

**ACADEMIC REGULATIONS (R20)**  
**COURSE STRUCTURE & DETAILED SYLLABUS**

For

**B. Tech FOUR YEAR DEGREE COURSE**

**(Applicable for the batches admitted from 2020-21)**



**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA**  
**KAKINADA – 533003, ANDHRA PRADESH, INDIA**

*for*  
**PRINCIPAL**  
**ANDHRA LOYOLA INSTITUTE OF**  
**ENGINEERING & TECHNOLOGY**  
**VIJAYAWADA-520 000**

## ACADEMIC REGULATIONS (R20) FOR B. TECH. (REGULAR)

**Applicable for students of B. Tech. (Regular) from Academic Year 2020-21 onwards**

Jawaharlal Nehru Technological University Kakinada (JNTUK) 2020 Regulations (R20 Regulations) applicable to all affiliated colleges are given hereunder. These regulations govern the B. Tech programmes offered by all affiliated colleges with effect from the students admitted to the programmes in academic year 2020-21.

### **1. Courses of study:**

The following courses of study are offered at present as specializations for the B. Tech. Courses in the jurisdiction of all affiliated colleges of JNTUK.

<b>S. No</b>	<b>Branch Name</b>	<b>Branch Code</b>
1	Civil Engineering	01
2	Electrical & Electronics Engineering	02
3	Mechanical Engineering	03
4	Electronics and Communication Engineering	04
5	Computer Science Engineering	05
6	Computer Science & Technology	06
7	Computer Science & Information Technology	07
8	Chemical Engineering	08
9	Electronics and Instrumentation Engineering	10
10	Bio- Medical Engineering	11
11	Information Technology	12
12	Electronics and Control Engineering	13
13	Electronics & Communication Technology	14
14	Computer Science and Systems Engineering	15
15	Electronics and Computer Engineering	19
16	Aeronautical Engineering	21
17	Instrumentation and Control Engineering	22
18	Bio- Technology	23
19	Automobile Engineering	24
20	Mining Engineering	26
21	Petroleum Technology / Petroleum Engineering	27
22	Petrochemical Engineering	28
23	Aviation Engineering	29
24	Aircraft Maintenance Engineering	30
25	Metallurgical Engineering	31
26	Power Engineering	34
27	Agriculture Engineering	35
28	Textile Engineering	36
29	Architecture (B.Arch)	40
30	B. Pharmacy	00
31	CSE (Artificial Intelligence and Machine Learning)	42
32	CSE( Artificial Intelligence)	43
33	CSE( Data Science)	44
34	CSE (Artificial Intelligence and Data Science)	45
35	CSE ( Cyber Security)	46
36	CSE ( Internet of things and Cyber security including Block chain Technology)	47

  
PRINCIPAL  
ANDHRA LOYOLA INSTITUTE OF  
ENGINEERING & TECHNOLOGY  
VIJAYAWADA-520 008

37	CSE (Computer Science and Business System)	48
38	CSE( Internet of Things)	49
39	ECE ( Electronics & Communication Technology)	50
40	Food Engineering	51
41	ECE ( Internet of Things)	52
42	ME ( Robotics)	53
43	Artificial Intelligence and Data Science	54
44	Pharmaceutical Engineering	55
45	Aerospace Engineering	56
46	Computer Science and Business System	57
47	CSE (Big Data Analytics)	58
48	Cyber Security	59
49	Internet of Thing	60
50	Artificial Intelligence and Machine Learning	61
51	Computer Science and Design	62

**2. Medium of Instruction:** The medium of instruction of the entire B. Tech undergraduate programme in Engineering & Technology (including examinations and project reports) will be in **English** only.

**3. Admissions:** Admission to the B. Tech Programme shall be made subject to the eligibility, qualifications and specialization prescribed by the A.P. State Government/University from time to time. Admissions shall be made either on the basis of the merit rank obtained by the student in the common entrance examination conducted by the A.P. Government/University or on the basis of any other order of merit approved by the A.P. Government/University, subject to reservations as prescribed by the Government/University from time to time.

