

**ACADEMIC REGULATIONS,
COURSE STRUCTURE
AND
DETAILED SYLLABUS**

FOR

B.Tech - ECE I & II Year

(Applicable for the Batches admitted from 2020-2021)



DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING
SREENIDHI INSTITUTE OF SCIENCE AND TECHNOLOGY
(An Autonomous Institution under JNTUH)
Accredited by NAAC with 'A' Grade and accredited by NBA)
(Recipient of TEQIP under The World Bank Assistance)
Yamnapet, Ghatkesar, Hyderabad – 501301.

January 2021

VISION AND MISSION OF THE INSTITUTION

Vision

To emerge as a leading Institute for Technical Education and Research in India with focus to produce professionally competent and socially sensitive engineers capable of working in multidisciplinary global environment.

Mission

1. To train the students in the fundamentals of Engineering, Science and Technology by providing good academic environment to pursue undergraduate, Post graduate in chosen fields of Engineering and Technology for a successful professional career.
2. To be a continuous learning organization by developing strong liaison with Academia, R & D institutions and Industry for exposure in practical aspects of engineering and providing solutions to the industrial and societal problems for sustainable development. To imbibe skills for entrepreneurship, project and finance management.
3. To inculcate team work, leadership, professional ethics, use of modern tools, IPR issues so that graduates are encouraged to obtain patents and respond to competitive global environment.
4. To promote strong research culture in graduates for lifelong learning, to explore the frontiers of knowledge and present at technical fora/publish in Journals at national/international level.

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

Department of Electronics and Communication Engineering is established in the year 1997 to meet the requirements of the emerging industry/discipline. The Vision and the Mission of the department are:

VISION

To create an educational environment for students to excel in their professional carrier, and to solve the challenges of industry in the field of Electronics and Communication Engineering with focus on human values, professional ethics and social responsibility.

MISSION

1. Training the students in the core subjects of Electronics and Communication engineering with due focus on multi-disciplinary areas.
2. Establishing liaison with relevant industries, R&D organizations and renowned academia for exposure to modern tools and practical aspects of technology.
3. Inculcating team work, leadership, professional ethics, effective communication and interpersonal skills to make students globally competent in employment as well as entrepreneurship.
4. Promoting scientific temper and research culture in the graduates towards lifelong learning, and to work towards the engineering solution in the contexts of society and environment.

Program Educational Objectives (PEOs)

PEO – I. To apply the knowledge of mathematics, science and engineering fundamentals to find the solution of complex engineering problems concerning societal, health, safety, cultural and environmental issues.

PEO – II. Empowering graduates to exhibit proficiency in core areas through evolving technologies in electronics and communication engineering and to identify, analyze, design, and conduct experiments for innovative solutions.

PEO – III. Facilitating graduates to achieve academic excellence and pursue R&D in multi-disciplinary domains leading to design of novel products using modern tools and to promote skills in project management, entrepreneurship and IPR.

PEO- IV. Developing human values, and professional ethics, improving the effective communication skills, team work, leadership qualities, and life-long learning.

The Program Outcomes

Engineering Graduates will be able to:

1. **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. **Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3. **Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
4. **Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
5. **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
6. **The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
7. **Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. **Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. **Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
11. **Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

12. **Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

The Program Specific Outcomes (PSOs)

PSO1: Should be able to gain the in-depth knowledge in core subjects to identify, formulate, analyze, and suggest viable solutions to the real-life problems in the field of electronics and communication engineering.

PSO2: Should have the capability to apply modern design tools to analyze and design subsystems/processes for a variety of applications in the allied fields of electronics and communications.

PSO3: Should possess good interpersonal skills, and also an ability to work as a team member as well as team leader with good professional ethics, and also to become a life-long learner in the context of technological developments.

**ACADEMIC REGULATIONS
FOR B.TECH. REGULAR STUDENTS
WITH EFFECT FROM
THE ACADEMIC YEAR 2020-21
(A-20)**

1.0 Under-Graduate Degree Programme in Engineering & Technology (E&T)

- 1.1** SNIST offers a 4-year (8 semesters) **Bachelor of Technology (B.Tech.)** degree programme, under Choice Based Credit System (CBCS) with effect from the academic year 2020-21 in the following branches of Engineering.

Sl. No.	Branch
1.	Civil Engineering
2.	Electrical and Electronics Engineering
3.	Mechanical Engineering
4.	Electronics and Communication Engineering
5.	Computer Science and Engineering
6.	Information Technology
7.	Electronics and Computer Engineering

1.2. Credits (Semester system for B.Tech courses)

The existing credit system of giving one credit for a lecture hour/ tutorial hour per week and giving 0.5 credit for every hour of practical and drawing shall be continued in these regulations also.

2.0 Eligibility for admission

- 2.1** Admission to the Under Graduate courses shall be made either on the basis of the rank of the candidate in entrance test conducted by the Telangana State Government (EAMCET) or on the basis of any other order of merit approved by the University, subject to reservations as prescribed by the Government from time to time. However, admissions under Management / NRI Category shall be made on the relevant orders issued by the Govt. of Telangana from time to time.

- 2.2** The medium of instruction for the entire Under Graduate programme of study in E&T will be **English** only.

3.0 B.Tech. Programme structure

- 3.1** A student after securing admission shall pursue the Under Graduate programme in B.Tech. in a minimum period of **four** academic years (8 semesters), and a maximum period of **eight** academic years (16 semesters) starting from the date of commencement of first year first semester, failing which student shall forfeit seat in B.Tech course. However, the student can take two more years for appearing the examinations to clear the backlog subjects.

In the First year it is structured to provide **45 credits** and the credits in II , III and IV years should not exceed **119 credits** as per AICTE model curriculum for the B.Tech. programme. Each student shall secure **164 credits** (with CGPA ≥ 5) required for the completion of the Under Graduate programme and Award of B.Tech degree.

Each student shall secure **164 total credits** (with CGPA ≥ 5) for the completion of the Under Graduate programme for the award of the B.Tech. degree. However, any revision made in this regard and approved by the Academic Council of the college and by Parent University shall be implemented from the date of the revision.

3.2 UGC/AICTE specified definitions/ descriptions are adopted appropriately for various terms and abbreviations stated below.

3.2.1 Semester scheme

Each Under Graduate programme is of 4 academic years (8 semesters) with the academic year being divided into two semesters of 22 weeks (90 instructional days) each, each semester having - ‘Continuous Internal Evaluation (CIE)’ and ‘Semester End Examination (SEE)’.

Choice Based Credit System (CBCS) and Credit Based Semester System (CBSS) as indicated curriculum / course structure as suggested by AICTE are followed.

3.2.2 Credit courses

- A student in a semester has to earn credits which shall be assigned to each subject/ course in an L: T: P: C (lecture periods: tutorial periods: practical periods: credits) structure based on the following general pattern.
- One credit for one hour/ week offered in the entire semester for theory lecture (L) / Tutorial (T) courses.
- One credit for two hours/ week offered in the entire semester for laboratory/ practical (P) courses.
- The orientation course recommended by AICTE in the model curriculum is offered for 3 weeks and Cyber Security in III year as mandatory course.
- Environmental Engineering is offered mandatory course for B. Tech Mechanical Engineering and ECE students in II year.
- However, these courses will be reflected in the Memo of Marks, the grading will be awarded below, with some total of 100 marks with CIE for 30 marks and SEE for 70 marks.

%of Marks Secured in a Subject/Course	LetterGrade
Greater than or equal to 90%	O (Outstanding)
80 and less than 90%	A+ (Excellent)
70 and less than 80%	A (Very Good)
60 and less than 70%	B+ (Good)
50 and less than 60%	B (Average)
40 and less than 50%	C (Pass)
Below 40%	F (FAIL)
Absent	Ab

- For mandatory courses i.e., **Orientation Course** for B. Tech I year students to be taught for one week in I semester with Two Units and remaining Four Units in B. Tech. I year II semester and **Cyber Security** is offered as mandatory course for all the students of Civil, ME, EEE and will not have credits, but evaluation will be done as per the above table. A student cannot obtain degree unless he / she completes all the mandatory courses.

3.2.3 Subject Course Classification

All subjects / courses offered for the Under Graduate programme in E&T (B.Tech. Degree programmes) are broadly classified as follows. The Institution has followed all the guidelines issued by AICTE/UGC.

The groups of the subjects shall be as given in the table hereunder along with the credits suggested by AICTE. efforts are made by individual departments to make up the total credits equal to 164.

