normally be as follows:

Duration of MOOC	Equivalent Credits
4 weeks or equivalent	1 Credit
8 weeks or equivalent	2 Credits
12 weeks or equivalent	3 Credits

Note: The equivalence of a MOOC course with the corresponding University course and the number of credits to be transferred shall be determined by the competent academic authority of the University.

xii. In accordance with applicable UGC/AICTE guidelines, the University may provide appropriate opportunities, including supplementary examinations wherever prescribed, to enable students who are unsuccessful in completing a mandatory MOOC to fulfil the required academic credits.

xiii. The University reserves the right to amend, modify, or update these guidelines from time to time in accordance with the regulations/guidelines issued by UGC, AICTE, SWAYAM, NPTEL, or any other competent statutory authority. The equivalence of courses (Courses vs.

Credits) shall be decided by the University authorities.

13. Credit Transfer Policy

In accordance with NEP 2020 and applicable UGC/AICTE regulations, the University shall facilitate credit transfer for approved MOOCs and other recognized online learning platforms to promote flexible and blended learning.

- In accordance with NEP 2020 and applicable UGC/AICTE regulations, credits earned through University-approved MOOCs may be transferred towards Professional Electives, Open Electives, Micro-Credentials, and Industry-Oriented Courses; only through proctored examination.
- Professional Core, Basic Sciences, Humanities and Social Sciences, and Engineering Sciences courses shall ordinarily be completed through offline/on-campus instruction, unless otherwise approved by the University.
- Credit transfer shall be permitted only for courses offered through SWAYAM, NPTEL, SWAYAM Plus, or other University-approved platforms, subject to course equivalence, successful completion, and prescribed assessment requirements.
- Verified Course Completion/Proctored Examination Certificates and other prescribed documents shall be submitted to the University Examination Branch for credit transfer. ○ The course equivalence, credit equivalence, grading, and maximum transferable credits shall be determined by the competent academic authority in accordance with University Regulations and applicable UGC/AICTE guidelines.
- The concerned institution shall submit the following documents to the University Examination Branch:
  - List of students eligible for credit transfer, duly recommended by the concerned authority
  - Course Completion Certificates issued by the authorized MOOC provider Student undertaking forms and any other documents prescribed by the University.

14. Academic Bank of Credits (ABC)

The University implements the Academic Bank of Credits (ABC) in accordance with NEP 2020 and applicable UGC regulations to promote curriculum flexibility, academic mobility, and multiple entries and exit opportunities.

The ABC framework facilitates:

- Accumulation, transfer, and redemption of academic credits earned by students across recognized Higher Education Institutions (HEIs), subject to University norms.
- Earning credits through approved MOOCs and other recognized digital learning platforms.
- Multiple Exit and Entry through the accumulation and transfer of credits in the student's ABC account, as per applicable regulations.
- Students who have completed approved courses at JNTUK and subsequently continue their UG programme at another recognized institution may transfer such credits, subject to the norms of the receiving institution and applicable University regulations.

- Students seeking admission to JNTUK with credits earned from Centrally Funded Technical Institutions (CFTIs), other recognized HEIs, or institutions specifically approved by the University may have such credits considered for transfer, subject to credit equivalence, academic requirements, and University norms.
- The award of certificates, diplomas, degrees, or other academic credentials shall be based on the prescribed credit requirements and applicable University regulations.

All credit transfer, equivalence, acceptance, and redemption shall be governed by the University Regulations and applicable UGC/AICTE guidelines in force from time to time.

15. Mandatory Internships

Summer Internships: Students shall complete two mandatory summer internships, each of minimum six / eight week duration, at the end of the second and third years through onsite or virtual mode.

i. The Second-year & Third-Year Internship shall be an Industry Internship undertaken in collaboration with industries, Government organizations, Public Sector Undertakings (PSUs), construction agencies, power projects, software companies, research and development organizations, or any other recognized organization relevant to the student's programme of study or specialization. Where an industry internship is not possible, the student may undertake a Mini Project of equivalent academic rigor, subject to the approval of the concerned department.

ii. Students shall register for internships as per the curriculum and follow the guidelines issued by the University for execution and evaluation.

iii. Summer Internship evaluation shall be conducted by a Departmental Committee based on the internship report and oral presentation. The report and presentation shall carry 50% weightage each and shall be evaluated for 100 external marks. No internal marks shall be awarded. A certificate of successful completion from the host organization shall be enclosed with the report. A minimum of 40% marks is required for successful completion. Failed students shall repeat the internship as per University regulations.

Internship / Project Work

i. In the final semester, students shall undergo a full-semester onsite internship / a project with clearly defined objectives.

ii. Students shall submit an internship completion certificate / project report at the end of the semester. The project report may also be based on the work carried out during the internship.

iii. The project work shall carry 200 marks, comprising:

Internal Evaluation: 120 marks

External Evaluation:

80 marks iv. Internal

evaluation shall include:

Supervisor evaluation: 60 marks (Report: 30 marks, Seminar: 30 marks)
Departmental Project Review Committee evaluation: 60 marks (comprising the Supervisor, Senior Faculty Member, and Head of the Department)

v. All projects shall be showcased at the department level for review and knowledge sharing. External evaluation shall be conducted through a Viva-Voce Examination by an external examiner appointed by the University in the presence of the internal examiner. vi. The institution shall facilitate, monitor, and ensure completion of all internship activities. Successful completion of internships is mandatory for the award of the degree. Students failing to complete the internship shall repeat and complete the same as per University guidelines.

vii. Plagiarism content is permitted up to a maximum of 50% using approved plagiarism software excluding their own contribution in research papers published in SCI / Scopus / approved journals of the University.

viii. Patents awarded shall be considered as Project work.

16. Attendance Requirements:

i. A student shall be eligible to appear for the University external examinations if he/she acquires a minimum of 40% attendance in each subject and 75% of attendance in aggregate of all the subjects. Condonation of shortage of attendance in aggregate up to 10% (65% and above and below 75%) in each semester may be granted by the College Academic Committee.

ii. Shortage of Attendance below 65% in no case be condoned. Students who are admitted as in-patients for treatment are only eligible to claim condonation of attendance. Such students under medical exigencies need to Produce (a) Doctor Medical Prescription, (b) Medical bills duly signed by Doctor/Hospital authorities, (c) Diagnosis reports, if any, (d) Discharge summary issued at the time of discharge and any other supporting documents within two week(s) from the date of discharge to the respective institution.

iii. University at any point of time can inform the institution(s) to submit such list/proofs. Hence, respective institution shall verify and accord condonation privilege scrupulously. Students participation in Sports/Games and NSS activities shall also be permitted for condonation of attendance. In such cases, they need to produce (a) invitation letter from the organising institute/agency, (ii) participation certificate and any supporting documents within two week(s) from the date of participation to the respective institution

iv. Shortage of Attendance below 65% in aggregate shall in NO CASE be condoned.

v. A stipulated fee of INR 5,000/- per semester shall be payable towards condonation of shortage of attendance to the University.

vi. A student can avail condonation of attendance for a maximum of 3 times during the study period.

vii. Students whose shortage of attendance is not condoned in any semester are not eligible to take their end examination of that class.

viii. A student will not be promoted to the next semester unless he satisfies the attendance requirements of the present semester. They may seek readmission for that semester in the subsequent academic year.

ix. If any candidate fulfils the attendance requirement in the present semester, he shall not be eligible for readmission into the same class.

x. For induction programme attendance shall be maintained as per AICTE norms.

