ACADEMIC REGULATIONS,

COURSE STRUCTURE

AND

DETAILED SYLLABUS (II YEAR II SEM)

for

B.Tech Four Year Degree Course

(A-20 – Regulation)

in

ELECTRICAL AND ELECTRONICS ENGINEERING

(EEE)

(Applicable for the batches admitted from 2020-21)

SREENIDHI INSTITUTE OF SCIENCE AND TECHNOLOGY
(An Autonomous Institution approved by UGC and affiliated to JNTUH)
(Accredited by NAAC with 'A' Grade and Accredited by NBA of AICTE)
Yamnampet, Ghatkesar, Malkajigiri Medchal District -501 301.

January, 2021

DEPARTMENT OF
ELECTRICAL AND ELECTRONICS ENGINEERING (EEE)

Program objective:

B. Tech in Electrical and Electronics Engineering program emphasizes the fundamentals of electrical & electronics in daily life.

The first two years of this program begins with a set of introductory courses, like Mathematics, physics, English, computer languages (C, C++), circuits and networks, DC machines and introduction to power systems which provide students with a firm foundation in mathematics, Electrical, as well as communication skills. These courses include weekly labs in which students use state-of-the art techniques and equipments to create solutions to interesting problems.

The last two years of study focuses on the concepts and techniques used in the design and development of advanced systems in electrical and electronics. In addition, students choose from a rich set of electives, which covers skills in demand. These advanced courses give broad opening for research and help them to choose specialization in their higher studies. A generous allotment of open electives allows students to learn foreign languages like French, German, Spanish; and it includes computing with a business focus.

Students in this program pursue an inter-disciplinary course of study that combines strong foundation in electrical and electronics with a focus on interdisciplinary areas. This program is designed for students who seek to blend their abilities with skills in demand and skills specific to another domain to solve problems in that domain.

Having completed this course, a student is prepared to work independently within a well structured design frame work in the job and for higher studies.

VISION

To emerge as a leading Electrical and Electronics Engineering Department in 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 empower the students and provide the academic environment to pursue and attain competencies in their studies at undergraduate, post graduate level in Electrical & Electronics Engineering.
2. To develop liaison with academia, R&D institutions and electrical industry for hands-on training which enable the students to design and produce novel products for better society.
3. To inculcate interpersonal skills, team work, leadership qualities and professional ethics in students.
4. To enable the students to pursue higher studies and conduct research which will help them in developing the qualities for life-long learning and for a successful professional career.

Program Educational Objectives of B. Tech

(Electrical and Electronics Engineering)

PEO-I: To empower the students by providing necessary knowledge, critical thinking and problem solving capabilities in the field of Electrical and Electronics Engineering so that they can excel in their profession, in industry, higher studies and Research & Development.

PEO-II: To develop competencies in core and allied fields, so as to conduct experiments, comprehend, analyze, design and apply appropriate techniques / tools to arrive at optimal solutions to face real time challenges.

PEO-III: To inculcate the sense of responsibility towards ethics, Intellectual Property rights, good communication skills and entrepreneurship with adequate knowledge of project / finance management skills for betterment of society at large.

PEO-IV: To motivate the students to be academically excellent and also to be sensitive to Professional ethics, to acquire leadership skills and to be life-long learners for a successful professional career.

Program Outcomes of EEE Department

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.

Program Specific Outcomes (PSO)

1. Able to demonstrate the applications of knowledge gained into the recent technologies in the areas of Power systems, Power electronics and allied fields.
2. Recognize the need of self learning and ability to get into the advanced fields such as renewable energy systems and smart grids.

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 $\geq$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	Letter Grade
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 complete 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 up to 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 in **NO 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	Conditions to be fulfilled
1	First year First Semester to Second Semester	Regular course of study of first year first semester and should have satisfied the minimum requirement of attendance to appear I year I semester.
2	First year to second year first semester	i. Regular course of study of first year First and second semesters. ii. Must have secured at least 50% of credits (22) upto first year second semester from all the relevant regular and supplementary examinations, whether the student takes those examinations or not.

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) upto second year second semester from all the relevant regular and supplementary examinations, whether the student takes those examinations or not.
5	Third year first semester to 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 takes 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 fulfilment 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 $2^1/_2$ 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 9th 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, IIII, IV and V semester
B.Tech III year II semester	I, II, IIII, IV, V and VI semester
B.Tech IV year I semester	I, II, IIII, 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 a Internship 1 and Internship 2, in an Industry of their specialization. Students will register for this immediately after II year II semester end examination and 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 and IV 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)	**Letter Grade (UGC Guidelines)**	**Grade Points (GP)**
Greater than or equal to 90%	O (Outstanding)	10
80% and less than 90%	A+ (Excellent)	9
70% and less than 80%	A (Very Good)	8
60% and less than 70%	B+ (Good)	7
50% and less than 60%	B (Average)	6
40% and less than 50%	C (Pass)	5
Below 40%	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 = { $\sum_{i=1}^{N}$ C_i G_i } / { $\sum_{i=1}^{N}$ C_i } …. 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 Jth subjects and G_j represents the grade points (GP) corresponding to the letter grade awarded for that Jth 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
Course 1	4	A	8	4 x 8 = 32
Course 2	4	O	10	4 x 10 = 40
Course 3	4	C	5	4 x 5 = 20
Course 4	3	B	6	3 x 6 = 18
Course 5	3	A+	9	3 x 9 = 27
Course 6	3	C	5	3 x 5 = 15
	21			152