Sl. No.	Category	Suggested Breakup of Credits (Total 160)	CSE	ECE	CED	EEE	ME	IT	ECM
1	Humanities and social sciences including Management courses	12*	14	14	11	13	13	14	13
2	Basic Science including Mathematics courses	25*	22	23	29	30	24	22	26
3	Engineering Science courses including workshop, drawing, basic electrical /electronics mechanical course as well as various computer courses offered for Non – IT branches	24*	29	28	31	25	28	29	28
4	Professional core courses	48*	59	59	51	61	62	59	59
5	Professional Elective courses (five courses)relevant to chosen specialization / branch	18*	15	15	15	15	15	15	15
6	Open Electives(3 courses) offered by any other departments / MBA department **	18*	6	6	6	6	6	6	6
7	Project work, seminar and internship in industry or elsewhere	15*	19	19	21	14	16	19	17
8	Mandatory courses (Environmental Sciences, Induction training, Indian constitution, Essence of Indian Traditional Knowledge)	(Non-credit)	(Non-credit)	(Non-credit)	(Non-credit)	(Non-credit)	(Non-credit)	(Non-credit)	(Non-credit)
	Total	160*	164	164	164	164	164	164	164

The Joint Board of Studies and Academic Council of the institution has approved the total number of credits to be 164. The various groups of subjects mentioned above shall have credits suggested above with minor variations.

4.0 Course registration

- 4.1 A 'faculty advisor or counselor' shall be assigned to a group of 20 students, who will advise student about the under graduate programme, its course structure and curriculum, choice/option for Professional and open Electives based on their employment potential / further studies.
- 4.2 The student will progress semester after semester as the Institute is following cohort system to satisfying the conditions of promotion to the next semester.
- 4.3 **In the present system there shall be five subjects in each professional elective stream and three subjects in open elective stream.** A student can opt for a stream of professional/ open electives which should be submitted to the faculty Advisor/ Counselor and copy of it to the Examination Section through the Head of the department. A copy of it will be retained with the Head of the department/ faculty Advisor/ Counselor and the student.
- 4.4. **The student can take one extra subject in each semester and can complete the program in 3 ½ years but original degree will be issued along with his / her batch mates after 4 years.**
- 4.5. **If a student acquires 20 credits extra than the required credits as per the regulations he will be awarded honors.**
- 4.6 The purpose of offering Elective Streams in both Professional and Open Electives is to facilitate the students to have a minor specialization based on their interest, so that they will have multi disciplinary exposure. Hence, a student is to take a stream of Electives in either in Professional / Open Elective. He shall not be permitted to opt for other elective subjects in other streams in subsequent semesters.
- 4.7 Dropping of Electives may be permitted, only after obtaining prior approval from the faculty advisor / counselor, '**within a period of 15 days** from the beginning of the current semester.

5.0 Subjects / courses to be offered

- 5.1 A typical section (or class) nominal strength for each semester shall be 60.
- 5.2 A subject / course may be offered to the students, **only if a minimum of 30 students** opt for it. The maximum strength of a section is limited to 80.

6.0 Attendance requirements:

- 6.1 A student shall be eligible to appear for the semester end examinations, if student acquires a minimum of 75% of attendance in aggregate of all the subjects / courses (excluding attendance in mandatory courses, Internship during II year, NCC / NSO and NSS) for that semester.
- 6.2 Shortage of attendance in aggregate upto 10% (65% and above and below 75%) in each semester may be condoned by the college academic committee on genuine and valid grounds, based on the student's representation with supporting evidence.
- 6.3 A stipulated fee shall be payable towards condoning of shortage of attendance as decided by finance committee of SNIST from time to time.
- 6.4 Shortage of attendance below 65% in aggregate shall **inNO CASE** be condoned.

6.5 Students whose shortage of attendance is not condoned in any semester are not eligible to take their end examinations of that semester.

They get detained and their admission for that semester shall stand cancelled.

They will not be promoted to the next semester. They may seek re-admission for all those subjects registered in that semester in which student was detained, by seeking re-admission into that semester as and when offered; in case if there are any professional electives and / or open electives, the same may also be re-registered if offered. However, if those electives are not offered in later semesters, then alternate electives may be chosen from the **same** set of elective subjects offered under that category. He will be governed by the new regulations in which he takes re-admission.

6.6 A student fulfilling the attendance requirement in the present semester shall not be eligible for readmission into the same semester.

7.0 Academic requirements

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

7.1 **A student shall be deemed to have satisfied the academic requirements and earned the credits allotted to each subject / course, if student secures not less than 35% marks (24 out of 70 marks) in the semester end examination, and a minimum of 40% of marks in the sum total of the CIE (Continuous Internal Evaluation) and SEE (Semester End Examination) taken together; in terms of letter grades, this implies securing ‘C’ grade or above in that subject / course.**

7.2 A student shall be deemed to have satisfied the academic requirements and earned the credits allotted to group projects, seminar, comprehensive test, viva-voce and major project. If a student secures not less than 40% marks (i.e. 40 out of 100 allotted marks) in each of them.

The student would be treated as failed, if student

- (i) does not complete all the mandatory courses offered during the course
- (ii) does not submit a report on internship, group project, major project, or does not make a presentation of the same before the evaluation committee as per schedule, or
- (iii) does not present the seminar as required in the I year and II year or
- (iv) secures less than 40% marks in comprehensive test and seminar/ comprehensive test and viva-voce /group project/major project evaluations.

Student may reappear once for each of the above evaluations, when they are scheduled again; if student fails in such ‘one re-appearance’ evaluation also, student has to reappear for the same in the next subsequent semester, as and when it is scheduled.

7.3 Promotion Rules based upon credits

S.No.	Promotion	Conditionstobefulfilled
1	First year First Semester to Second Semester	Regularcourseofstudyoffirstyear firstsemester and should have satisfied the minimum requirement of attendance to appear I year I semester.
2	Firstyear to secondyearfirstsemester	i. Regularcourseofstudyoffirstyear First and secondsemesters. ii. Musthavesecuredat least50%ofcredits (22) upto first year second semester from alltherelevantregularand supplementary examinations, whetherthestudent takesthose examinationsornot.

3	II Year I Semester to II Semester	Regular course of study of second year first semester.
4	Second year to third year first semester	i. Regular course of study of First and second semesters of second year. ii. Must have secured at least 60% of credits (54) up to second year second semester from all the relevant regular and supplementary examinations, whether the student take those examinations or not.
5	Third year first semester to second semester	Regular course of study of third year first semester.
6	Third year second semester to fourth year first semester	i. Regular course of study of third year second semester. ii. Must have secured 60% of credits (79) up to third year second semester from all the relevant regular and supplementary examinations, whether the student take those examinations or not.
7	Fourth year first semester to fourth year second semester	Regular course of study of fourth year first semester.

7.4 A student (i) shall attend for all courses / subjects covering 164 credits as specified and listed in the course structure, (ii) fulfils all the attendance and academic requirements for 164 credits, (iii) earn all 164 credits by securing SGPA \geq 5.0 (in each semester), and CGPA (at the end of each successive semester) \geq 5.0, (iv) **passes all the mandatory courses**, to successfully complete the under graduate programme. The performance of the student in these 164 credits shall be taken into account for the calculation of 'the final CGPA (at the end of under graduate programme), and shall be indicated in the grade card of IV year II semester.

7.5 If a student registers for some more '**extra subjects**' (in the parent department or other departments / branches of engineering) other than those listed subjects as specified in the course structure of his Department, the performances in those '**extra subjects**' will not be taken into account while calculating the SGPA and CGPA. For such '**extra subjects**' registered, Percentage (%) of marks and letter grade alone will be indicated in the grade card as a performance measure, subject to completion of the attendance and academic requirements as stated in the regulations 6 and 7.1 to 7.4 above.

7.6 A student eligible to appear in the semester end examination for any subject / course, but absent from it or failed (thereby failing to secure '**C**' grade or above) has to reappear for that subject/ course in the supplementary examination as and when conducted. In such cases, CIE assessed earlier for that subject / course will be carried over, and added to the marks obtained in the supplementary examination for evaluating performance in that subject.

7.7 A student **detained in a semester due to shortage of attendance, may be re-admitted when the same semester is offered in the subsequent academic years for the fulfillment of academic requirements.**

The academic regulations under which student has been readmitted shall be applicable. However, no grade allotments or SGPA / CGPA calculations will be done for the entire semester in which student has been detained.