17. Promotion Rules:

The following academic requirements must be satisfied in addition to the attendance requirements:

i. A student shall be promoted from first year to second year if he/she fulfils the minimum attendance requirement as per university norms.

ii. A student will be promoted from II year to III year if he/she fulfils the academic requirement of securing 40% of the credits (any decimal fraction should be rounded off to lower digit) up to in the subjects that have been studied up to II Year I Semester (III semester).

iii. A student shall be promoted from III year to IV year if he/she fulfils the academic requirements of securing 40% of the credits (any decimal fraction should be rounded off to lower digit) in the subjects that have been studied up to III Year I Semester (V semester).

iv. And in case a student is detained for want of credits for a particular academic year by ii) & iii) above, the student may make up the credits through supplementary examinations and only after securing the required credits he/she shall be permitted to join in the III year I Semester (V semester) or IV Year I Semester (VII semester) respectively as the case may be.

v. When a student is detained due to lack of credits/shortage of attendance he/she may be re-admitted when the semester is offered after fulfilment of academic regulations. In such case, he/she shall be in the academic regulations into which he/she is readmitted.

18. Grading:

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: After each course is evaluated for 100 marks, the marks obtained in each course will be converted to a corresponding letter grade as given below, depending on the range in which the marks obtained by the student fall.

Table: 4 Structure of Grading of Academic Performance

Range in which the marks in the subject fall	Grade	Grade points Assigned
≥ 90	S (Outstanding)	10
≥ 80 to < 90	A (Excellent)	9

≥ 70 to < 80	B (Very Good)	8
≥ 60 to < 70	C (Good)	7
≥ 50 to < 60	D (Average)	6
≥ 40 to < 50	E (Satisfactory)	5
< 40	U (Unsatisfactory)	3
Absent	Ab (Absent)	0

i) A student, who does not clear the end semester examination shall be awarded "U" grade. A student obtaining Grade 'U' or Grade 'Ab' in a subject shall be considered failed and will be required to reappear for that subject when it is offered as supplementary examination.

ii) Grade U: When a student gets the U grade (transitory grade) in any course during a semester, the SGPA and the CGPA from that semester onwards will be tentatively calculated, taking 'three points' for each 'U' grade, consistent with the grade points shown in the structure of the grading table above. After the 'U' grade has to be substituted by better grades during a subsequent supplementary examination, the SGPA and CGPA of all the semesters starting from the earliest semester in which the 'U' grade has to be up dated, will be recomputed and recorded to take this change of grade into account. This grade can't be considered for promotion purpose.

iii) Grade Ab: The student gets zero grade points, if he is absent for the examination. If he attends subsequent supplementary examinations, the grade points shall be changed according to his performance.

iv) For non-credit audit courses, "Satisfactory" or "Unsatisfactory" shall be indicated instead of the letter grade and this will not be counted for the computation of SGPA/CGPA.

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

The Semester Grade Point Average (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.,

$$SGPA = \sum C_i G_i / \sum C_i$$

Where, Ci is the number of credits of the ith subject and Gi is the grade points scored by the student in the ith course. The calculation of SGPA shall be up to a maximum of three decimal points. However, if the 4th decimal point is more than or equal to '5' then SGPA should be rounded of in third decimal point.

The Cumulative Grade Point Average (CGPA) will be computed in the same manner considering all the courses undergone by a student overall the semesters of a program, i.e.,

$$CGPA = \sum C_i \times S_i \; / \sum C_i$$

Where, "Si" is the SGPA of the ith semester and Ci is the total number of credits up to that semester.

The calculation of CGPA shall be up to a maximum of three decimal points. However, if the 4th decimal point is more than or equal to '5' then SGPA should be rounded of in third decimal point.

Grade Point: It is a numerical weight allotted to each letter grade on a 10-point scale. Letter **Grade**: It is an index of the performance of students in a said course. Grades are denoted by the letters S, A, B, C, D, E and U.

Award of Class:

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

Table: 5 Award of Class for different CGPA

Class Awarded	CGPA Secured
First Class with Distinction *(without backlog history)#*	≥ 8.0#
First Class	≥ 6.5 to <8.0
Second Class	≥ 5.5 to < 6.5
Pass Class	≥ 5.0 to < 5.5

CGPA to Percentage Conversion Formula: (CGPA – 0.5) x 10

 # (If the student is having backlog history due to any reasons, even if he/she get CGPA ≥8.0, such students will be awarded First class only)

19. Withholding of Results

If the candidate has any dues not paid to the university or if any case of indiscipline or malpractice is pending against him/her, the result of the candidate shall be withheld in such cases. If any affiliated / constituent institution is involved in indiscipline activity, such institution results shall be withheld. The University shall resolve such problems,

only after recommendations of the constituted committee within the framework of rules and regulations of the University.

20. Multiple Exit and Entry

Option (a) Exit Policy:

The students can choose to exit the four-year programme at the end of first/second/third year.

i) **Certificate in (Field of study / discipline)** - Programme duration: First year (first two semesters) of the undergraduate programme, credits of first year, followed by an additional credits of at least 6-credit job-specific internship/ apprenticeship that would help the candidates acquire job-ready competencies required to enter the workforce. However, it should be approved by University authorities.

ii) **Diploma (in Field of study/discipline)** - Programme duration: First two years (first four semesters) of the undergraduate programme, credits of first and second years, followed by an additional credits of at least 6-credit job-specific internship/ apprenticeship that would help the candidates acquire job-ready competencies required to enter the workforce. However, it is to be approved by University authorities.

iii) **Bachelor of Science (in Field of study/discipline)** i.e., **B.Sc. Engineering in (Field of study/discipline)**- Programme duration: First three years (first six semesters) of the undergraduate programme, i.e., credits obtained in six semesters. Guidelines for 6 credit job specific internship are to be included here.

(b) Entry Policy:

- Entry policy shall be presented only for the students admitted in 2026-27 (207-28 for lateral entry students). Students who are re-admitted in a particular year, either in 2nd, 3rd, and 4th years have to follow the regulations of the year of readmission.
- The credits obtained so far will be considered as per the Academic Bank of Credit policy, and the rest of the credits should be obtained as per the regulations prevailing to continue the degree. In subsequent years, the subjects which were studied should not be repeated.
- University is final authority to provide the guidelines at the time of re-entry. Such an entry policy shall be limited to maximum of two times.

Note: The Universities shall resolve any issues that may arise in the implementation of Multiple Exit and Entry policies from time to time and shall review the policies in the light of periodic changes brought by UGC, AICTE and State government.

21. Gap Year Concept:

- The Gap Year concept for Student Entrepreneurs-in-Residence is introduced to encourage entrepreneurship among students. Outstanding students interested in pursuing entrepreneurship or establishing start-ups may be permitted to take a break of one year at any time after completion of the second year to undertake full-time entrepreneurial activities.

- The gap period may be extended up to a maximum of two years and shall also be counted towards the maximum duration permitted for the completion of the degree.
- Students seeking a gap year shall submit a proposal through the Principal of the respective college to the University. An Evaluation Committee constituted by the University shall review the proposal and decide the eligibility and approval for availing the Gap Year facility.

22. Transitory Regulations

- Discontinued, detained, or failed students shall be eligible for readmission into the appropriate semester when it is offered, as per the regulations at the time of re-joining / re-admission.

- Students detained due to shortage of attendance, non-fulfilment of academic requirements, or those who have failed after pursuing courses under earlier regulations, and students who discontinued their studies and wish to resume, shall be permitted to join the unfinished semester from the date of commencement of class work with the same or equivalent courses, as prescribed by the University.
- Students permitted to avail the Gap Year facility shall be eligible to re-join the succeeding year of the B.Tech. programme from the date of commencement of class work, subject to University regulations.

23. Minimum Instruction period for a Semester:

The minimum instruction period for each semester shall be for 16 weeks (excluding mid and end examination). However, the quiz and assignments shall be conducted in zeroth hour.

24. Medium of Instruction:

The medium of instruction is English / Telugu or any other language as approved by the University authorities or as prescribed by APSCHE and AICTE.

25. Transfer policy of the students:

Student transfers shall be as per the guidelines issued by the Government of Andhra Pradesh and the Universities from time to time.