SGPA = 152/21 = 7.24

Illustration of calculation of CGPA:

Course / Subject	Credits	Letter Grade	Grade Points	Credit points Points
I				
Course 1	4	A	8	4 x 8 = 32
Course 2	4	A	9	4 x 9 = 36
Course 3	4	B	6	4 x 6 = 24
Course 4	3	O	10	3 x 10 = 30
Course 5	3	B	7	3 x 7 = 21
Course 6	3	A	8	3 x 8 = 24
I				
Course 7	4	B	7	4 x 7 = 28
Course 8	4	O	10	4 x 10 = 40
Course 9	4	A	8	4 x 8 = 32
Course 10	3	B	6	3 x 6 = 18

Course 11	3	C	5	3 x 5 = 15
Course 12	3	A	9	3 x 9 = 27
Total Credits	= 42			Total Credit Points =327

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 $\geq$5.0), within 8 academic years from the date of commencement of the first academic year, shall be declared to have '**qualified'** for the award of 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 $\geq$ 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) $\geq$ 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) $\geq$ 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) $\geq$ 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 detail 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. <u>Promotion rules based on credits</u>

S.	Promotion	Conditions to be fulfilled
1	Second year first semester to second year second semester	Regular course of study of second year first semester.
2	Second year second semester to third year first semester	(i) Regular course of study of second year second semester. (ii) Must have secured at least 27 credits out of 45 credits i.e., 60% of credits up to second year second semester from all the relevant regular and supplementary examinations, whether the student takes those examinations or not.
3	Third year first semester to third year second semester	Regular course of study of third year first semester.
4	Third year second semester to fourth year first semester	(i) Regular course of study of third year second semester. (ii) Must have secured at least 52 credits out of 87 credits i.e., 60% of credits up to third year second semester from all the relevant regular and supplementary examinations, whether the student takes those examinations or not.
5	Fourth year first semester to fourth year second semester	Regular course of study of fourth year first semester.

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, note book, programmable calculators, cell phones, pager, palm computers or any other form of material concerned with or related to the subject of the examination (theory or practical) in which student is appearing but has not made use of (material shall include any marks on the body of the student which can be used as an aid in the subject of the examination)	Expulsion from the examination hall and cancellation of the performance in that subject only.
(b)	Gives assistance or guidance or receives it from any other student orally or by any other body language methods or communicates through cell phones with any student or persons in or outside the exam hall in respect of any matter.	Expulsion from the examination hall and cancellation of the performance in that subject only of all the students involved. In case of an outsider, he will be handed over to the police and a case is registered against him.
2.	Has copied in the examination hall from any paper, book, programmable calculators, palm computers or any other form of material relevant to the subject of the examination (theory or practical) in which the student is appearing.	Expulsion from the examination hall and cancellation of the performance in that subject 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 class work and all university examinations. The continuation
		of the course by the student is subject to the academic regulations in connection with forfeiture of seat. 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 class work and all university examinations. The continuation of the course by the student is subject to the academic regulations in connection with forfeiture of seat.
5.	Uses objectionable, abusive or offensive language in the answer paper or in letters to the examiners or writes to the examiner requesting him to award pass marks.	Cancellation of the performance in that subject.
6.	Refuses to obey the orders of the chief superintendent/assistant – superintendent / any officer on duty or misbehaves or creates disturbance of any kind in and around the examination hall or organizes a walk out or instigates others to walk out, or threatens the officer-in charge or any person on duty in or outside the examination hall of any injury to his person or to any of his relations whether by words, either spoken or written or by signs or by visible representation, assaults the officer-in-charge, or any person on duty in or outside the examination hall or any of his relations, or indulges in any other act of misconduct or mischief which result in damage to or destruction of property in the examination hall or any part of the college campus or engages in any other act which in the opinion of the officer on duty amounts to use of unfair means or misconduct or has the tendency to disrupt the orderly conduct of the examination.	In case of students of the college, they shall be expelled from examination halls and cancellation of their performance in that subject and all other subjects the 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 answer 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 class work and all university examinations. The continuation of the course by the student is subject to the academic regulations in connection with forfeiture of seat.