7.8 A student detained **due to lack of credits, will be promoted to the next academic year only after acquiring the required credits as per academic regulations.**

The academic regulations shall be applicable to a student whatever they are in force at the time of re-admission.

8.0 Evaluation - Distribution and weightage of marks

8.1 The performance of a student in each semester shall be evaluated subject-wise for a maximum of 100 marks for a theory and 100 marks for every practical subject with 30 marks Continuous Internal Evaluations (CIE) and 70 marks for Semester End Examinations (SEE)

Summer Break: Internship-I and Internship-II will be organized during summer vacation of II-II and III-II and evaluation of the same will be carried out during lab examinations of III-I and IV-I.

In addition, there will be Group Project-I in III year I semester, Group Project-II in III year II semester, and Group Project-III in IV year I semester, Major project in IV year II semester will be evaluated for 100 marks.

The pattern of continuous internal evaluation for Internship Project and Group Project is given below:

Sl.No	Description	Marks
1	Abstract, Design, implementation and Presentation in front of Project Review Committee consisting of HoD, Senior faculty and Internal guides (Average)	15 marks
2	Report	05 marks
3	Evaluation by Internal Guide	10 marks
	Total sessional marks	30 marks

Semester end examination - 70 marks

Pattern of external evaluation for Internship Project and Group Project.

Sl.No	Description	Marks
1	Final report	10 marks
2	Presentation	10 marks
3	Demonstration/defence of project	50 marks
	Total sessional marks	70 marks

Pattern of continuous internal evaluation for Major Project in IV year II semester is as follows:

Sl.No	Description	Marks
1	Progress of Project work and the corresponding interim report as evaluated by Project Review Committee at the end of 6 weeks	5 marks
2	Seminar at the end of 6 weeks	5 marks
3	Progress of Project work as evaluated by Project Review Committee at the end of 11 weeks	5 marks
4	Seminar at the end of 11 weeks	5 marks
5	Evaluation by Project Review Committee at the end of 15 weeks and Final Project Report	5 marks
6	Final presentation and defense of project	5 marks
	Total	30 marks

Pattern of External Evaluation for Major project - 70 Marks

Sl.No	Description	Marks
1	Final Project Report	10 marks
2	Presentation	20 marks
3	Demonstration / Defense of Project before committee	40 marks
4	TOTAL	70 marks

8.2 For all the other theory and lab subjects the distribution of marks shall be 30 for Continuous Internal Evaluation (CIE) and 70 for the Semester End-Examination (SEE).

8.3 Theory Subjects

8.3.1 Pattern for Continuous Internal Evaluation (CIE) 30 marks

The following procedure is to be adopted for awarding internal marks of 30 for all the B. Tech. students from the Academic Year 2020-2021

The distribution of marks for continuous internal evaluation (30 marks) is shown below. Average of two Mid Tests will be taken for final award of marks.

a)	Part – A of Mid Test will have 10 questions	5 marks
b)	Part – B of Mid Test will have 4 questions (1 from each unit and 4th question from any one unit or combination) and student has to answer 3 questions	15 marks
c)	Part – C Mid Test Question Paper Will have 3 questions – One from each unit taken from assignment questions. Student has to answer 1 question out of 3 questions	3 marks
d)	Assignment– I three questions from each unit (1,2,3 unit) – total of 9 questions to be submitted before first mid test. Similarly assignment – II: will have three questions from each unit (4, 5, 6 units) total of 9 questions will be submitted before Mid Test II and average of two assignments will be considered.	2 marks
e)	Attendance *	3 marks
f)	Class notes	2 marks
	Total	30 marks

* Three marks are awarded for each theory subject for the students who put in attendance in a graded manner as given below:

S.No.	Attendance Range	Marks Awarded
1.	65 % and above but less than 75%	1
2.	75% and above and less than 85%	2
3.	85% and above	3

Marks for attendance shall be added to each subject based on average of attendance of all subjects put together.

If any candidate is absent in any subject or mid-term examination, this student wishes to improve performance, a **third mid-test** will be conducted for that student by the Institution in the entire syllabus, on the same day of Semester End Examination (SEE) for 2¹/₂ hours. That result will be treated as III mid test and average of better two of (mid test I,II,III) will be considered. III mid test

will have Part-A (compulsory) and Part-B with essay type questions and three out of four questions are to be answered.

b) Pattern for External Examinations - (70 marks)

- There shall be external examination in every theory course and consists of two parts (Part-A & Part-B). The total time duration for this semester end examination will be 3 hours.
- **Part-A** shall have 20 marks, which is compulsory. It will have 10 short questions set with 2 marks each. There shall be atleast one question to each of the six units and two questions from units 1,2,3 and two questions from unit 4,5,6 and number of questions from any unit shall not exceed two.
- **Part-B** of the question paper shall have essay type questions for 50 marks and shall have 8 questions out of which any 5 are to be answered. At least one question must appear from each Unit. Seventh question must have 2 to 3 bits taken from 1st, 2nd, and 3rd units and 8th question also with 2 to 3 bits taken from 4th, 5th and 6th units, such that not more than 2 questions shall be from any one unit. All the questions carry equal marks.

8.4 Pattern of Evaluation for Lab subjects - (100 marks)

8.4.1 For practical subjects there shall be a continuous evaluation during the semester for 30 sessional marks and 70 marks for semester end examination. Out of the 30 marks for Continuous Internal Evaluation, the distribution of marks is as follows

S. No	Item	Marks
1.	Day to Day work	05 marks
2.	Final Record and viva	09 marks
3.	Average of two tests including viva	05 marks
4.	Lab Based Project Report viva and demo	08 marks
5.	Attendance	03 marks
Total		30 marks

8.4.2 The semester end examination for 70 marks for the lab subjects shall be conducted by an external examiner and an internal examiner appointed by the Chief Superintendent of Examinations of the college. The marks are distributed as follows:

S. No	Item	Marks
1.	Procedure to experiment and Tabulation	10 marks
2.	Conduct of experiment, observation, Calculation	30 marks
3.	Results including graphs, discussions and conclusion	20 marks
4.	Viva voce and Record	10 marks
Total		70 marks

8.4.3 In case computer based examinations

S. No	Item	Marks
1.	Flow chart and algorithms	10 marks
2.	Program writing and execution	30 marks
3.	Result and conclusions	20 marks
4.	Viva voce and Record	10 marks
Total		70 marks

8.5 **For the subject having design and / or drawing, (such as Engineering Drawing and Machine Drawing), the distribution shall be 30 marks for internal evaluation (10 marks for day-to-day work including drawing,3 marks for home assignment work, 12 marks for average of two internal tests and 2 marks for class notes 3 marks for attendance) and 70 marks for end semester end examination.**

There shall be two internal tests in a Semester and the average of the two shall be considered for the award of marks for internal tests.

Third test facility can be availed as mentioned above (8.3.1 (i) (a) and (b))

8.6. Technical Seminar

There shall be a technical seminar evaluated for 100 marks from I year I semester to II year II Semester. The evaluation is purely internal and will be conducted as follows:

Sl.No	Description	Marks
1	Literature survey, topic and content	10
2	Presentation including PPT	10
3	Seminar Notes	05
4	Interaction with audience after presentation	05
5	Final Report 3 copies	10
6	Class room participation	05
7	Punctuality in giving seminar as per Scheduled time and date	10
8	Mid Semester Viva (on the seminar topics completed up to the end of 9 th week	15
9	End Semester Viva	30
	Total	100 Marks

Student must secure 40% i.e. 40 marks to be successful in sum total (Hundred Marks) in Technical Seminar.

8.7 Comprehensive Test and Viva-voce:

Comprehensive test and Viva Voce	The subjects studied in the Semester concerned related to branches concerned and for placements
B.Tech I year I semester	I semester
B.Tech I year II semester	I and II semester
B.Tech II year I semester	I, II and III semester
B.Tech II year II semester	I, II, III and IV semester
B.Tech III year I semester	I, II, III, IV and V semester
B.Tech III year II semester	I, II, III, IV, V and VI semester
B.Tech IV year I semester	I, II, III, IV, V, VI and VII semester

Two Mid tests, Two mid Viva voce, one External Comprehensive Test and one External Comprehensive Viva Voce.

Allocation of marks :

*Comprehensive Test	: 70 marks
**Viva Voce	: 30 marks
Total	: 100 marks

*Average of two best Mid Tests of Mid Test – I, Mid Test – II and Mid Test - III will be taken for 30 marks.