26. Additional Credits

- If the student is completing additional credits, i.e., more than 164 credits, the University gives another certificate for the additional credits obtained as per the University norms.
- If the student register for B.Tech (Minor) or B.Tech (Hons) programme, but not able to obtain all the credits required as per the University norms, then the certificate may be given to the additional credits obtained as per the University norms.
- If the student is involved in industry sponsored projects, research projects, software development services, or in any other academic contributions, then the

student may please be rewarded accordingly, from the internal resources, if possible. Such projects may be considered as equivalent to summer internships subject to the approval of institution.

- If the student obtains the credit/s through SWAYAM / NPTEL /SWAYAM (as prescribed by UGC /AICTE / or any other Government organization / University), more than the required credits through proctored examination / any other examination process acceptable to University, then the University may please transfer such credits to the University, if BoS approves such courses. If these credits are more than the required credits, then an additional certificate is given.
- The credits of the courses of B.Tech (Minor) & B.Tech (Hons) should be obtained in the duration of B.Tech programme only. No extension of duration shall be given.
- In the Multiple Exit and Multiple entry, if the student exists in either of the four years, the credits will be considered in Academic Bank of Credits. If the student re-joins with new regulations to obtain the credits required for the award of Degree in new regulations, any additional credits obtained by the students should be considered for the award of certificate accordingly.

27. Provisions for Differently abled Students:

Students with differently disabled in different categories should be given additional provisions in order to encourage them on par with other students, as per the AICTE / UGC Guidelines. ❖ **Different Categories with Persons with Benchmark Disabilities (PwBD)**

1. PwBD-1 : Blindness and low vision
2. PwBD-2 : Deaf and hard of hearing
3. PwBD-3 : Locomotor Disability (including cerebral palsy, muscular dystrophy, dwarfism, acid attack victims)
4. PwBD-4 : Austism, intellectual disabilities, mental illness, or specific learning Disabilities
5. PwBD-5 : Multiple disabilities from the above categories

- In addition to the regular class work, these students may be given an opportunity to attend the extra classes, as per their requirements
- Infrastructure facilities, viz., classrooms, restrooms, hostels, dining rooms, waiting rooms, transport within the campus, have to be provided as per the requirements.
- Scribe is to be provided in both Internal examination and External examination, if the percentage of disability is more than or equal to 40%
- Scribe should be from Intermediate (10+2) Arts students
- Separate room for attending the examination is to be provided
- No relaxation shall be given for the internal and external examination pass marks
- Extra time by another 20 minutes, for every one hour examination is to be provided, prorata basis, who are allowed to use scribe / reader / lab assistant.

- All the candidates with benchmark disability not availing of scribe may be allowed additional time of minimum of one hour for the examination of 3 hours duration.
- PwBD students must inform the University / institution in advance regarding their need for compensatory time.
- A certificate from the competent Government medical doctor, is to be submitted to the University / Institution, as and when required to the concerned authorities
- Any other facilities shall be given as per the rules and regulations of Government of Andhra Pradesh issued GO.

The above rules are applicable for both internal and external theory and laboratory examinations.

28. Special Leave

- ❖ "Special leave" includes students' participating in Academic activities / extra-curricular activities approved by the University / Institute. The head of the academic unit shall be the approving authority on the recommendation of the faculty mentor / faculty incharge of the respective activity in which the student is participating.
- ❖ Special leave up to 5 working days (at a stretch or part) may be sanctioned by the head of

  Academic unit excluding mid / end semester examination in accordance with academic calendar. Compensation of any missed lab, quiz is to be provided by the respective faculty member.

29. Planned break from studies

- ❖ The student is allowed for maximum two semester break during his / her duration in continuation. This planned break can be for variety of reasons (ill-health, financial constraints, ill-health of parents, or other genuine reasons as approved by the Institute / University). The student has to apply for one or two semesters break with a course completion plan in consultation with competent authority.
- ❖ A declaration must be submitted by the student with regard to consent / information of the parents as follows
  - (i) I have informed my parents and have their consent for semester (s) break
  - (ii) I have informed my parents and do not have their consent for semester(s) break
  - (iii) I have not informed my parents for semester break
- ❖ The student should apply for semester break from his / her fourth semester onwards. The break will be allowed / approved after second year. Such approval can be availed by the student before fee payment (if any) and registration for a semester. Once the classes have started, the students will not be eligible to apply for a break for that semester.
- ❖ Approval chain of such semester break-Head of the Department – Principal – Registrar – Concerned Director of University – Vice-Chancellor
- ❖ The student would not be eligible for hostel / medical facilities during approved planned break.

- ❖ Any reimbursement of fee from Government shall be stopped during the break period. Once, when he restores to his / her programme, the reimbursement of fee shall be decided by the Government authorities
- ❖ In case of approved break, the period of break will be counted for the prescribed duration of the programme. Hence, the student will be eligible for the award of minor / Honours, if credits requirements are completed in the prescribed duration of the programme excluding approved break.
- ❖ A letter will be issued to parents in case of approved break, on the address available in the records of the students.
- ❖ However, the maximum duration of completing the B.Tech degree is limited to 8 years.

30. General Instructions:

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

ii. Malpractices and Punishments are governed by the University Examination Section, as approved by the University. (The details are appended in Annexure)

iii. Where the words "he", "him", "his", occur in the regulations, they also to be replaced as *he/she/him/her/his/hers* respectively.

iv. In the case of any doubt or ambiguity in the interpretation of the above rules, the decision of the University is final. University is authorized to take any decisions in terms of regulations / rules, if they are not appropriately mentioned in this document.

v. The Universities may change or amend the academic regulations or syllabi at any time and the changes or amendments shall be made applicable to all the students on rolls with effect from the dates notified by the University.

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ACADEMIC REGULATIONS (R26) FOR B.TECH. (LATERAL ENTRY SCHEME)

(Effective for the students admitted into II year through Lateral Entry Scheme from the Academic Year

***2027-28** and onwards)*

1. Award of the Degree

(a) Award of the B.Tech. Degree if he/she fulfils the following [credit and duration figures below are as per the lateral entry scheme: the underlying eligibility rule is otherwise the same as Section 1(a) of the main B. Tech Academic regulations]

(i) Pursues a course of study for not less than three academic years and not more than six academic years.

(ii) Registers for 122 credits and secures all 122 credits.

(b) **Award of B.Tech. degree with Minors** if he/she fulfils the following:

(i) Student secures additional 18 credits fulfilling all the requisites of a B.Tech. program i.e., 122 credits.

(ii) Registering for Minors is optional.

(iii) Minors is to be completed simultaneously with B.Tech. programme.

(iv) All other guidelines are same as regular students of B.Tech programme

(c) **Award of B.Tech. degree with Honours** if he/she fulfils the following:

(i) Student secures additional 18 credits fulfilling all the requisites of a B.Tech. program i.e., 122 credits.

(ii) Registering for Honours is optional.

(iii) Honours is to be completed simultaneously with B.Tech. programme.

(iv) All other guidelines are same as regular students of B.Tech programme

2. Students, who fail to fulfil the requirement for the award of the degree within six consecutive academic years from the year of admission, shall forfeit their seat.

3. Minimum Academic Requirements

The following academic requirements have to be satisfied in addition to the requirements mentioned in item no.2

[This promotion rule corresponds to the main academic regulations – the single promotion check point applicable to lateral entry students, who joined directly in II year]

i. The students of lateral entry shall have the attendance requirements to be satisfied for the promotion from II year to III year. However, the lateral entry student shall be promoted from III year to IV year, only if the student satisfies 40% of the credits till III year – I semester (V semester).

And in case if student is already detained for want of credits for particular academic year, the student may make up the credits through supplementary exams of the above exams before the commencement of IV year I semester class work of next year.

4. Course Pattern

i) The entire course of study is three academic years on semester pattern. ii) A student eligible to appear for the end examination in a subject but absent at it or has failed in the end examination may appear for that subject at the next supplementary examination offered.

iii) When a student is detained due to lack of credits/shortage of attendance the student may be re-admitted when the semester is offered after fulfilment of academic regulations, the student shall be in the academic regulations into which he/she is readmitted.