8.	Possess any lethal weapon or firearm in the examination hall.	Expulsion from the examination hall and cancellation of the performance in that subject and all other subjects the 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 colleges 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 be registered against them.
10.	Comes in a drunken condition to the examination hall.	Expulsion from the examination hall and cancellation of the performance in that subject and all other subjects the 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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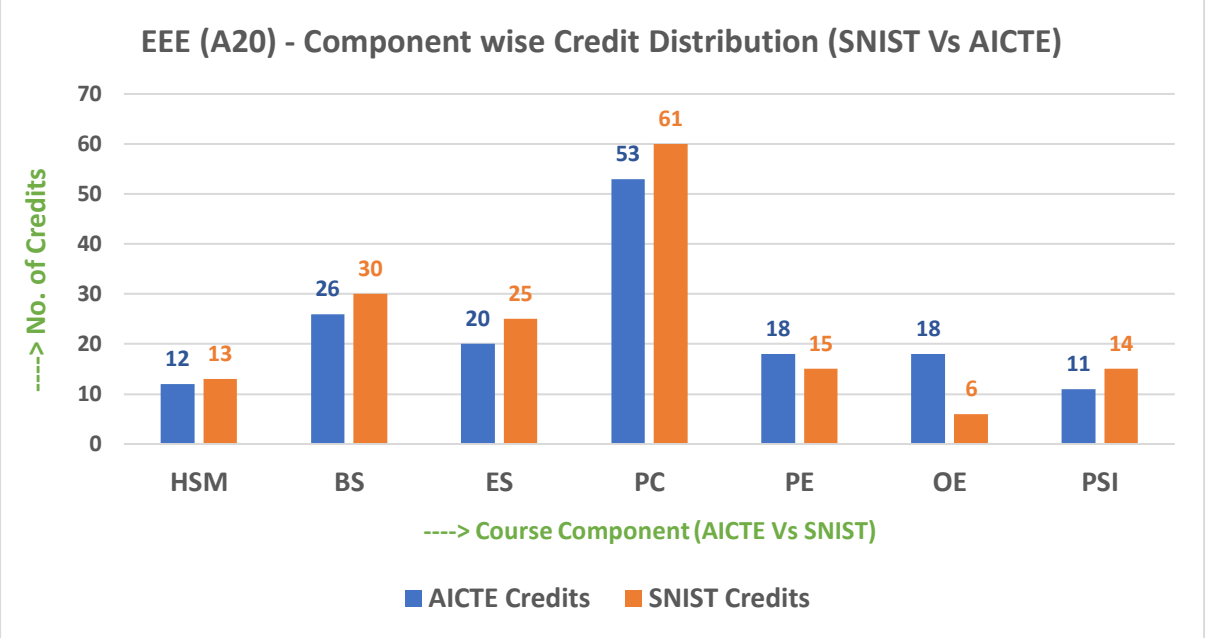
COURSE COMPONENT WISE CREDIT DISTRIBUTION

(SNIST-A20 Regulation Vs AICTE Model Curriculum)

S.No	Component	AICTE Credits	SNIST Credits
1	HSM	12	13
2	BS	26	30
3	ES	20	25
4	PC	53	61
5	PE	18	15
6	OE	18	6
7	PSI	11	14
8	MC	Non-Credit	Non-Credit
TOTAL CREDITS		**158**	**164**

Graphical Representation of the Component wise Credit Distribution of SNIST Vs AICTE



Note: All End Examinations (Theory and Practical) are of Three hours duration.

T – Tutorial L - Theory P/D – Practical/Drawing

C - Credits Int. - Internal Exam Ext. - External Exam

Course code Definitions

BS- Basic Science Courses

ES- Engineering Science Courses

HS- Humanities and Social Sciences including Management courses

PC-EEE Professional core courses

PE -EEE Professional Elective courses

OE-EEE Open Elective courses

PS- Summer Industry Internship, Projects, Comprehensive Viva Voce, Technical Seminars.

SREENIDHI INSTITUTE OF SCIENCE AND TECHNOLOGY (AUTONOMOUS)

B.TECH IN ELECTRICAL AND ELECTRONICS ENGINEERING (EEE)

Course structure for B. Tech I Year I Semester EEE (2020-21)

Sl.No	Course Category	Dept Course	Course code	Name of the Course	L	T	P	C	Max Marks	
									CIE	SEE
1.	BS	S&H	8HC07	Engineering Physics	3	1	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 (MMC)	2	1	0	3	30	70
4.	ES	Mech	8BC02	Engineering Graphics	1	0	4	3	30	70
5.	HSM	S&H	8HC02	Written communication skills	1	0	0	1	30	70
6	BS	S&H	8HC65	Engineering Physics lab	0	0	2	1	30	70
7	ES	IT	8FC61	Problem Solving using C Lab	0	0	2	1	30	70
8	HSM	S&H	8HC62	Written communication skills Lab	0	0	2	1	30	70
9	PSI	EEE	8A191	Technical Seminar - I	0	0	2	1	100	--
10	BS	EEE	8A181	Comprehensive Test and Viva Voce – I	1	0	0	1	30	70
11	HS	S&H	8HC18	Orientation Course*	1	0	0	0	Marks and Grade will be given at the end of I year II semester	
				Total				19		

* 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).