**4. Programme Pattern:**

- a) Total duration of the of B. Tech (Regular) Programme is four academic years
- b) Each Academic year of study is divided in to **two semesters**.
- c) Minimum number of instruction days in each semester is 90.
- d) Grade points, based on percentage of marks awarded for each course will form the basis for calculation of SGPA (Semester Grade Point Average) and CGPA (Cumulative Grade Point Average).
- e) The total credits for the Programme are 160.
- f) A three-week induction program is mandatory for all first year UG students and shall be conducted as per AICTE/UGC/APSCHE guidelines.
- g) Student is introduced to “Choice Based Credit System (CBCS)”.
- h) A pool of interdisciplinary and job-oriented mandatory skill courses which are relevant to the industry are integrated into the curriculum of concerned branch of engineering (total five skill courses: two basic level skill courses, one on soft skills and other two on advanced level skill courses)
- i) A student has to register for all courses in a semester.
- j) All the registered credits will be considered for the calculation of final CGPA.
- k) Each semester has - ‘Continuous Internal Evaluation (CIE)’ and ‘Semester End Examination (SEE)’. Choice Based Credit System (CBCS) and Credit Based Semester System (CBSS) as indicated by UGC and course structure as suggested by AICTE are followed.
- l) A 10 months industry/field mandatory internship, both industry and social, during the summer vacation and also in the final semester to acquire the skills required for job and make engineering graduates to connect with the needs of the industry and society at large.
- m) All students shall be mandatorily registered for NCC/NSS activities.
- n) Each college shall assign a faculty advisor/mentor after admission to each student or group of students from same department to provide guidance in courses registration/career growth/placements/opportunities for higher studies/GATE/other competitive exams etc.

  
 PRINCIPAL  
 ANDHRA LOYOLA INSTITUTE OF  
 ENGINEERING & TECHNOLOGY  
 VIJAYAWADA-520 008

5. **Subject/Course Classification:** All subjects/courses offered for the undergraduate programme in E & T (B. Tech degree programmes) are broadly classified as follows.

S. No	Category	Code	APSCHE breakup of Credits	AICTE Credits of breakup
1	Humanities and social science including Management courses	HSMC	10.5	12
2	Basic Science courses	BSC	21	25
3	Engineering courses science	ESC	24	24
4	Professional core Courses	PCC	51	48
5	Open Elective Courses	OEC	12	18
6	Professional Courses Elective	PEC	15	18
7	Internship, seminar, project work	PROJ	16.5	15
8	Skill Oriented Courses	SC	10	-
9	Laboratory Courses	LC	-	-
10	Mandatory courses	MC	Non-credit	Non-credit
<b>Total Credits</b>			160	160

6. **Registration for Courses:**

- i) The college shall invite registration forms from the students at the beginning of the semester for the registration for courses each semester. The registration process shall be closed within one week. If any student wishes to withdraw the registration, he/she shall submit a letter to the principal through the class teacher/instructor and HOD. The principal shall communicate the registration and withdraw details courses of each student in a consolidated form to the college examination section and University without fail.
- ii) There are four open electives in each branch. All Open Electives are offered to students of all branches in general. A student shall choose an open elective, by consulting the HOD/advisor, from the list in such a manner that he/she has not studied the same course in any form during the Programme.
- iii) A student shall be permitted to pursue up to a maximum of two elective courses under MOOCs during the programme. Students are advised to register for only for minimum 12 weeks in duration MOOCs courses. Student has to pursue and acquire a certificate for a MOOC course only from the SWAY/NPTE through online with the approval of Head of the Department in order to earn the 3 credits. The Head of the department shall notify the list of such courses at the beginning of the semester. The details of the MOOCs courses registered by the students shall be submitted to the University examination center as well as college examination center. The Head of the Department shall appoint a mentor for each of the MOOC subjects registered by the students to monitor the student's assignment submissions given by SWAYAM/NPTEL. The student needs to submit all the assignments given and needs to take final exam at the proctor center. The student needs to earn a certificate by passing the exam. The student will be awarded the credits given in curriculum only by submission of the certificate. In case if student does not pass subjects registered through SWAYAM/NPTEL, the same or alternative equivalent subject may be registered again through SWAYAM/NPTEL in the next semester with the recommendation of HOD and shall be passed.
- iv) Two summer internships each with a minimum of six weeks duration shall be mandatorily done/completed respectively at the end of second and third years (during summer vacations). The internship can be done by the students at local industries, Govt. Organizations, construction agencies, Industries, Hydel and thermal power projects and also in software MNCs. After completing the summer internship, the students shall register in the immediate respective odd semester and it will be evaluated at the end of the semester as per norms of the university. The student has to produce the summer internship satisfactory report and certificate taken from the organization to be considered for evaluation. The College shall facilitate and monitor the student internship programs. Completion of internships is mandatory, if any student fails to complete internship, he/she will not be eligible for the award of degree. In such cases, the student shall repeat and complete the internship.

  
 PRINCIPAL  
 ANDHRA LOYOLA INSTITUTE OF  
 ENGINEERING & TECHNOLOGY  
 VIJAYAWADA-520 008