5. All other regulations as applicable for B. Tech. Four-year degree course (Regular) will continue for B. Tech. (Lateral Entry Scheme).

Guidelines Minor Programme

(Applicable from the Academic Year 2026-27(R26))

1. Objectives

The objectives of introducing the Minor programme are to:

a) Provide interdisciplinary / multidisciplinary learning opportunities to undergraduate students.

b) Enhance employability by developing additional domain expertise.

c) Enable students to acquire professional skills beyond their major discipline.

d) Facilitate specialisation in emerging engineering domains.

2. Eligibility and Applicability

- B.Tech. students (Regular and Lateral Entry) may register for a Minor programme from the II Year I Semester **(III semester) onwards** in any approved discipline other than their parent branch.
- Students shall not be permitted to pursue a Minor offered by the same discipline.
- Students who have completed the B.Tech. degree, and discontinued the programme, shall not be eligible to register/continue the Minor programme.
- Award of Minor is conditional upon successful completion of the regular B.Tech.

  programme. Minor shall not be awarded independently.

3. Minor Programme Structure and Credit Requirements

- A student shall earn **18 additional credits** from the selected Minor discipline for the award of Minor.
- The required credits shall be completed through:
  - (i) Six theory courses of 3 credits each; **or**
  - (ii) Five theory courses of 3 credits each and two laboratory courses of 1.5 credits each; or
  - (iii) Four theory courses of 3 credits each and four laboratory courses of 1.5 credits each
- Minor courses may be completed through:
  - (i) Offline courses offered by the institution; or
  - (ii) Approved online learning platforms such as NPTEL, SWAYAM, SWAYAM Plus, or other University-approved platforms.
- Students may select theory and/or laboratory courses from the approved Minor curriculum.
- Courses from the parent department shall not be considered for fulfilling Minor credit requirements.
- The curriculum and syllabus of Minor courses shall be approved by the concerned Board of Studies (BoS).
- The student is permitted to acquire the required credits by completing the BoS suggested courses through ONLINE platforms viz., NPTEL / SWAYAM /

SWAYAM Plus, and university approved online courses by completing the proctored examination

4. Online Learning and Credit Transfer

- Students may earn Minor credits through approved online courses of through NPTEL/SWAYAM/SWAYAM Plus or other approved Industry (TCS/L&T/IBM etc) platforms. Credits equivalency shall be decided from time to time as per University norms.
- Students shall submit valid course completion certificates issued by the authorized platform for credit recognition.
- Assessment and certification of online courses shall be governed by the norms of the respective platform.

5. Attendance Requirements

- Attendance for Major and Minor courses shall be calculated separately.
- A minimum of **75% attendance** in Minor courses is mandatory for appearing in semester end examinations.
- Attendance condonation between **65% and 75%** may be permitted as per University regulations.
- Students with attendance below **65%** in Minor courses shall not be permitted to appear for semester-end examinations.
- Students detained in the regular B.Tech. programme due to attendance shortage shall not be allowed to register for courses offered under Minor programme.

6. Admission and Registration Procedure

- Departments offering Minor programmes shall notify available minor programmes and courses before the commencement of the academic session.
- Interested students shall apply through the Head of their parent department.
- The department offering the Minor shall publish the list of selected students based on the approved criteria.
- The complete selection and registration process shall be completed before the commencement of the semester.
- Selected students shall submit the joining request through the concerned Head of Department and register Minor courses with approval of the Principal.
- Both the parent department and Minor offering department shall maintain records of students pursuing the Minor.
- Any change or withdrawal of registered Minor courses shall be permitted within two weeks of registration with approval from the concerned authorities.

7. Seat Allocation

- Minor courses shall be offered from disciplines approved by the University.
- No additional fee shall be charged for offline Minor courses offered by the institution.

8. Teaching, Examination and Evaluation

- Teaching, examination, and evaluation procedures for offline Minor courses shall be identical to those followed for regular B.Tech. courses.

- Semester-end examinations for offline Minor courses shall be conducted along with regular B.Tech. examinations.
- The additional credits earned through the minor programme shall appear in the separate Grade sheet, but, shall not contribute to the CGPA calculations of the B.Tech.
  programme. This grade sheet shall be issued along with final academic records.
- Examination fee shall be as per University regulations.

9. Monitoring and Mentoring

- The progress of students pursuing Minor programmes shall be monitored continuously as per University academic regulations.
- A faculty mentor/advisor from the parent department shall be assigned to guide students regarding Minor course registration and completion.
- Departments shall coordinate timetable preparation to avoid clashes between Major and Minor courses.

10. Award of Minor Degree

- A student shall be awarded the Minor qualification only after: ▪ Successful completion of the Regular B.Tech. programme; and ▪ Completion of the prescribed 18 additional Minor credits.
- The provisional / degree certificate shall indicate the Major degree along with the Minor specialisation.
- In order to award Minor degree, only obtained credits will be considered. However, the student shall complete the Minor in the stipulated period of time only.
- The student shall complete the additional credits also as mentioned in the guidelines for minors
- The award of the class is based on the CGPA obtained in the major degree requirement only. Separate grade sheet shall be issued for additional courses registered for Minor.

11. Fee for Minor Courses

- No additional fee shall be charged for registration of offline Minor courses offered by the respective institution. Examination fee shall be applicable as per University norms.

Guidelines for B.Tech Honours

(Applicable from the Academic Year 2026-2027 (R26))

1. Introduction

The **B.Tech. Honours programme** enables academically meritorious students to gain advanced knowledge and specialization within their parent discipline. It is intended to encourage higher studies, research orientation, and advanced professional competency at the undergraduate level. Students pursuing regular B.Tech programmes, who satisfy the prescribed eligibility criteria may opt for Honours by earning **additional 18 credits** beyond the regular B.Tech credit requirement. The additional courses shall comprise advanced theory, laboratory, and elective courses approved by the concerned Board of Studies (BoS).

2. Objectives

The objectives of introducing B.Tech Honours are to:

- Encourage undergraduate students towards higher studies and research.
- Develop advanced competency in the core engineering discipline.
- Provide opportunities for specialisation in emerging areas of the parent discipline Enhance technical and professional skills beyond the regular curriculum.
- Enable students to pursue advanced/postgraduate-level courses during undergraduate study.

3. Eligibility and Applicability

- The programme is applicable to **B.Tech. Regular and Lateral Entry students** of Engineering and Technology programmes.
- Students with a minimum **CGPA of 7.5 up to II Year I Semester (III semester)** are eligible to register for Honours.
- Honours registration shall be permitted from the II Year II Semester (**IV semester) onwards**.
- After registration of Honours, in IV semester, no restriction to maintain the CGPA in forth coming semesters
- Both Regular B.Tech. and Honours programmes shall be completed within the stipulated duration.
- Admission to Honours shall be based on CGPA obtained up to III semester.
- Transfer of credits between Honours and Minor programmes or between Honours and other degree programmes shall not be permitted.

4. Honours Programme Eligibility and Registration Rules

- Students shall pursue Honours only in their **parent branch/discipline**.
- A student pursuing B.Tech. in a particular branch shall select Honours courses from the same discipline as approved by the BoS.
- Students shall complete Honours within the prescribed duration of the regular B.Tech. programme.
- Honours shall be awarded along with the regular B.Tech. degree. The additional credits earned shall appear in the grade sheet but shall not contribute to CGPA calculation.

- Honours courses shall not be considered equivalent to regular courses if the student fails to complete the B.Tech. programme.
- Students who have already completed the degree shall not be eligible to register for
  Honours.
- Students pursuing a **Minor programme** can register for B.Tech. Honours.