Course structure for B.Tech I Year II Semester EEE (2020-21)

Sl.No	Course Category	Dept Course	Course Code	Name of the Course	L	T	P	C	Max Marks	
									CIE	SEE
1.	BS	S&H	8HC04	Engineering Chemistry	3	1	0	4	30	70
2.	PC	EEE	8A201	Electrical Circuits and Networks-I	2	1	0	3	30	70
3.	BS	S&H	8HC11	Advanced Calculus and Complex Variable (ACCV)	3	1	0	4	30	70
4.	BS	S&H	8HC08	Basic Mathematics, Analysis and Reasoning (BMAR)	2	1	0	3	30	70
5.	ES	MECH	8BC01	Workshop/Manufacturing processes	1	0	0	1	30	70
6.	ES	CSE	8EC01	Data Structures and C++	3	0	0	3	30	70
7	BS	S&H	8HC63	Engineering Chemistry lab	0	0	2	1	30	70
8	HSM	S&H	8HC01	Oral communication skills	1	0	0	1	30	70
9	ES	MECH	8BC61	Workshop/Manufacturing	0	0	2	1	30	70

				processes Lab						
10	HSM	S&H	8HC61	Oral communication skills Lab	0	0	2	1	30	70
11	ES	CSE	8EC61	Data Structures (C / C++) Lab	0	0	2	1	30	70
12	BS	EEE	8A282	Comprehensive Test and Viva Voce – II	1	0	0	1	30	70
13	PSI	EEE	8A292	Technical Seminar - II	0	0	2	1	100	--
14	HS	S&H	8HC18	Orientation Course*	2	0	0	0	30	70
									Grade evaluation	
Total								26		

* 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).

II Year – I Semester

S. No	Course Category	Dept Course	Subject Code	Subject	L	T	P/D	C	Max Marks	
									CIE	SEE
1	BS	S&H	8HC14	Transform Techniques and Numerical Methods (TTNM)	2	1	---	3	30	70
2	PC	ECE	8CC02	Digital Logic Design	2	--	---	2	30	70
3	PC	ECE	8CC01	Electronic Devices and Circuits	2	1	---	3	30	70
4	PC	EEE	8A302	Electro Magnetic Fields	2	---	---	2	30	70
5	PC	EEE	8A303	Electrical Machines – I	2	---	---	2	30	70
6	PC	EEE	8A304	Electrical Circuits & Networks – II	2	---	---	2	30	70
7	ES	CSE	8EC42	Programming in Java	2	---	---	2	30	70
8	HSM	S&H	8HC05	Environmental Science and Ecology	2	---	---	2	30	70
9	PC	ECE	8CC71	Electronic Devices and Circuits Lab	---	---	2	1	30	70
10	PC	EEE	8A371	Electrical Circuits and Networks Analysis Lab	---	---	2	1	30	70
11	PSI	EEE	8A393	Technical Seminar - III	---	---	2	1	100	--
12	BS	EEE	8A383	Comprehensive Test and Viva Voce – III	1	0	0	1	30	70
			Total					**22**		

II Year – II Semester

S. No.	Course Category	Dept Course	Subject Code	Subject	L	T	P/D	C	Max Marks	
									CIE	SEE
1	BS	S&H	8HC16	Probability and Statistics (P&S)	2	1	---	3	30	70
2	PC	EEE	8A405	Electrical Machines – II	2	--	---	2	30	70
3	PC	EEE	8A406	Power System – I	2	--	---	2	30	70
4	PC	EEE	8AC07	Linear Control Systems	3	--	---	3	30	70
5	PC	ECE	8CC05	Analog Circuits	2	--	---	2	30	70
6	ES	IT	8EC44	Database System Concepts	2	--	---	2	30	70
7	HSM	S&H	8HC17	Universal Human Values	2	1	0	3	30	70
8	HSM	S&H	8HC03	Soft Skills	1	0	2	2	30	70
9	PC	EEE	8A473	Electrical Machines Lab – I	--	--	2	1	30	70
10	PC	ECE	8CC74	Analog Circuits Lab	---	---	2	1	30	70
11	PSI	EEE	8A494	Technical Seminar - IV	---	---	2	1	100	--
12	BS	EEE	8A484	Comprehensive Test and Viva Voce – IV	1	0	0	1	30	70
13		EEE		Summer Break – Internship–I (4 weeks): Evaluation will be done along with 3-1 courses (2 Internal Reviews (30 M) and External Evaluation (70M) in III year – I-Sem)						
	Total							**23**		