Total marks for Comprehensive Test will be 70.

The total sessional marks in this subject of Comprehensive Test and Viva Voce will be : 30 for sessionals and 70 for End Semester examination.

The grand total of marks for the subject of Comprehensive Test and Viva Voce will be 100. The student has to secure 40% of marks i.e. 40 marks in sum total of 100 marks to be successful in the subject.

- 8.8 The laboratory records and internal test papers shall be preserved in the respective departments as per the college norms and shall be produced to the Committee of the college or any external agency like AICTE, NAAC, JNTUH, NBA etc., as and when the same are called for.
- 8.9 There shall be aInternship 1 and Internship 2, in an Industry of their specialization. Students will register for this immediately after II year II semester end examinationand III year II semester examinations and pursue it during summer vacation. Internship 1 and Internship 2 shall be submitted as a project report and presented before the committee in III year I semester andIV year I semester along with lab examination. This project report will be evaluated for 30 internal marks and 70 external marks. The committee consists of an external examiner, Head of the Department, Supervisor of the Internship project and Senior Faculty Member of the Department.
- 8.10 The laboratory marks and the internal marks awarded by the college are subject to scrutiny and scaled down by the Departmental committees wherever necessary. In such cases, the internal and laboratory marks awarded by the department will be referred to a committee. The committee will arrive at a scaling factor and the marks will be scaled accordingly. The recommendation of the committee is final and binding. The laboratory records and internal test papers shall be preserved in the respective departments as per the college rules and produced before the visiting committees as and when they are asked for.
- 8.11. For mandatory courses like orientation course, cyber security, a student has to secure 40 marks out of 100 marks (i.e. 40% of the marks allotted) in sum total of continuous internal evaluation and external examination for passing the subject / course. These marks will be graded as per table given in 3.2.2.

9.0 Grading procedure

- 9.1 Marks will be awarded to indicate the performance of student in each theory subject, laboratory / practicals, seminar, Group Project 1,2,3, in the Major project and Comprehensive Test and Viva.

Based on the percentage of marks obtained (Continuous Internal Evaluation plus Semester End Examination, both taken together) as specified in item 8 above, a corresponding letter grade shall be given.

- 9.2 As a measure of the performance of student, a 10-point absolute grading system using the following letter grades (as per UGC / AICTE guidelines) and corresponding percentage of marks shall be followed:

%of Marks Secured in a Subject / Course (Class Intervals)	LetterGrade (UGCGuidelines)	GradePoints (GP)
Greater thanorequalto90%	O (Outstanding)	10
80%and lessthan 90%	A+ (Excellent)	9
70%and lessthan 80%	A (VeryGood)	8
60%and lessthan 70%	B+ (Good)	7
50%and lessthan 60%	B (Average)	6
40%and lessthan 50%	C (Pass)	5
Below40%	F (FAIL)	0
Absent	Ab	0

- 9.3** A student obtaining ‘**F**’ grade in any subject shall be deemed to have ‘**failed**’ and is required to reappear as a ‘supplementary student’ in the semester end examination, as and when offered. In such cases, internal marks in those subjects will remain the same as those obtained earlier.
- 9.4** A student who has not appeared for examination in any subject, ‘**Ab**’ grade will be allocated in that subject, and student shall be considered ‘**failed**’. Student will be required to reappear as a ‘supplementary student’ in the semester end examination, as and when offered.
- 9.5** A letter grade does not indicate any specific percentage of marks secured by the student, but it indicates only the range of percentage of marks.
- 9.6** A student earns grade point (GP) in each subject / course, on the basis of the letter grade secured in that subject / course. The corresponding ‘credit points’ (CP) are computed by multiplying the grade point with credits for that particular subject/ course.

Credit points (CP) = grade point (GP) x credits For a course

- 9.7** The student passes the subject / course only when **GP is not less than 5 (i.e. ‘C’ grade or above)**
- 9.8** The Semester Grade Point Average (SGPA) is calculated by dividing the sum of credit points (CP) secured from all subjects / courses registered in a semester, by the total number of credits registered during that semester. SGPA is rounded off to two decimal places. SGPA is thus computed as

$$SGPA = \left\{ \sum_{i=1}^N C_i G_i \right\} / \left\{ \sum_{i=1}^N C_i \right\} \dots \text{For each semester}$$

(i.e., upto and inclusive of S semesters, S 2),

where ‘**N**’ is the **total** number of subjects (as specifically required and listed under the course structure of the parent department) the student has ‘**registered**’ i.e., from the 1st semester onwards upto and inclusive of the 8th semester, ‘**j**’ is the subject indicator index (takes into account the subjects from 1 to 8 semesters), C_j is the number of credits allotted to the J th subjects and G_j represents the grade points (GP) corresponding to the letter grade awarded for that J th subject.

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

Illustration of calculation of SGPA

Course / Subject	Credits	Letter Grade	Grade Points	Credit Points
Course1	4	A	8	4x8 =32
Course2	4	O	10	4x10=40
Course3	4	C	5	4x5 =20
Course4	3	B	6	3x6 =18
Course5	3	A+	9	3x9 =27
Course6	3	C	5	3x5 =15
	21			152

$$\text{SGPA} = 152/21 = 7.24$$

Illustration of calculation of CGPA:

Course / Subject	Credits	Letter Grade	Grade Points	Credit points
I				
Course1	4	A	8	4x8 =32
Course2	4	A	9	4x9 =36
Course3	4	B	6	4x6 =24
Course4	3	O	10	3x10=30
Course5	3	B	7	3x7 =21
Course6	3	A	8	3x8 =24
I				
Course7	4	B	7	4x7 =28
Course8	4	O	10	4x10=40
Course9	4	A	8	4x8 =32
Course10	3	B	6	3x6 =18
Course11	3	C	5	3x5 =15
Course12	3	A	9	3x9 =27
TotalCredits	= 42			TotalCreditPoints = 327

$$\text{CGPA} = 327/42 = 7.79$$

- 9.9** For merit ranking or comparison purposes or any other listing, **only** the ‘**rounded off**’ values of the CGPAs will be used.
- 9.10** For calculations listed in regulations 9.6 to 9.9, performance in failed subjects/ courses (securing **F** grade) will also be taken into account, and the credits of such subjects/courses will also be included in the multiplications and summations.

After passing the failed subject(s) newly secured letter grades will be taken into account for calculation of SGPA and CGPA.

However, mandatory courses will not be taken into consideration.

10.0 Passing standards

- 10.1 A student shall be declared successful or 'passed' in a semester, if student secures a GP ≥ 5 ('C' grade or above) in every subject/course in that semester (i.e. when student gets SGPA 5.00 at the end of that particular semester); and a student shall be declared successful or 'passed' in the entire under graduate programme, only when gets a CGPA 5.00 for the award of the degree as required.
- 10.2 After the completion of each semester, a grade card or grade sheet (or transcript) shall be issued to all the registered students of that semester, indicating the letter grades and credits earned. It will show the details of the courses registered (course code, title, no. of credits, and grade earned etc.), credits earned, SGPA, and CGPA.

11.0 Declaration of results

- 11.1 Computation of SGPA and CGPA are done using the procedure listed in 9.6 to 9.9.
- 11.2 For final percentage of formula may be used.

12.0 Award of degree marks equivalent to the computed final CGPA, the following % of Marks = (final CGPA – 0.5) x 10

- 12.1 A student who registers for all the specified subjects/ courses as listed in the course structure and secures the total number of credits (with CGPA ≥ 5.0), within 8 academic years from the date of commencement of the first academic year, shall be declared to have '**qualified**' for the award of the B.Tech. degree in the chosen branch of Engineering as selected at the time of admission.
- 12.2 A student who qualifies for the award of the degree as listed in item 12.1 shall be placed in the following classes.
- 12.3 Students with final CGPA (at the end of the under graduate programme) 8.00 and above, and fulfilling the following conditions -
- (i) Should have passed all the subjects/courses in '**first appearance**' within the first 4 academic years (or 8 sequential semesters) from the date of commencement of first year first semester.
 - (ii) Should have secured a CGPA ≥ 8.00 , at the end of each of semesters, starting from first year first semester onwards.
 - (iii) Should not have been detained or prevented from writing the end semester examinations in any semester due to shortage of attendance or any other reason, shall be placed in '**FIRST CLASS WITH DISTINCTION**', otherwise **FIRST CLASS** only.
- 12.4 Students with final CGPA (at the end of the under graduate programme) ≥ 6.5 but < 8.00 , shall be placed in '**FIRST CLASS**'.
- 12.5 Students with final CGPA (at the end of the under graduate programme) ≥ 5.5 but < 6.5 , shall be placed in '**SECOND CLASS**'.
- 12.6 All other students who qualify for the award of the degree (as per item 12.1), with final CGPA (at the end of the under graduate programme) ≥ 5 but < 5.5 , shall be placed in '**pass class**'.