5. Structure and Credit Requirements

- A student shall earn **18 additional credits** from the parent discipline for the award of B.Tech. Honours. The required credits shall be completed through:
  (i) Six theory courses of 3 credits each; **or**
  (ii) Five theory courses of 3 credits each and two laboratory courses of 1.5 credits each; or
  (iii) Four theory courses of 3 credits each and four laboratory courses of 1.5 credits each
- Students shall complete all courses through offline, if the institution offers. Otherwise student is permitted to register to approved on-line platforms for a maximum of two courses as per the required credits. Number of Credits for on-line platforms shall change from time to time, as per the University norms.
- Honours credits may be earned through:
  - Offline courses offered by the institution; or
  - Approved online courses through platforms such as NPTEL/SWAYAM/SWAYAM+ or other approved Industry (TCS/L&T/IBM, etc.) platforms. ○ Online courses shall be domain-specific, with a minimum duration of **12 weeks**, as approved by the University authorities.
  - The Honours curriculum and syllabus shall be approved by the concerned Board of Studies.

6. Attendance Requirements

- A minimum of **75% attendance** in Honours courses is required to appear for semesterend examinations.
- Attendance shortage between **65% and 75%** may be condoned as per University regulations.
- Students with attendance below **65%** shall not be permitted to appear for Honours examinations.

7. Admission and Registration Procedure

- The department offering Honours shall notify available specializations and courses before commencement of the semester.
- Interested students shall submit applications through the concerned Head of Department.
- The department shall publish the list of selected students based on eligibility criteria.
- Selected students shall submit a joining request through the HOD to the Principal.

- Students shall register Honours courses with approval of the Principal and guidance of the assigned mentor.
- The department offering Honours shall maintain records of enrolled students.
- Departments shall coordinate with the time table committee to avoid overlapping between regular and Honours courses.
- Withdrawal or change of registered Honours courses shall be permitted within two weeks of registration with approval of concerned authorities.

8. Monitoring and Mentoring

- The progress of students pursuing Honours shall be monitored continuously as per University academic practices.
- A faculty advisor shall be assigned to guide and monitor students throughout the programme.

9. Teaching, Examination and Evaluation

- Teaching, examination, and evaluation procedures for offline Honours courses shall be identical to regular B.Tech. courses.
- Semester end examinations for Honours courses shall be conducted along with regular B.Tech. examinations.
- Assessment and certification of online courses shall be as per the norms of the respective platforms.
- Students shall submit valid completion certificates for online courses for credit recognition.
- A separate grade sheet shall indicate Honours courses completed by the student. Examination fee shall be as per University regulations.

10. Award of B.Tech. Honours Degree

A student shall be awarded the **B.Tech. Honours degree** upon:

- Successful completion of the regular B.Tech. programme
- Completion of additional 18 Honours credits
- In order to award Honours degree, only obtained credits will be considered. However, the student shall complete the Honours in the stipulated period of time only.
- Separate grade sheet shall be issued for courses registered under Honours

11. Fee for Honours Courses

 No additional fee shall be charged for registration of offline Honours courses offered by the respective institution. Examination fee shall be applicable as per University norms.

Annexure-I

MALPRACTICES RULES
DISCIPLINARY ACTION FOR / IMPROPER CONDUCT IN EXAMINATIONS

	conduct	
	If the candidate:	
(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 he is appearing but has not made use of (material shall include any marks on the body of the candidate 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 candidate orally or by any other body language methods or communicates through cell phones with any candidate 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 candidates 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 candidate is appearing.	Expulsion from the examination hall and cancellation of the performance in that subject and all other subjects the candidate has already appeared including practical examinations and project work and shall not be permitted to appear for the remaining examinations of the subjects of that Semester/year. The Hall Ticket of the candidate is to be cancelled and sent to the University.

3.	Impersonates any other candidate in connection with the examination.	The candidate who has impersonated shall be expelled from examination hall. The candidate is also debarred and forfeits the seat. The performance of the original candidate who has been impersonated, shall be cancelled in all the subjects of the examination (including practical and project work) already appeared and shall not be allowed to appear for examinations of

	Nature of Malpractices/Improper	**Punishment**
		the remaining subjects of that semester/year. The candidate is also debarred for two consecutive semesters from class work and all University examinations. The continuation of the course by the candidate 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.	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.	Expulsion from the examination hall and cancellation of performance in that subject and all the other subjects the candidate 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 candidate is also debarred for two consecutive semesters from class work and all University examinations. The continuation of the course by the candidate is subject to the academic regulations in connection with forfeiture of seat.
5.	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.	Cancellation of the performance in that subject.

6.	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 or by 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.	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 candidate(s) has (have) already appeared and shall not be permitted to appear for the remaining examinations of the subjects of that semester/year. The candidates 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.
7.	Leaves the exam hall taking away answer script or intentionally tears the script or any part thereof inside or outside the examination hall.	Expulsion from the examination hall and cancellation of performance in that subject and all the other subjects the candidate 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 candidate is also debarred for two consecutive semesters from class work and all University examinations. The continuation of the course by the candidate is subject to the academic regulations in connection with forfeiture of seat.

8.	Possess any lethal weapon or firearm in the examination hall.	Expulsion from the examination hall and cancellation of the performance in that subject and all other subjects the candidate 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 candidate is also debarred and forfeits the seat.
9.	If student of the college, who is not a candidate 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.	Student of the colleges expulsion from the examination hall and cancellation of the performance in that subject and all other subjects the candidate 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 candidate is also debarred and forfeits the seat. Person(s) who do not belong to the College will be handed over to police and, a police case will be registered against them.
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 candidate 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.
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 candidate has appeared 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 University for further action and impose suitable punishment.	

Malpractices identified by squad or special invigilators

1. Punishments to the candidates as per the above guidelines.

2. Punishment for institutions: (if the squad reports that the college is also involved in encouraging malpractices)

   (i) A show cause notice shall be issued to the college.

   (ii) Impose a suitable fine on the college.

(iii) Shifting the examination centre from the college to another college for a specific period of not less than one year before any institutional penalty under (i) - (iii) above is finalized.

* * * * *

Table: 6 Induction Programme

S.No.	Course Name	Category	L-T-P-C
1	Physical Activities -- Sports, Yoga and Meditation, Plantation	MC	0-0-6-0
2	Career Counselling	MC	2-0-2-0
3	Orientation to all branches -- career options, tools, etc.	MC	3-0-0-0
4	Orientation on admitted Branch -- corresponding labs, tools and platforms	EC	2-0-3-0
5	Proficiency Modules & Productivity Tools	ES	2-1-2-0
6	Assessment on basic aptitude and mathematical skills	MC	2-0-3-0
7	Remedial Training in Foundation Courses	MC	2-1-2-0
8	Human Values & Professional Ethics	MC	3-0-0-0
9	Communication Skills -- focus on Listening, Speaking, Reading, Writing skills	BS	2-1-2-0
10	Concepts of Programming	ES	2-0-2-0

B.Tech Program Course Structure & Syllabus

Program Educational Objectives (PEOs) – Program Educational Objectives are broad statements that describe the career and professional accomplishments that the program is preparing graduates to achieve

BoS needs to include PEOs (Three to Five)

Mapping of PEOs with Mission statements

	PEO1	PEO2	PEO3	PEO4
M1				
M2				
M3				
M4				

Program Outcomes (POs)

POs are statements that describe what students are expected to know and be able to do upon completion of the program. These relate to the skills, knowledge, attitude and analytical ability and behavior that students acquire through the program.

(As defined by NBA)

Program Outcomes (POs)

PO1: Engineering Knowledge: Apply knowledge of mathematics, natural science, computing, engineering fundamentals and an engineering specialization to develop to the solution of complex engineering problems.

PO2: Problem Analysis: Identify, formulate, review research literature and analyze complex engineering problems reaching substantiated conclusions with consideration for sustainable development.

PO3: Design/Development of Solutions: Design creative solutions for complex engineering problems and design/develop systems/components/processes to meet identified needs with consideration for the public health and safety, whole-life cost, net zero carbon, culture, society and environment as required.

PO4: Conduct Investigations of Complex Problems: Conduct investigations of complex engineering problems using research-based knowledge including design of experiments, modelling, analysis & interpretation of data to provide valid conclusions.