III Year – I Semester

S. No	Course Category	Dept Course	Subject Code	Subject	L	T	P/D	C	Max Marks	
									CIE	SEE
1	PC	ECE	8CC07	IC Applications	3	--	---	3	30	70
2	PC	EEE	8A508	Electrical Machines – III	2	1	--	3	30	70
3	PC	EEE	8A509	Power Electronics	3	1	--	4	30	70
4	PC	EEE	8A510	Power Systems – II	2	1	--	3	30	70
5	OE			Open Elective – I	2	--	--	2	30	70
6	HSM	MBA	8ZC01	Economics, Accountancy and Management Science	2	--	---	2	30	70
7	MC	IT	8FC24	Cyber Security	2	---	---	0	Grading	
8	PC	ECE	8CC76	IC Applications Lab	-	-	2	1	30	70
9	PC	EEE	8A575	Linear Control Systems and Simulation Lab	--	--	2	1	30	70
10	PSI	EEE	8A595	Group Project – I	-	-	2	1	30	70
11	PSI	EEE	8A586	Evaluation of Summer Break - Internsl (2 Internal Reviews and External Evalu	--	--	--	1	30	70
12	ES	EEE	8A585	Comprehensive Test and Viva Voce – V (2 Mid exams (Viva) and End Semester (Test and Viva) = 30+70))	0	0	0	1	100	--
	Total							**22**		

Open Elective – I

Subject Code	Name of the subject	Stream
	Operating System Concepts	Computer
8ZC22	Basics of Entrepreneurship	Entrepreneurship
8ZC05	Banking Operations, Insurance and Risk Management	Finance
8ZC25	Basics of Indian Economy	Social Sciences
	Design literacy and Design Thinking	Innovation and Design Thinking

III Year – II Semester

S. No	Course Category	Dept Course	Subject Code	Subject	L	T	P/D	C	Max Marks	
									CIE	SEE
1	PC	ECM	8DC05	Microprocessors and Microcontrollers	3	--	--	3	30	70
2	PC	EEE	8A611	Switch Gear and Protection	2	--	---	2	30	70
3	PC	EEE	8A612	Measurements & Instrumentation	2	---	--	2	30	70
4	ES	MECH		Elements of Mechanical Engineering	2	---	---	2	30	70
5	ES	CSE	8FC22	Python Programming and Computer Algorithms	3	--	--	3	30	70
6	OE			Open Elective – II	2	--	---	2	30	70
7	ES	CSE	8EC45	Artificial Intelligence	2	--	---	2	30	70
8	PC	EEE	8A677	Electrical Machines Lab – II	--	--	2	1	30	70
9	PC	EEE	8A678	Power Electronics & Simulation Lab	--	--	2	1	30	70
10	PSI	EEE	8A696	Group Project – II	---	---	2	1	30	70
11	ES	EEE	8A686	Comprehensive Test and Viva Voce – VI (2 Mid exams (Viva) and End Semester (Test and Viva) = 30+70))	0	0	0	1	100	--
		EEE		Summer Break – Internship–II (4 weeks): Evaluation will be done along with 4-1 courses (2 Internal Reviews (30 M) and External Evaluation (70M) in IV year – I-Sem))						
	Total							**20**		

Open Elective – II

Subject Code	Name of the subject	Stream
	Big Data Analytics	Computer
8ZC23	Advanced Entrepreneurship	Entrepreneurship
8ZC19	Entrepreneurship Project Management and Structured Finance	Finance
8ZC26	Basics of Polity and Ecology	Social Sciences
	Co-Creation and Product Design	Innovation and Design Thinking
* SWAYAM MOOCS Course: The department will identify the MOOCS Course from the available courses in SWAYAM portal for the semester		

IV Year – I Semester

S.No	Course Category	Dept Course	Subject Code	Subject	L	T	P/D	C	Max Marks	
									CIE	SEE
1	PC	EEE	8A714	Power Systems Analysis and Control	3	--	--	3	30	70
2	PE	EEE		Professional Elective -I	3	--	---	3	30	70
3	PE	EEE		Professional Elective -II	3	--	---	3	30	70
4	PE	EEE		Professional Elective -III	3	--	---	3	30	70
5	OE			Open Elective – III	2	--	--	2	30	70
6	PSI	EEE	8A696	Group Project – III	--	--	2	1	30	70
7	PSI	EEE	8A787	Evaluation of Summer Break - Internship-II (2 Internal Reviews and External Evaluation)	--	--	--	1	30	70
8	PC	EEE	8A781	Electrical workshop	--	--	2	1	30	70
9	PC	EEE	8A782	Measurements & Instrumentation Lab	--	--	2	1	30	70
10	PC	EEE	8A783	Power Systems and Simulation Lab	--	--	2	1	30	70
11	PC	ECM	8DC71	Microprocessors and Microcontrollers Lab	--	--	2	1	30	70
12	ES	EEE	8A787	Comprehensive Test and Viva Voce – VII (2 Mid exams (Viva) and End Semester (Test and Viva) = 30+70))	1	0	0	1	30	70
	Total							**21**		