12.7 A student with final CGPA (at the end of the under graduate programme) < 5.00 will not be eligible for the award of the degree.

12.8 Students fulfilling the conditions listed under item 12.3 alone will be eligible for award of ‘**university rank**’ and ‘**gold medal**’.

13.0 Withholding of results

13.1 If the student has not paid the fees to the university / college at any stage, or has dues pending due to any reason whatsoever, or if any case of indiscipline is pending, the result of the student may be withheld, and student will not be allowed to go into the next higher semester. The award or issue of the degree may also be withheld in such cases.

14.0 Transitory regulations

14.1 A student who has discontinued for any reason, or has been detained for want of attendance or lack of required credits as specified, or who has failed after having undergone the degree programme, may be considered eligible for readmission to the same subjects / courses (or equivalent subjects/ courses, as the case may be), and same professional electives / open electives (or from set/category of electives or equivalents suggested, as the case may be) as and when they are offered (within the time-frame of 8 years from the date of commencement of student's first year first semester).

A student admitted in one academic regulation and he is getting readmission in some other academic regulations , the college has to offer substitute / additional subjects based on the comparison of two academic regulations. The details of substitute / additional subjects offered with the recommendations of board of studies of the concerned branch has to be given from time to time. The student will be governed by the academic regulations at the time of re-admission.

15.0 Student transfers

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

15.2 The students seeking transfer to Sreenidhi Institute of Science and Technology (SNIST) from various other Universities / institutions have to pass the failed subjects which are equivalent to the subjects of SNIST, and also pass the subjects of SNIST which the students have not studied at the earlier institution.

Further, though the students have passed some of the subjects at the earlier semesters of SNIST, the students have to study substitute subjects in SNIST and get sessional marks by attending 3rd mid test and paying requisite fee as per the rules.

15.3 The transferred students from other Universities/ institutions to SNIST who are on rolls to be provided one chance to write the CIE (internal marks) in the failed subjects and /or subjects not studied as per the clearance letter issued by the Institution.

15.4 The autonomous affiliated colleges have to provide one chance to write the internal examinations in the failed subjects and /or subjects not studied, to the students transferred from other universities / institutions to SNIST who are on rolls, as per the clearance (equivalence) letter issued by the University.

16.0 Scope

- 16.1 The academic regulations should be read as a whole, for the purpose of any interpretation.
- 16.2 In case of any doubt or ambiguity in the interpretation of the above rules, the decision of the Academic Council is final and binding.
- 16.3 The Institution may change or amend the academic regulations, course structure or syllabi at any time, and the changes or amendments made shall be applicable to all students with effect from the date notified by the Institution.

**Academic Regulations for B.Tech.
(LATERAL ENTRY SCHEME)
w.e.f the AY 2021-22**

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

The Lateral Entry Scheme (LES) students after securing admission shall pursue a course of study for not less than three academic years and not more than six academic years failing which he will forfeit the seat.

2. The student shall register and secure for all the credits with CGPA ≥ 5 from II year to IV year B.Tech. programme (LES) as per the regulations for the award of B.Tech. degree. **Out of the total credits secured, the student can avail exemption up to 6 credits**, that is, one open elective subject and one professional elective subject or two professional elective subjects for B.Tech programme to improve the performance of the Grade point average.
3. The students, who fail to fulfil the requirement for the award of the degree in six academic years from the year of admission, shall forfeit their seat in B.Tech. However, the student can take **two more** years for appearing the examinations.
4. The attendance requirements of B. Tech. (Regular) shall be applicable to B.Tech. (LES).

5. Promotion rules based on credits

S.	Promotion	Conditionstobefulfilled
1	Second year first semester to second year second semester	Regularcourseofstudyofsecondyearfirst semester.
2	Secondyearsecondsemestertothird yearfirstsemester	(i)Regular course ofstudyofsecondyear secondsemester. (ii)Musthavesecuredatleast27credits outof45credits i.e.,60% ofcreditsup to second yearsecond semester fromall the relevant regular and supplementary examinations, whether thestudenttakes thoseexaminationsor not.
3	Thirdyearfirstsemestertothirdyear secondsemester	Regularcourseofstudyofthirdyearfirst semester.
4	Thirdyearsecondsemestertofourth yearfirstsemester	(i) Regularcourseof study ofthird year secondsemester. (ii)Musthavesecuredatleast52credits outof87credits i.e.,60% ofcreditsup to third year second semester from all the relevant regular and supplementary examinations, whether the student takes thoseexaminationsor not.

5	Fourth year first semester to fourth year second semester	Regular course of study of fourth year first semester.
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6. All the other regulations as applicable to B.Tech. 4-year degree course (Regular) will hold good for B.Tech. (Lateral Entry Scheme).

MALPRACTICE RULES
DISCIPLINARY ACTION FOR MIS-CONDUCT OF STUDENTS DURING EXAMINATIONS

	Nature of Malpractice/ Mis-conduct of the conduct	Punishment
	If the student:	
1.(a)	Possesses or keeps accessible in examination hall, any paper, notebook, programmable calculators, cellphones, pager, palm computers or any other form of material concerned with or related to the subject of the examination (theory or practical) in which student is appearing but has not made use of (material shall include any marks on the body of the student which can be used as an aid in the subject of the examination)	Expulsion from the examination hall and cancellation of the performance in that subject only.
(b)	Gives assistance or guidance or receives it from any other student or ally or by any other body language methods or communicates through cellphones with any student or persons in or outside the exam hall in respect of any matter.	Expulsion from the examination hall and cancellation of the performance in that subject only of all the students involved. In case of an outsider, he will be handed over to the police and a case is registered against him.
2.	Has copied in the examination hall from any paper, book, programmable calculators, palm computers or any other form of material relevant to the subject of the examination (theory or practical) in which the student is appearing.	Expulsion from the examination hall and cancellation of the performance in that subject and all other subjects the student has already appeared including practical examinations and UG major project and shall not be permitted to appear for the remaining examinations of the subjects of that semester/year. The hall ticket of the student is to be cancelled and sent to the university.
3.	Impersonates any other student in connection with the examination.	The student who has impersonated shall be expelled from examination hall. The student is also debarred and forfeits the seat. The performance of the original student who has been impersonated, shall be cancelled in all the subjects of the examination (including practicals and UG major project) already appeared and shall not be allowed to appear for examinations of the remaining subjects of that semester/year. The student is also debarred for two consecutive semesters from classwork and all university examinations. The continuation
		of the course by the student is subject to the academic regulations in connection with forfeiture of seat. If the imposter is an outsider, he will be handed over to the police and a case is registered against him.

4.	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 student has already appeared including practical examinations and UG major project and shall not be permitted for the remaining examinations of the subjects of that semester/year. The student is also debarred for two consecutive semesters from classwork and all university examinations. The continuation of the course by the student is subject to the academic regulations in
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 walkout or instigates others to walkout, or threatens the officer-in-charge or any person on duty in or outside the examination hall or 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 results 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	In case of students of the college, they shall be expelled from examination halls and cancellation of their performance in that subject and all other subjects the student(s) has (have) already appeared and shall not be permitted to appear for the remaining examinations of the subjects of that semester/year. The students also are debarred and forfeit their seats. In case of outsiders, they will be handed over to the police and a police case is registered against them.