PO5: Engineering Tool Usage: Create, select and apply appropriate techniques, resources and modern engineering & IT tools, including prediction and modelling recognizing their limitations to solve complex engineering problems.

PO6: The Engineer and The World: Analyze and evaluate societal and environmental aspects while solving complex engineering problems for its impact on sustainability with reference to economy, health, safety, legal framework, culture and environment.

PO7: Ethics: Apply ethical principles and commit to professional ethics, human values, diversity and inclusion; adhere to national & international laws.

PO8: Individual and Collaborative Team work: Function effectively as an individual, and as a member or leader in diverse/multi-disciplinary teams.

PO9: Communication: Communicate effectively and inclusively within the engineering community and society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations considering cultural, language, and learning differences

PO10: Project Management and Finance: Apply knowledge and understanding of engineering management principles and economic decision-making and apply these to one's own work,

as a member and leader in a team, and to manage projects and in multidisciplinary environments.

PO11: Life-Long Learning: Recognize the need for, and have the preparation and ability for i) independent and life-long learning ii) adaptability to new and emerging technologies and iii) critical thinking in the broadest context of technological change. **BoS needs to include up to THREE Program Specific Outcomes (PSOs):**

Categories of Courses:

BSC : Basic Science Courses
HSM : Humanities, Social Sciences including Management
ESC : Engineering Science Courses
PCC : Professional Core Courses
PEC : Professional Elective Courses (including Skill Enhancement)
OEC : Open Elective Courses (including Free 1 credit courses)
MNC : Mandatory Non-Credit Courses

S.No	Category	AICTE	%	JNTUK	%
1	Humanities and Social Sciences including Management Courses	6	3-4%	6-9	4-5%
2	Basic Science Courses	24	14-15%	21 -24	12-13%
3	Engineering Science courses including workshop, drawing, basics of electrical/mechanical/ computer / AI Applications, Design Thinking etc	20	12-13%	21-24	13-14%
4	Professional core courses	58	35-36%	57-60	36-37%
5	Professional Elective specialization/branch courses relevant to chosen including Skill enhanced	26	15-16%	24-27	15-16%
6	Indian Knowledge System	2	1-2%	---	---

7	Multidisciplinary Open Electives Courses	12	7-8%	9-12	7-8%
8	Project work, seminar and internship in industry or appropriate work place/ academic and research institutions in India/abroad	16	9-10%	16	9-10%
9	Non-credit Mandatory Courses – Universal Human Values, Environmental Science, Constitution of India, Indian Knowledge System, Research Methodology & Intellectual Property Rights, Sports & Yoga, Indian Knowledge System	0	0	0	0
		164		164	

Suggested Basic Science Courses **(21-24 Credits)**

S.No	Title of the Course	L	T	P	Credits	Suggestive Courses
1	Chemistry Course	3	0	0	3	a. Applied Chemistry in Emerging Technologies b. Applied Chemistry c. Chemistry for Civil Engineers d. Chemistry for Electrical Systems e. Chemistry for Mechanical Systems
2	Chemistry Course Lab	0	0	3	1.5	
3	Physics Course	3	0	0	3	a. Physics for Advanced Computing-CSE and Allied b. Physics for Civil Engineers c. Applied Physics-ECE d. Engineering Physics - e. Physics for Electrical Systems f. Physics for Mechanical Systems
4	Physics Lab	0	0	3	1.5	

5	Mathematics Course-1	3	0	0	3	a. Linear Algebra and Calculus b. Differential Equations and Vector Calculus c. Probability and Complex Variables d. Probability and Statistics e. Random Variables and Stochastic Process f. Discrete Mathematics and graph theory g. Numerical Methods h. Optimization Techniques i. Transform Techniques
6	Mathematics Course-2	3	0	0	3	
7	Mathematics Course-3	3	0	0	3	
8	Mathematics Course-4	3	0	0	3	
9	Engineering Biology	3	0	0	3	

Suggested **Humanities Social Sciences including Management Courses(6-9 Credits)**

S.No	Title of the Course	L	T	P	Credits	Suggestive Courses
Mandatory Humanities Social Sciences including Management Courses						
1	English Course	3	0	0	3	English for Technical Communication
2	English and MOODLES Lab	0	0	3	1.5	English for Technical Communication and MOODLES Lab
3	Management Course	3	0	0	3	UHV-II (Universal Human Values – Understanding Harmony and Ethical Human Conduct)
Suggestive Management Courses						
4	Suggestive Management Course(s)					a. Engineering Economics and Financial Analysis (EEFA) b. Managerial Economics and Financial Analysis c. Human Resources Management d. Industrial Management e. Entrepreneurship development f. Leadership Management g. Management Science h. Project Management

Suggested **Engineering Science Courses(21-24 Credits)**

S.No	Title of the Course	L	T	P	Credits	Suggestive Courses
*Mandatory Engineering Science Courses**(12.5 Credits)***						
1	Design Thinking and Innovation	0	1	3	2.5	
2	AI Tools and Applications	0	1	3	2.5	

3	Fundamentals of Quantum computing	3	0	0	3	
4	Computational Thinking and Problem Solving	3	0	0	3	
5	Computational Thinking and Problem Solving Lab	0	0	3	1.5	
*Suggestive Engineering Science Courses**(8.5-11.5 Credits)***						
6						a. Prompt Engineering b. Engineering Mechanics c. Engineering Graphics (0-1-3) d. Engineering Materials e. Engineering Geology f. Electrical Technology g. Electronic Devices and Circuits h. Data Structures using C or Python i. IDEA Lab Workshop (3D Printing, Robotics, Programmable Logic Controller, PCB Design etc) j. IT Workshop / IT and Electronic Workshop / IT Workshop with PCB Design / Digital Fabrication/ Workshop / Manufacturing Practices k. Sustainability and Green Engineering / Systems Thinking and Interdisciplinary Engineering / Systems Engineering l. Sustainable Development: Principles, Practices and SDGs m. Elements of Mechanical Engineering n. Elements of Electrical and Electronics Engineering o. Elements of Electrical and Electronics Engineering Lab p. Basic Electrical and Electronics Engineering q. Elements of Petroleum Engineering r. Elements of Chemical Engineering s. Elements of Civil Engineering t. Python Programming and its applications u. Renewable Energy

Mandatory Non Credit Courses (SIX Courses)

S.No	Title of the Course	L	T	P	Credits	Suggestive Courses
1	MNC-1	2	0	0	0	a. Environmental Studies

						b. Research Methodology c. Professional Practice, Law & Ethics d. Sports and Yoga or NSS/NCC e. Indian Constitution f. Indian Knowledge Systems (IKS) Courses - Indian Knowledge and Creative Thinking / Indic Perspective on Scientific Sustainable Development / Indic Meta Thinking - Knowing Knowledge / Human Values and Indian Education System etc.,
2	MNC-2	0	0	2	0	
3	MNC-3	2	0	0	0	
4	MNC-4				0	
5	MNC-5				0	
6	MNC-6				0	

Suggested **Professional Elective Courses(in addition to regular 3 credit courses; following is 1,2 credits each)**

S.No	Title of the Course	L	T	P	Credits	Suggestive Courses
						Online / MOOC Courses viz., SWAYAM Plus can be quantified as follows (**NCrF level > 4.5**): – For 1 Credit – Min. 30 Hrs For 1.5 Credit – Min. 45 Hrs For 2 credit – Min. 60 Hrs
1		0	0	2	1	Prompt Engineering offered by SWAYAM Plus (30 Hrs)
2		0	0	3	1.5	Certified Intelligent Data Centre offered by SWAYAM Plus (around 45 Hrs)
3		0	0	4	2	Cyber Security offered by SWAYAM Plus (Around 60 Hrs)
						a. AI for Aspiring Engineers b. Digital Engineering offered by Swayam Plus c. Data Analytics (Tableau) offered by Swayam Plus d. Advanced Excel, SQL and Data Skills: Organize and Analyze Your Data offered by Swayam Plus e. Soft Skills / Soft Skills and Employability offered by Swayam Plus f. Advanced Certification in Professional and Communicative English Skills offered by Swayam Plus g. Any course as approved by BoS offered by SWAYAM Plus, as per the requirement of minimum credits