Professional Elective –I

Subject Code	Name of the subject	Stream
8CC03	Signals and Systems	Electronics
8A725	Advanced Control Systems	Control Systems
8A716	Utilization of Electrical Energy	Power Systems
8A734	HVDC and FACTS	Power Electronics

Professional Elective –II

Subject Code	Name of the subject	Stream
8A715	Renewable Energy Sources	Power Systems
8CC09	Digital Signal Processing	Electronics
8A724	Digital Control Systems	Control Systems
8A737	Advanced Power Electronics	Power Electronics

Professional Elective – III

Subject Code	Name of the subject	Stream
8A729	Power System Deregulation	Power Systems
8A735	Electrical and Hybrid Vehicles	Power Electronics
8A739	Optimal Control Systems	Control Systems
	Communication Theory	Electronics

Open Elective – III

Subject Code	Name of the subject	Stream
	Computer Networks	Computer
8ZC24	Product and Services	Entrepreneurship
8ZC15	Financial Institutions, Markets and Services	Finance
8ZC27	Indian History, Culture and Geography.	Social Sciences
	Entrepreneurship & Business Design	Innovation and Design Thinking

IV Year – II Semester

S. No.	Course Category	Dept Course	Subject Code	Subject	L	T	P/D	C	Max Marks	
									CIE	SEE
1	PE	EEE		Professional Elective – IV	3	--	--	3	30	70
2	PE	EEE		Professional Elective – V	3	--	--	3	30	70
3	PSI	EEE		Major Project	---	---	10	5	30	70
	Total				**6**	**--**	**10**	**11**	**90**	**210**

Professional Elective – IV

Subject Code	Name of the subject	Stream
8A813	Power Semi Conductor Drives	Power Electronics
8A817	High Voltage Engineering	Power Systems
8A827	Reactive Power Control & Management	Control Systems
	Fundamentals of VLSI and Embedded Systems	Electronics

Professional Elective – V

Subject Code	Name of the subject	Stream
8A820	Electrical Distribution Systems	Power Systems
8A826	Programmable Logic Controllers	Control Systems
8A833	Switched Mode Power Conversion	Power Electronics
	Artificial Neural Networks	Electronics

L - Lectures; T - Tutorial; P/D - Practical / Drawing; C – Credit

Note: All End Examinations (Theory and Practical) are of **Three** hours duration.

B. Tech EEE A20 REGULATION ELECTIVE STREAMS

PROFESSIONAL ELECTIVE STREAMS

L	T	P/D	C
3	0	0	3

Professional Elective Streams	Professional Elective – I (4-1)	Professional Elective – II (4-1)	Professional Elective – III (4-1)	Professional Elective – IV (4-2)	Professional Elective – V (4-2)
Power Systems	Utilization of Electrical Energy	Renewable Energy Sources	Power System Deregulation	High Voltage Engineering	Electrical Distribution Systems
Power Electronics	HVDC and FACTS	Advanced Power Electronics	Power Semi-Conductor Drives	Electrical and Hybrid Vehicles	Switched Mode Power Conversion
Control Systems	Advanced Control Systems	Digital Control Systems	Optimal Control Systems	Reactive Power Control and Management	Programmable Logic Controllers
Electronics	Signals and Systems	Digital Signal Processing	Communication Theory	Fundamentals of VLSI and Embedded Systems	Artificial Neural Networks

OPEN ELECTIVES STREAMS

L	T	P/D	C
2	0	0	2

Open Elective Streams	Open Elective (OE)					
	Code	**OE – I (3-1)**	**Code**	**OE – II (3-2)**	**Code**	**OE – III (4-1)**
Computer		Operating System Concepts		Big Data Analytics		Computer Networks
Entrepreneurship Stream	8ZC22	Basics of Entrepreneurship	8ZC23	Advanced Entrepreneurship	8ZC24	Product and Services
Social Sciences Stream	8ZC25	Basics of Indian Economy	8ZC26	Basics of Polity and Ecology	8ZC27	Indian History, Culture and Geography.
Finance Stream	8ZC05	Banking Operations, Insurance and Risk Management	8ZC19	Entrepreneurship Project Management and Structured Finance	8ZC15	Financial Institutions, Markets and Services

Innovation and Design Thinking		Design Literacy and Design Thinking		Co-Creation and Product Design		Entrepreneurs hip & Business Design

SWAYAM MOOCS Courses:
The department will identify the MOOCS Course from the available courses in SWAYAM portal for the semester

A	b	c	d	e	F	G	h	i	j	K	l
X		X					X				

SREENIDHI INSTITUTE OF SCIENCE & TECHNOLOGY
(An Autonomous Institution approved by UGC and 'A' Grade Awarded by NAAC)