7.	Leaves the exam hall taking away answers script or intentionally tears of 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 student has already appeared including practical examinations and UG major project and shall not be permitted for the remaining examinations of the subjects of that semester/year. The student is also debarred for two consecutive semesters from classwork and all university examinations. The continuation of the course by the student is subject to the academic regulations in
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8.	Possess any lethal weapon or fire arm in the examination hall.	Expulsion from the examination hall and cancellation of the performance in that subject and all other subjects the student has already appeared including practical examinations and UG major project and shall not be permitted for the remaining examinations of the subjects of that semester/year. The student is also debarred and forfeits the seat.
9.	If student of the college, who is not a student for the particular examination or any person not connected with the college indulges in any malpractice or improper conduct mentioned in clause 6 to 8.	Student of the college expulsion from the examination hall and cancellation of the performance in that subject and all other subjects the student has already appeared including practical examinations and UG major project and shall not be permitted for the remaining examinations of the subjects of that semester/year. The student is also debarred and forfeits the seat. Person(s) who do not belong to the college will be handed over to police and, a police case will
10.	Comes in a drunken condition to the examination hall.	Expulsion from the examination hall and cancellation of the performance in that subject and all other subjects the student has already appeared including practical examinations and UG major project and shall not be permitted for the remaining examinations of the subjects of that semester/year.
11.	Copying detected on the basis of internal evidence, such as, during valuation or during special scrutiny.	Cancellation of the performance in that subject and all other subjects the student has appeared including practical examinations and UG major project 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 to punishment award suitable.

Malpractices identified by squad or special invigilators

1. Punishments to the students as per the above guidelines.
2. Punishment for institutions: (if the squad reports that the college is encouraging malpractices)
 - a. A show cause notice shall be issued to the college.
 - b. Impose a suitable fine on the college.
 - c. Shifting the examination centre from the college to another college for a specific period of not less than one year.

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## I Year I Semester ECE

| Sl. No | Course Type | Dept Course | Code  | Name of the Course                                                                        | L  | T | P | C  | CIE                                                     | SEE |
|--------|-------------|-------------|-------|-------------------------------------------------------------------------------------------|----|---|---|----|---------------------------------------------------------|-----|
| 1      | BS          | S&H         | 8HC04 | Engineering Chemistry                                                                     | 4  | 0 | 0 | 4  | 30                                                      | 70  |
| 2      | ES          | IT          | 8FC01 | Problem Solving using C                                                                   | 3  | 0 | 0 | 3  | 30                                                      | 70  |
| 3      | BS          | S&H         | 8HC09 | Matrix Methods and Calculus                                                               | 2  | 1 | 0 | 3  | 30                                                      | 70  |
| 4      | ES          | S&H         | 8BC01 | Workshop/Manufacturing Processes                                                          | 1  | 0 | 0 | 1  | 30                                                      | 70  |
| 5      | HS          | S&H         | 8HC01 | Oral Communication Skills                                                                 | 1  | 0 | 0 | 1  | 30                                                      | 70  |
| 6      | BS          | S&H         | 8HC08 | Basic Mathematics, Analysis and Reasoning                                                 | 2  | 1 | 0 | 3  | 30                                                      | 70  |
| 7      | BS          | S&H         | 8HC64 | Engineering Chemistry Lab                                                                 | 0  | 0 | 2 | 1  | 30                                                      | 70  |
| 8      | ES          | IT          | 8FC61 | Problem Solving using C Lab                                                               | 0  | 0 | 2 | 1  | 30                                                      | 70  |
| 9      | ES          | S&H         | 8BC61 | Workshop/Manufacturing Processes Lab                                                      | 0  | 0 | 2 | 1  | 30                                                      | 70  |
| 10     | HS          | S&H         | 8HC61 | Oral Communication Skills Lab                                                             | 0  | 0 | 2 | 1  | 30                                                      | 70  |
| 11     | BS          | ECE         | 8C160 | Comprehensive Test and Viva Voce-I (2 Mids(Viva) and End Semester(Test and Viva) = 30+70) | 1  | 0 | 0 | 1  | 30                                                      | 70  |
| 12     | BS          | ECE         | 8C161 | Technical Seminar – I                                                                     | 1  | 0 | 0 | 1  | 100                                                     | 00  |
| 13     | HS          | S&H         | 8HC18 | Orientation Course*                                                                       | 1  | 0 | 0 | 0  | Marks and Grades will be given at the end of I – II Sem |     |
| Total  |             |             |       |                                                                                           | 16 | 2 | 8 | 21 | 430                                                     | 770 |

\* a) Orientation Course for B. Tech I year I semester Students take place for 3 weeks duration covering the first Two Units

b) Orientation Course for B. Tech I year II semester Students take place for covering the remaining Four Units (Units III, IV, V, and VI).

## I Year II Semester ECE

| Sl. No | Course Type | Dept Course | Code  | Name of the Course                                                                         | L  | T | P  | C  | CIE              | SEE |
|--------|-------------|-------------|-------|--------------------------------------------------------------------------------------------|----|---|----|----|------------------|-----|
| 1      | BS          | S&H         | 8HC07 | Engineering Physics                                                                        | 3  | 1 | 0  | 4  | 30               | 70  |
| 2      | ES          | CSE         | 8EC01 | Data Structures and C++                                                                    | 3  | 0 | 0  | 3  | 30               | 70  |
| 3      | BS          | S&H         | 8HC11 | Advanced Calculus and Complex Variable                                                     | 3  | 1 | 0  | 4  | 30               | 70  |
| 4      | ES          | S&H         | 8BC02 | Engineering Graphics                                                                       | 1  | 0 | 4  | 3  | 30               | 70  |
| 5      | HS          | S&H         | 8HC02 | Written Communication Skills                                                               | 1  | 0 | 0  | 1  | 30               | 70  |
| 6      | ES          | EEE         | 8AC42 | Electrical Circuits & Networks Analysis                                                    | 2  | 1 | 0  | 3  | 30               | 70  |
| 7      | ES          | EEE         | 8AC61 | Electrical Circuits & Networks Analysis Lab                                                | 0  | 0 | 2  | 1  | 30               | 70  |
| 8      | BS          | S&H         | 8HC66 | Engineering Physics Lab                                                                    | 0  | 0 | 2  | 1  | 30               | 70  |
| 9      | ES          | CSE         | 8EC61 | Data Structures (C/C++) Lab                                                                | 0  | 0 | 2  | 1  | 30               | 70  |
| 10     | HS          | S&H         | 8HC62 | Written Communication Skills Lab                                                           | 0  | 0 | 2  | 1  | 30               | 70  |
| 11     | BS          | ECE         | 8C262 | Comprehensive Test and Viva Voce-II (2 Mids(Viva) and End Semester(Test and Viva) = 30+70) | 1  | 0 | 0  | 1  | 30               | 70  |
| 12     | BS          | ECE         | 8C263 | Technical Seminar – II                                                                     | 1  | 0 | 0  | 1  | 100              | 00  |
| 13     | HS          | S&H         | 8HC18 | Orientation Course*                                                                        | 2  | 0 | 0  | 0  | Grade evaluation |     |
|        |             |             |       |                                                                                            |    |   |    |    | 30               | 70  |
| Total  |             |             |       |                                                                                            | 17 | 3 | 12 | 24 | 460              | 840 |



## II Year I Semester ECE

| Sl. No       | Course Type | Dept Course | Code  | Name of the Course                                                                          | L  | T | P | C  | CIE | SEE |
|--------------|-------------|-------------|-------|---------------------------------------------------------------------------------------------|----|---|---|----|-----|-----|
| 1            | PC          | ECE         | 8CC01 | Electronic Devices and Circuits                                                             | 3  | 0 | 0 | 3  | 30  | 70  |
| 2            | PC          | ECE         | 8CC02 | Digital Logic Design                                                                        | 2  | 0 | 0 | 2  | 30  | 70  |
| 3            | PC          | ECE         | 8CC03 | Signals and Systems                                                                         | 3  | 0 | 0 | 3  | 30  | 70  |
| 4            | PC          | ECE         | 8C304 | Probability Theory and Stochastic Process                                                   | 2  | 1 | 0 | 3  | 30  | 70  |
| 5            | BS          | S&H         | 8HC14 | Transform Techniques and Numerical Methods                                                  | 2  | 1 | 0 | 3  | 30  | 70  |
| 6            | HS          | S&H         | 8HC17 | Universal Human Values                                                                      | 2  | 1 | 0 | 3  | 30  | 70  |
| 7            | HS          | S&H         | 8HC03 | Soft Skills                                                                                 | 1  | 0 | 2 | 2  | 30  | 70  |
| 8            | PC          | ECE         | 8CC71 | Electronic Devices and Circuits Lab                                                         | 0  | 0 | 2 | 1  | 30  | 70  |
| 9            | PC          | ECE         | 8CC72 | Basic Simulation Lab                                                                        | 0  | 0 | 2 | 1  | 30  | 70  |
| 10           | PC          | ECE         | 8CC73 | Digital Logic Design Lab                                                                    | 0  | 0 | 2 | 1  | 30  | 70  |
| 11           | PW          | ECE         | 8C364 | Comprehensive Test and Viva Voce-III (2 Mids(Viva) and End Semester(Test and Viva) = 30+70) | 1  | 0 | 0 | 1  | 30  | 70  |
| 12           | PW          | ECE         | 8C365 | Technical Seminar - III                                                                     | 1  | 0 | 0 | 1  | 100 | 00  |
| <b>Total</b> |             |             |       |                                                                                             | 17 | 3 | 8 | 24 | 430 | 770 |