Suggested **Open Elective Courses(in addition to regular 3 credit courses; following is 1,2 credits each)**

S.No	Title of the Course	L	T	P	Credits	Suggestive Courses

		0	0	2	1	One Credit Courses: a. Beginning your Entrepreneurship Journey offered by Swayam Plus b. Digital Marketing Basics: Getting Started Online offered by Swayam Plus c. Ignite for Entrepreneurs - A Foundational Course offered by Swayam Plus d. Principles of Investment offered by Swayam Plus e. Soft Skills and Employability offered by Swayam Plus (1.5 Credits) f. Any course as approved by BoS offered by SWAYAM Plus, as per the requirement of minimum credits

Mandatory -

PEC for CSE and Allied, Open Elective Courses for other **(offered by WISE, IBM Skill Build, QUBICOetc)**

- Quantum Computing and AI offered by WISER
- Quantum Computing for Differential Equations offered by WISER
- AI offered by IBM Skill Build
- Cyber Security offered by IBM Skill Build
- Data Analytics offered by IBM Skill Build
- Entrepreneur + Career Management Essentials offered by IBM Skill Build

B.Tech Program Course Structure

B.Tech. – I Year I Semester

S.No.	Course Category	Course Code	Title	L	T	P	Credits
1	HSM	A261XX01	Humanities, Social Sciences and Management Course-1	3	0	0	3
2	BSC	A261XX02	Basic Science Course-1	3	0	0	3
3	BSC	A261XX03	Basic Science Course-2	3	0	0	3
4	ESC	A261XX04	Engineering Science Course-1	3	0	0	3
5	ESC	A261XX05	Engineering Science Course-2	3	0	0	3
6	HSM	A261XX06	Humanities, Social Sciences and Management Course-1 Lab	0	0	3	1.5
7	BSC	A261XX07	Basic Science Course-1 Lab	0	0	3	1.5
8	ESC	A261XX08	Engineering Science Course-1 Lab	0	0	3	1.5

9	ESC	A261XX09	Engineering Science Course-2 Lab	0	0	3	1.5
10	MNC	A261XX10	MNC-1	2	0	0	0
		Total		**17**	**0**	**12**	**21**

B.Tech (I year - II Semester) – II semester

S.No.	Course Category	Course Code	Title	L	T	P	Credits
1	BSC	A262XX01	Basic Science Course-3	3	0	0	3
2	BSC	A262XX02	Basic Science Course-4	3	0	0	3
3	ESC	A262XX03	Engineering Science Course-3	2	0	2	3
4	ESC	A262XX04	Engineering Science Course-4	3	0	0	3
5	ESC	A262XX05	Engineering Science Course-5	3	0	0	3
6	ESC	A262XX06	Engineering Science Course-3 Lab	0	0	3	1.5
7	ESC	A262XX07	Engineering Science Course-4 Lab	0	0	3	1.5
8	ESC	A262XX08	Engineering Science Course-5 Lab	0	0	3	1.5
9	BSC	A262XX09	Basic Science Course-3 Lab	0	0	3	1.5
10	MNC	A262XX10	MNC-2	0	0	2	0
		Total		**14**	**0**	**16**	**21**

B.Tech.– II Year I Semester (III Semester)

S.No.	Course Category	Course Code	Title	L	T	P	Credits
1	BSC	A263XX01	Basic Science Course -5	3	0	0	3
2	HSC	A263XX02	Humanities, Social Sciences and Management Course-2	3	0	0	3
3	PCC	A263XX03	Professional Core-1	3	0	0	3
4	PCC	A263XX04	Professional Core-2	3	0	0	3
5	PCC	A263XX05	Professional Core-3	3	0	0	3
6	PEC	A263XXA0	Professional Elective Course-1	0	0	3	1.5
7	PCC	A263XX06	Professional Core-1 Lab	0	0	3	1.5
8	PCC	A263XX07	Professional Core-2 Lab	0	0	3	1.5
9	PCC	A263XX08	Professional Core-3 Lab	0	0	3	1.5
10	MNC	A263XX09	MNC-3	2	0	0	0
Total				**16**	**1**	**10**	**21**

B.Tech. II Year II Semester (IV Semester)

S.No	**Course category**	Course Code	Title	L	T	P	Credits
1	BSC	A264XX01	Basic Science Course -6	3	0	0	3
2	PCC	A264XX02	Professional Core-4 (pre-requisites -)	3	0	0	3
3	PCC	A264XX03	Professional Core-5 (pre-requisites -)	3	0	0	3
4	PCC	A264XX04	Professional Core-6 (pre-requisites -)	3	0	0	3
5	PCC	A264XX05	Professional Core-7	3	0	0	3
6	PEC	A264XXA0	Professional Elective Course-2	0	0	3	1.5
7	PCC	A264XX06	Professional Core-4 Lab	0	0	3	1.5
8	PCC	A264XX07	Professional Core-5 Lab	0	0	3	1.5
9	PCC	A264XX08	Professional Core-6 Lab	0	0	3	1.5
10	MNC	A264XX09	MNC-4	2	0	0	0
Total				**17**	**0**	**12**	**21**

	Mandatory Industry Internship / CSP / Mini Project of 06 weeks duration during summer vacation

III B.Tech I Semester (V Semester)

S.No.	Course Category	Course Code	Title	L	T	P	Credits
1	PCC	A265XX01	Professional Core-8 (pre-requisites -)	3	0	0	3
2	PCC	A265XX02	Professional Core-9 (pre-requisites -)	3	0	0	3
3	PCC	A265XX03	Professional Core-10 (pre-requisites -)	3	0	0	3
4	PEC	 A265XXA0 A265XXA1 A265XXA2 A265XXA3	**Professional Elective Course-3** 1 Stream - 1 2 Stream - 2 3 Stream - 3 4 Stream – 4	3	0	0	3
5	PEC	 A265XXB0 A265XXB1 A265XXB2 A265XXB3 A265XXB4	**Professional Elective Course-4** 1 Stream – 1 (pre-requisites -) 2 Stream – 2 (pre-requisites -) 3 4 5. SWAYAM / NPTEL 12 Week MOOC	3	0	0	3
6	PCC	A265XX04	Professional Core-8 Lab	0	0	3	1.5
7	PCC	A265XX05	Professional Core-9 Lab	0	0	3	1.5
8	OEC	A265XXC0	Open Elective-1	1	0	0	1
9	Internship / Project work	A265XX06	Evaluation of industry Internship/ CSP / Mini Project*	0	0	0	2
10	MNC	A265XX07	MNC-5				
			Total	**16**	**0**	**8**	**21**

* performed during IV to V Semester break

Courses offered Professional Elective-5

1.
2. Courses offered by SWAYAM Plus

Courses offered under Open Elective-1 (for other department students):

1.
2.

III B.Tech II Semester (VI Semester)

S.No.	Course Category	Course Code	Title	L	T	P	Credits
1	PCC	A266XX01	Professional Core-11 (pre-requisites -)	3	0	0	3
2	PCC	A266XX02	Professional Core-12 (pre-requisites -)	3	0	0	3
3	PCC	A266XX03	Professional Core-13 (pre-requisites -)	3	0	0	3
4	PEC	A266XXA0 A266XXA1 A266XXA2 A266XXA3	Professional Elective-5 1 Stream – 1 (pre-requisites -) 2 Stream - 2 3 Stream - 3 4 Stream – 4	3	0	0	3
5	PEC	A266XXB0 A266XXB1 A266XXB2 A266XXB3	Professional Elective 6 1 Stream - 1 2 Stream - 2 3 Stream - 3 4 Stream - 4 (pre-requisites -)	3	0	0	3
6	OEC	A266XXC0	Open Elective-2 / SWAYAM / NPTEL 8 week MOOC	2	0	0	2
7	PCC	A266XX04	Professional Core-11 Lab	0	0	3	1.5
8	PCC	A266XX05	Professional Core-12 Lab	0	0	3	1.5
9	OEC	A266XXC1	Open Elective-3	0/1	0	2/0	1
10	MNC-6	A266XX06	MNC-6				
			Total	**18**		**6**	**21**
	Industry Internship / Mini Project of 06 weeks duration during summer vacation						

Courses offered under Open Elective-2 (for other department students):

1.
2.