B.TECH. I YEAR I SEM (EEE & ECE) AND II SEM (CSE, IT & ECM)

		L	T	P	C
Code: 8HC07	**ENGINEERING PHYSICS (Theory)**	**3**	**1**	**0**	**4**

Course Objectives

- Explain about the Quantum Mechanics to understand wave particle duality, necessity of quantum mechanics to explore the behavior of sub atomic particles. Schroedinger's Time Independent Wave Equation, Physical Significance of the Wave Function – Application of Schroedinger wave equation.
- To understand the basic concepts of normal light, Laser and its applications and to know about the fiber optics, principle (TIR), Numerical Aperture, Types of optical Fibers, Step index and graded index Fibers, attenuation in optical fibers. Applications: optical fiber communication system, fiber optic sensors, medical endoscopy.
- To study the concepts of magnetism and superconductivity, Bohr magneton, Hysteresis nature, domain structure, Meissner effect, types of superconductors, BCS theory and applications of superconductors.
- To understand the concepts of dielectrics, polarizations and its types, internal fields, Clausius-Mossitti equation, Frequency and temperature effect on dielectrics and its applications – Piezo-electricity, Pyro-electricity and ferro-electricity.
- To know about the semiconductors, types, carrier concentration, Thermistor, Hall effect and also to understand the concept of PN-junction, I-V Characteristics, LED, Solar Cell and Photo diode.
- To discuss about the nano-technology, preparation techniques and characterization (XRD, SEM & TEM), CNTs and to know about the fundamentals of radioactivity and its applications.

UNIT: 1: WAVE NATURE OF PARTICLES, SCHROEDINGER EQUATION AND ITS APPLICATION

Waves and Particles, de Broglie Hypothesis, Matter waves, Davisson and Germer's Experiment, G.P. Thomson Experiment, Heisenberg's Uncertainty Principle, Schroedinger's Time Independent Wave Equation – Physical Significance of the Wave Function – Application of Schroedinger wave equation - Particle in One Dimensional Potential Box.

UNIT: 2: LASERS

Characteristics of LASER, Spontaneous and Stimulated Emission of Radiation, Meta-stable State, Population Inversion, Lasing Action, Einstein's Coefficients and Relation between them and significance, Ruby Laser, Helium-Neon Laser, Semiconductor Diode Laser, Applications of Lasers.

FIBER OPTICS

Introduction, Principle of Optical Fiber, Acceptance Angle and Acceptance Cone, Numerical Aperture, Types of Optical Fibers, Step index and graded index Fibers Attenuation in Optical Fibers. Applications: Optical Fiber communication system, Fiber Optic Sensors, Medical Endoscopy.

UNIT: 3: MAGNETIC AND SUPERCONDUCTING MATERIALS

Permeability, Field Intensity, Magnetic Induction, Magnetization, Magnetic Susceptibility, Origin of Magnetic Moment, Bohr Magneton. Hysteresis behavior of Ferro Magnetic materials based on Domain theory. Hard and Soft Magnetic Materials, Properties of Anti-Ferro and Ferri Magnetic Materials and their applications,

SUPER CONDUCTIVITY: effect of Magnetic Field, Critical current density, Meissner effect, Type-I and Type-II superconductors, BCS theory, applications of superconductors

UNIT: 4: DIELECTRIC MATERIALS AND THEIR PROPERTIES

Electric Dipole, Dipole Moment, Dielectric Constant, Electric Susceptibility, Electronic and Ionic polarizability (Quantitative) Orientation Polarization (Qualitative), Internal fields in Solids, Clausius - Mossotti equation, Frequency and temperature effect on Dielectrics (Qualitative), Applications - Piezo-electricity, Pyro-electricity and Ferro-electricity.

UNIT: 5: SEMICONDUCTORS

Fermi Level in Intrinsic and Extrinsic Semiconductors, calculation of carrier concentration of Intrinsic Semiconductors (quantitatively) and Extrinsic Semiconductors (qualitatively), Direct & Indirect Band Gap Semiconductors, Thermistor, Hall Effect in semiconductors and applications.

SEMICONDUCTOR DEVICES

Formation of a PN Junction and working of a PN Junction, Energy band Diagram of a open circuited PN Diode, I-V Characteristics of PN Junction, Application - LED, Solar Cell and Photo diode.

UNIT: 6: NANOTECHNOLOGY

Origin of Nanotechnology, Nano Scale, Surface to Volume Ratio, Quantum Confinement, Bottom-up Fabrication, Sol-gel, Precipitation, Chemical vapor Deposition(CVD); Top-down Fabrication; Thermal evaporation, Ball Milling, Characterization of Nano materials (XRD&TEM), carbon nano tubes(CNTs), Applications of Nano Materials.