## II Year II Semester ECE

| Sl. No       | Course Type | Dept Course | Code  | Name of the Course                                                                         | L  | T | P | C  | CIE | SEE |
|--------------|-------------|-------------|-------|--------------------------------------------------------------------------------------------|----|---|---|----|-----|-----|
| 1            | PC          | ECE         | 8CC05 | Analog Circuits                                                                            | 2  | 0 | 0 | 2  | 30  | 70  |
| 2            | PC          | ECE         | 8CC06 | Analog& Digital Communications                                                             | 2  | 1 | 0 | 3  | 30  | 70  |
| 3            | PC          | ECE         | 8CC07 | IC Applications                                                                            | 2  | 0 | 0 | 2  | 30  | 70  |
| 4            | PC          | ECE         | 8C408 | Electromagnetic Waves and Transmission Lines                                               | 3  | 0 | 0 | 3  | 30  | 70  |
| 5            | HS          | MBA         | 8ZC01 | Economics, Accountancy and Management Science                                              | 2  | 0 | 0 | 2  | 30  | 70  |
| 6            | ES          | IT          | 8FC27 | Python Programming Concepts                                                                | 2  | 0 | 0 | 2  | 30  | 70  |
| 7            | HS          | S&H         | 8HC05 | Environmental Science and Ecology                                                          | 2  | 0 | 0 | 2  | 30  | 70  |
| 8            | PC          | ECE         | 8CC74 | Analog Circuits Lab                                                                        | 0  | 0 | 2 | 1  | 30  | 70  |
| 9            | PC          | ECE         | 8CC75 | Analog& Digital Communication Lab                                                          | 0  | 0 | 2 | 1  | 30  | 70  |
| 10           | PC          | ECE         | 8CC76 | IC Applications Lab                                                                        | 0  | 0 | 2 | 1  | 30  | 70  |
| 12           | PW          | ECE         | 8C466 | Comprehensive Test and Viva Voce-IV (2 Mids(Viva) and End Semester(Test and Viva) = 30+70) | 1  | 0 | 0 | 1  | 30  | 70  |
| 13           | PW          | ECE         | 8C467 | Technical Seminar - IV                                                                     | 1  | 0 | 0 | 1  | 100 | 00  |
| 14           | PW          | ECE         |       | Summer Industry Internship - I: Evaluation will be done along with 3-1 courses             |    |   |   |    |     |     |
| <b>Total</b> |             |             |       |                                                                                            | 17 | 1 | 6 | 21 | 430 | 770 |

### III Year I Semester ECE

| Sl. No | Course Type | Dept Course | Code  | Name of the Course                       | L  | T | P  | C  | CIE              | SEE |
|--------|-------------|-------------|-------|------------------------------------------|----|---|----|----|------------------|-----|
| 1      | PC          | ECE         | 8CC09 | Digital Signal Processing                | 2  | 1 | 0  | 3  | 30               | 70  |
| 2      | PC          | ECE         | 8C510 | VLSI Design                              | 3  | 0 | 0  | 3  | 30               | 70  |
| 3      | PC          | ECM         | 8DC05 | Microprocessors and Microcontrollers     | 3  | 0 | 0  | 3  | 30               | 70  |
| 4      | PC          | ECE         | 8C511 | Cellular and Mobile Communication        | 2  | 0 | 0  | 2  | 30               | 70  |
| 5      | PC          | ECE         | 8C512 | Antennas and Wave Propagations           | 2  | 1 | 0  | 3  | 30               | 70  |
| 6      | PE          | ECE         |       | Professional Elective- I                 | 3  | 0 | 0  | 3  | 30               | 70  |
| 7      | PC          | ECM         | 8DC71 | Microprocessors and Microcontrollers Lab | 0  | 0 | 2  | 1  | 30               | 70  |
| 8      | PC          | ECE         | 8C577 | VLSI Design Lab                          | 0  | 0 | 4  | 2  | 30               | 70  |
| 9      | ES          | IT          | 8FC72 | Python Programming Lab                   | 0  | 0 | 4  | 2  | 30               | 70  |
| 10     | PW          | ECE         | 8C591 | Summer Industry Internship-I             | 0  | 0 | 1  | 1  | 30               | 70  |
| 11     | MC          | IT          | 8FC24 | Cyber Security                           | 2  | 0 | 0  | 0  | Grade evaluation |     |
|        |             |             |       |                                          |    |   |    |    | 30               | 70  |
| Total  |             |             |       |                                          | 16 | 2 | 11 | 23 | 330              | 770 |

### III Year II Semester ECE

| Sl. No | Course Type | Dept Course | Code  | Name of the Course                                                              | L  | T | P  | C  | CIE              | SEE |
|--------|-------------|-------------|-------|---------------------------------------------------------------------------------|----|---|----|----|------------------|-----|
| 1      | PC          | CSE         | 8EC47 | Computer Networks                                                               | 2  | 0 | 0  | 2  | 30               | 70  |
| 2      | PC          | ECE         | 8C613 | Microwave and Optical Communications                                            | 3  | 0 | 0  | 3  | 30               | 70  |
| 3      | MC          | CSE         | 8EC45 | Artificial Intelligence                                                         | 2  | 0 | 0  | 0  | Grade evaluation |     |
|        |             |             |       |                                                                                 |    |   |    |    | 30               | 70  |
| 4      | ES          | EEE         | 8AC07 | Linear Control systems                                                          | 3  | 0 | 0  | 3  | 30               | 70  |
| 5      | PE          | ECE         |       | Professional Elective- II                                                       | 3  | 0 | 0  | 3  | 30               | 70  |
| 6      | OE          |             |       | Open Elective- I                                                                | 2  | 0 | 0  | 2  | 30               | 70  |
| 7      | PC          | ECE         | 8C678 | Antenna Simulation Lab                                                          | 0  | 0 | 4  | 1  | 30               | 70  |
| 8      | PC          | CSE         | 8EC65 | Computer Networks Lab                                                           | 0  | 0 | 2  | 1  | 30               | 70  |
| 9      | PC          | ECE         | 8CC79 | Digital Signal Processing Lab                                                   | 0  | 0 | 4  | 2  | 30               | 70  |
| 10     | PW          | ECE         | 8C692 | Group Project                                                                   | 0  | 0 | 2  | 1  | 30               | 70  |
| 11     | PW          | ECE         | 8C668 | Comprehensive Viva Voce                                                         | 1  | 0 | 0  | 1  | 30               | 70  |
| 12     | PW          | ECE         |       | Summer Industry Internship - II: Evaluation will be done along with 4-1 courses |    |   |    |    |                  |     |
| Total  |             |             |       |                                                                                 | 16 | 0 | 12 | 19 | 330              | 770 |



#### IV Year I Semester ECE

| Sl. No       | Course Type | Dept Course | Code  | Name of the Course                       | L         | T        | P         | C         | CIE        | SEE        |
|--------------|-------------|-------------|-------|------------------------------------------|-----------|----------|-----------|-----------|------------|------------|
| 1            | PC          | ECE         | 8C714 | Internet of Things and Applications      | 2         | 1        | 0         | 3         | 30         | 70         |
| 2            | PC          | ECE         | 8C715 | Advanced Communications and Networks     | 3         | 1        | 0         | 3         | 30         | 70         |
| 3            | HS          | ECE         | 8C716 | Intellectual Property Rights             | 1         | 0        | 0         | 1         | 30         | 70         |
| 4            | PE          | ECE         |       | Professional Elective –III               | 3         | 0        | 0         | 3         | 30         | 70         |
| 5            | PE          | ECE         |       | Professional Elective – IV               | 3         | 0        | 0         | 3         | 30         | 70         |
| 6            | OE          |             |       | Open Elective – II                       | 2         | 0        | 0         | 2         | 30         | 70         |
| 7            | PC          | ECE         | 8C780 | Internet of Things and Applications Lab  | 0         | 0        | 4         | 2         | 30         | 70         |
| 8            | PC          | ECE         | 8C781 | Advanced Communications and Networks Lab | 0         | 0        | 4         | 2         | 30         | 70         |
| 9            | PC          | ECE         | 8C782 | Microwave and Optical Communications Lab | 0         | 0        | 4         | 2         | 30         | 70         |
| 10           | PW          | ECE         | 8C793 | Summer Industry Internship - II          | 0         | 0        | 1         | 1         | 30         | 70         |
| <b>TOTAL</b> |             |             |       |                                          | <b>14</b> | <b>2</b> | <b>13</b> | <b>22</b> | <b>300</b> | <b>700</b> |