Courses offered under Open Elective-3 (for other department students):

1.
2.

IV year – I Semester

S.No.	Course Category	Course Code	Title	L	T	P	Credits
1	PCC	A267XX01	Professional Core-14	3	0	0	3
2	PCC	A267XX02	Professional Core-15	3	0	0	3
3	PEC		**Professional Elective-7**	3	0	0	3
		A267XXA0	1				
		A267XXA1	2				
		A267XXA2	3				
		A267XXA3	4				
4	PEC		**Professional Elective-8**	3	0	0	3
		A267XXB0	**1**				
		A267XXB1	**2**				
		A267XXB2	**3**				
		A267XXB3	**4**				
5	PEC		**Professional Elective-9**	3	0	0	3
		A267XXC0	1				
		A267XX C1	2				
		A267XX C2	3				
		A267XXC3	4				
6	PEC	A267XXD0	**Professional Elective-10**	0	0	2	1
7	OEC	A267XXE0	Open Elective-4	2	0	0	2
8	OEC	A267XXE1	Open Elective-5	0	0	2	1
9	Internship / Project work	A267XX03	Evaluation of Industry Internship / Mini Project	0	0	0	2
			Total	**17**		**4**	**21**

*Includes evaluation of mini project

Courses offered Professional Elective-10

1.
2. Courses offered by SWAYAM Plus

Courses offered under Open Elective-4 (for other department students):

1.
2.

Courses offered under Open Elective-5 (for other department students):

1.
2.

IV B.Tech. II Semester

S.No.	Course Category	Course Code	Title	L	T	P	Credits
1	OEC	A268XXA0	Open Elective 6 / SWAYAM/NPTEL 12 week course	3	0	0	3
2	OEC	A268XXA1	Open Elective 7 / SWAYAM/NPTEL 8 week course	**2**	**0**	**0**	2
3	Project	A268XX01	Project work / Industry Internship				12
			Total				17

Courses offered under Open Elective-6 (for other department students):
1.
2.
3. SWAYAM / NPTEL MOOC (BoS need to suggest the courses)

Courses offered under Open Elective-7 (for other department students):
1.
2.
3. SWAYAM / NPTEL MOOC (BoS need to suggest the courses)

Suggested Courses for **Minor(s)** – 18 Credits
1. (II-I) (3-0-3)
2. (II-II) (3-0-0)
3. (III-I) (3-0-3)
4. (III-II) (3-0-0)
5. (IV-I) (3-0-0)

Suggested Courses for **Honor's** – 18 Credits
1. (III-I) (3-0-0)
2. (III-I) (3-0-0)
3. (III-II) (3-0-0)
4. (III-II) (3-0-0)
5. (IV-I) (3-0-0)
6. (IV-I) (3-0-0)

COURSE CODE – R26XXXX	MODEL- Data Structures through C	CATEGORY ESC	L-T-P 3-0-0	CREDITS 3

Course Outline

This course introduces the fundamental concepts of programming and data structures using the C language. Students learn to represent, organize, manipulate, and process data efficiently using linear and non-linear data structures. The course emphasizes algorithmic thinking, modular programming, memory management, recursion, and problem-solving through integrated laboratory practice. The knowledge gained serves as a foundation for advanced courses in computer science and engineering applications across all disciplines. **Pre-requisite**: NIL

Course Objectives:

- Understand the fundamental concepts of algorithms, structured programming, and abstract data types using the C programming language.
- Apply programming constructs and basic data structures to organize and manipulate data efficiently.
- Develop problem-solving skills by implementing linear and non-linear data structures using C.
- Analyze the performance of searching, sorting, and traversal algorithms using basic complexity measures.
- Apply appropriate data structures to solve computational problems encountered in engineering applications.

Course Outcomes: *After successful completion of this course, the student will be able to*: CO1: Explain the concepts of algorithms, structured programming, abstract data types, and basic complexity analysis (K2)
CO2: Develop C programs using functions, arrays, pointers, dynamic memory allocation, recursion, and user-defined data types (K3)
CO3: Implement linear and non-linear data structures and perform their basic operations using C (K3)
CO4: Analyze the performance of searching, sorting, and graph traversal algorithms for different computational problems (K4)

COs / POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
CO1	H	M	–	–	M	–	–	–	–	L	M			
CO2	H	M	M	L	H	–	–	–	L	L	M			
CO3	H	H	M	M	H	–	–	–	L	L	M			
CO4	M	H	M	M	M	L	–	–	L	L	M			

UNIT-I

Programming Fundamentals and Algorithmic Thinking: Programming Fundamentals: Problemsolving methodology; Algorithms; Flowcharts; Characteristics of algorithms; Introduction to C programming; Structure of a C program; Data types; Operators; Input and Output; Control statements;
Functions; Arrays; Strings; Pointers (basics); Structures; Introduction to Abstract Data Types (ADT); Need and classification of Data Structures; Introduction to algorithm analysis; Time and space complexity (basic concepts).

UNIT-II

Linear Data Structures: Linear Data Structures: Dynamic memory allocation; Recursion; Linked Lists—Singly, Doubly, and Circular Linked Lists; Basic operations (creation, insertion, deletion, traversal); Applications of Linked Lists; Stacks—Array and Linked List implementations; Basic applications (parenthesis matching, expression conversion and evaluation); Queues—Simple Queue, Circular Queue, Priority Queue; Applications of Queues.

UNIT-III

Trees: Introduction and terminology; Binary Trees; Tree representation; Tree traversals; Binary Search Trees—Insertion, Deletion, Searching; Heap—Min Heap and Max Heap; Introduction to Priority Queue using Heap; Applications of Trees.

UNIT-IV

Graphs: Graph terminology; Graph representations (Adjacency Matrix and Adjacency List); Graph traversals—Breadth First Search (BFS) and Depth First Search (DFS); Introduction to Minimum Spanning Trees (Prim's Algorithm); Applications of Graphs.

UNIT-V

Searching, Sorting and Hashing: Linear Search; Binary Search; Bubble Sort; Selection Sort; Insertion Sort; Merge Sort; Quick Sort; Introduction to Hashing; Hash Functions; Collision Resolution (basic concepts); Comparative analysis of searching and sorting algorithms; Engineering applications and case studies.

Learning Resources:

Text Books:

1. Balagurusamy, E. (2025). Data Structures Using C (2nd ed.). McGraw Hill Education India.
2. Thareja, R. (2023). Data Structures Using C (3rd ed.). Oxford University Press India.

Reference Books:

1. Deshpande, P. S., &Kakde, O. G. C and data structures. Dreamtech Press.
2. Shukla, R. K. Data structures using C and C++. Wiley India.

Web Resources:

- National Programme on Technology Enhanced Learning. (2026). Introduction to Programming in C. IIT Kanpur. https://nptel.ac.in/courses/106104128
- National Programme on Technology Enhanced Learning. (2026). Programming, Data Structures and Algorithms using C. IIT Madras. https://nptel.ac.in/courses/106106127
- National Programme on Technology Enhanced Learning. (2026). Problem Solving Through Programming in C. IIT Kharagpur. https://onlinecourses.nptel.ac.in
- Virtual Labs: https://ds1-iiith.vlabs.ac.in/
- Programiz. Data Structures. https://www.programiz.com/dsa
- Visualgo. Data Structure and Algorithm Visualizations. https://visualgo.net/en