#### IV Year II Semester ECE

| Sl. No       | Course Type | Dept Course | Code  | Name of the Course       | L        | T        | P         | C         | CIE       | SEE        |
|--------------|-------------|-------------|-------|--------------------------|----------|----------|-----------|-----------|-----------|------------|
| 1            | PE          | ECE         |       | Professional Elective –V | 3        | 0        | 0         | 3         | 30        | 70         |
| 2            | OE          |             |       | Open Elective – III      | 2        | 0        | 0         | 2         | 30        | 70         |
| 3            | PW          | ECE         | 8C894 | Major Project            | 0        | 0        | 10        | 5         | 30        | 70         |
| <b>TOTAL</b> |             |             |       |                          | <b>5</b> | <b>0</b> | <b>10</b> | <b>10</b> | <b>90</b> | <b>210</b> |

## Professional Electives

| S. No | Stream                     | PE-I                                     | PE- II                         | PE-III                              | PE-IV                                    | PE-V                      |
|-------|----------------------------|------------------------------------------|--------------------------------|-------------------------------------|------------------------------------------|---------------------------|
| 1     | <b>Code</b>                | <b>8C517</b>                             | <b>8C623</b>                   | <b>8C729</b>                        | <b>8C735</b>                             | <b>8C841</b>              |
|       | <b>VLSI</b>                | Digital Design Through Verilog           | Analog and Mixed Signal Design | VLSI Physical Design                | Design Verification using System Verilog | Low Power VLSI Design     |
| 2     | <b>Code</b>                | <b>8C518</b>                             | <b>8C624</b>                   | <b>8C730</b>                        | <b>8C736</b>                             | <b>8C842</b>              |
|       | <b>Embedded System</b>     | Advanced Computer Architecture           | Embedded C Programming         | Embedded System Design using ARM    | Embedded Real Time Operating Systems     | SystemonChip Architecture |
| 3     | <b>Code</b>                | <b>8C519</b>                             | <b>8C625</b>                   | <b>8C731</b>                        | <b>8C737</b>                             | <b>8C843</b>              |
|       | <b>Signal Processing</b>   | Digital Image & Video Processing         | Transform Techniques           | DSP Processors and Architectures    | Bio-Medical Signal Processing            | Radar Signal Processing   |
| 4     | <b>Code</b>                | <b>8C520</b>                             | <b>8C626</b>                   | <b>8C732</b>                        | <b>8C738</b>                             | <b>8C844</b>              |
|       | <b>Communications</b>      | Information Theory and Coding Techniques | Software Defined Radio         | Ad hoc and Wireless Sensor Networks | MIMO OFDM System                         | 5G Communications         |
| 5     | <b>Code</b>                | <b>8C521</b>                             | <b>8C627</b>                   | <b>8C733</b>                        | <b>8C739</b>                             | <b>8C845</b>              |
|       | <b>Advanced Computing</b>  | Digital ImageProcessing                  | Artificial Neural Networks     | Computer Vision                     | Machine Learning                         | Deep Learning             |
| 6     | <b>Code</b>                | <b>8C522</b>                             | <b>8C628</b>                   | <b>8C734</b>                        | <b>8C740</b>                             | <b>8C846</b>              |
|       | <b>Microwave and Radar</b> | Phased Array Antennas                    | Satellite Communications       | Radar Systems                       | Microwave Integrated Circuits            | EMI/EMC                   |

## Open Electives

| Sl. No | Stream                                             | OE-I                                              | OE-II                                                       | OE-III                                        |
|--------|----------------------------------------------------|---------------------------------------------------|-------------------------------------------------------------|-----------------------------------------------|
| 1      | Code                                               | 8ZC05                                             | 8ZC19                                                       | 8ZC15                                         |
|        | Finance                                            | Banking Operations, Insurance and Risk Management | Entrepreneurship, Project Management and Structured Finance | Financial Institutions , Markets and services |
| 2      | Code                                               | 8EC72                                             | 8EC74                                                       | 8EC76                                         |
|        | Computer Science                                   | Programming in Java                               | Database Systems Concepts                                   | Operating Systems Concepts                    |
|        | Code                                               | 8ZC22                                             | 8ZC23                                                       | 8ZC24                                         |
| 3      | Entrepreneurship                                   | Basics of Entrepreneurship                        | Advanced Entrepreneurship                                   | Product and Services                          |
|        | Code                                               | 8ZC25                                             | 8ZC26                                                       | 8ZC27                                         |
| 4      | Social Sciences Stream                             | Basics of Indian Economy                          | Basics of Polity                                            | Indian History, Culture and Geography         |
| 5      | Code                                               | 8CC51                                             | 8CC52                                                       | 8CC53                                         |
|        | ECE Stream                                         | Electronics and Instrumentation                   | Fundamentals of Communication                               | Embedded Systems                              |
|        |                                                    | 8CC56                                             |                                                             |                                               |
|        | Fundamentals of digital circuits & Microprocessors |                                                   |                                                             |                                               |
| 6      | Code                                               | 8AC47                                             | 8AC44                                                       | 8AC45                                         |
|        | EEE stream                                         | Power Electronic Devices and Converters           | Fundamentals of Measurements and Instrumentation            | Fundamentals of Renewable energy sources      |
| 7      | Code                                               | 8BC51                                             | 8BC52                                                       | 8BC53                                         |
|        | Mechanical Stream                                  | Introduction To Additive Manufacturing Processes  | Principles of Operations Research                           | Principles of Automation and Robotics         |
| 8      | Code                                               | 8ZC08                                             | 8ZC09                                                       | 8ZC10                                         |
|        | Innovation and Design Thinking                     | Design literacy and Design Thinking               | Co-Creation and Product Design                              | Entrepreneurship & Business Design            |

## A20 - Total Credits (Semester-wise Credit Distribution)

| SL. NO | SEMESTER     | CREDITS    |
|--------|--------------|------------|
| 1.     | I-I          | 21         |
| 2      | I-II         | 24         |
| 3      | II-I         | 24         |
| 4.     | II-II        | 21         |
| 5      | III-I        | 22         |
| 6      | III-II       | 20         |
| 7      | IV-I         | 22         |
| 8      | IV-II        | 10         |
|        | <b>Total</b> | <b>164</b> |

## Service Courses offered by ECE

| Sl. No | Code  | Name of Subject                     | Offered to Dept |
|--------|-------|-------------------------------------|-----------------|
| 1      | 8CC01 | Electronic Devices and Circuits     | ECM, EEE        |
| 2      | 8CC02 | Digital Logic Design                | ECM, EEE        |
| 3      | 8CC03 | Signals and Systems                 | ECM, EEE        |
| 4      | 8CC71 | Electronic Devices and Circuits Lab | ECM, EEE        |
| 5      | 8CC72 | Basic Simulation Lab                | ECM             |
| 6      | 8CC73 | Digital Logic Design Lab            | ECM             |
| 7      | 8CC05 | Analog Circuits                     | ECM, EEE        |
| 8      | 8CC06 | Analog& Digital Communications      | ECM             |
| 9      | 8CC07 | IC Applications                     | ECM, EEE        |
| 10     | 8CC74 | Analog Circuits Lab                 | ECM, EEE        |
| 11     | 8CC75 | Analog& Digital Communication Lab   | ECM             |
| 12     | 8CC76 | IC Applications Lab                 | ECM, EEE        |
| 13     | 8CC09 | Digital Signal Processing           | ECM, EEE        |
| 14     | 8CC79 | Digital Signal Processing Lab       | ECM             |
| 15     | 8CC54 | Analog Electronic Circuits          | CSE, IT         |
| 16     | 8CC83 | Analog Electronic Circuits Lab      | CSE, IT         |
| 17     | 8CC55 | Digital Electronics                 | CSE, IT         |