NUCLEAR ENERGY: Radioactivity, Nuclear binding energy, Nuclear fission, Nuclear fusion, □, β, γ rays decay, Geiger-Muller counter and practical applications of nuclear physics.

Text Books:

1. B.K. Pandey & S. Chaturvedi Engineering Physics, Cengage Learning

Reference Books:

1. Charles Kittel, Introduction to Solid State Physics, John Wiley Publisher
2. A.S. Vasudeva, Modern engineering Physics, S Chand
3. Dekker, Solid State Physics
4. Dr.M.N. Avadhanulu, Engineering Physics, S Chand
5. Dekker, Solid State Physics
6. Halliday and Resnick, Physics
7. S.O. Pillai, Solid State Physics
8. P K Palanisamy, Engineering Physics, Sitech Publications
9. A. Ghatak - Optics

Course Outcomes

After completing the course, students are able to

- Differentiate the wave and particle, de-Broglie matter waves-its experimental evidence, Schroedinger's wave concept and its application for a particle in one dimension box.
- Explain about emission, its types, laser principle, types, working and its applications and to reveals about TIR principle, optical fiber-types and signal propagation, attenuation, communication system and applications of optical fibers (sensors and medical endoscopy)
- Reveals about the magnetism-its origin and types, Hysteresis, domain theory, Anti-ferro and ferri-magnetism, Superconductivity, experimental facts, theoretical analysis, types of superconductors and its applications.
- Explain the basic concepts of dielectric materials, polarization and its types, local fields, frequency and temperature effect on dielectrics and their applications (piezo, ferro and Pyro electricity).
- Explain semiconductor behavior, types, carrier concentration, Hall effect, Thermistor, demonstrate and analyze semiconductor devices like a PN-junction, I-V characteristics, LED, solar cell, photo diode and their applications.
- Summarize nano & bulk concepts, surface to volume ratio, quantum confinement, CNTs and preparation methods (physical & chemical), analysis the techniques like XRD, SEM, TEM and also to understand the radioactivity, fusion & fission, alpha, beta and gamma rays decay and its applications.

Syllabus for B. Tech I Year I semester
Electrical and Electronics Engineering (EEE)

PROBLEM SOLVING USING C
(Common to All Branches)

Code: 8FC01	**L**	**T**	**P**	**C**
	3	**0**	**0**	**3**

Course Outcomes: After completion of this course student will learn

1. *To formulate simple algorithms for arithmetic, logical problems and to translate the algorithms to programs(in C language)*
2. *To test and execute the programs and correct syntax and logical errors, to implement conditional branching, iteration and recursion*
3. *To decompose a problem into functions and synthesize a complete program using divide and conquer approach.*
4. *To use arrays, pointers and structures to formulate algorithms and programs.*
5. *To apply programming to solve matrix addition and multiplication problems and searching and sorting problems.*
6. *To apply programming to solve simple numerical method problems, namely rot finding of function, differentiation of function and simple integration.*

UNIT I: INTRODUCTION TO PROGRAMMING:
Introduction to components of a computer system (disks, memory, processor, where a program is stored and executed, operating system, compilers etc.)
Idea of Algorithm: steps to solve logical and numerical problems. Representation of Algorithm: Flowchart/Pseudocode with examples.
From algorithms to programs; source code, variables (with data types) variables and memory locations, Syntax and Logical Errors in compilation, object and executable code

UNIT II: HISTORY OF C LANGUAGE, CHARACTERISTICS OF C LANGUAGE, STRUCTURE OF C LANGUAGE, C TOKENS:
Arithmetic expressions, Operator Precedence & **Associativity**
Conditional Branching and Loops
Writing and evaluation of conditionals and consequent branching and **Jumping Constructs**
Pretest and Post test, Iteration and loops (3 lectures)

UNIT III: FUNCTION:
Functions (including using built in libraries), Parameter passing in functions, call by value, passing arrays to functions: idea of call by reference, **Storage Classes**
Recursion: Recursion, as a different way of solving problems. Example programs, such as Finding Factorial, Fibonacci series, Ackerman function etc.

UNIT IV: ARRAYS:
Arrays (1-D, 2-D), Character arrays **Ragged Arrays and Dynamic Arrays**
Basic Algorithms Searching, Basic Sorting Algorithms (Bubble, Insertion and Selection), Finding roots of equations, notion of order of complexity through example programs (no formal definition required) Quick sort or Merge sort.

UNIT V: POINTERS:
Idea of pointers, Defining pointers, Use of Pointers in self-referential structures, notation of linked list (no implementation) **Dynamic Memory allocation Functions**.
Strings: String Handling Functions.

UNIT VI: STRUCTURE:
Structures, Defining structures and Array of Structures,
Nested Structures enum, typedef
File handling (only if time is available, otherwise should be done as part of the lab)
File Handling Functions, File Modes, File Operations

TEXT BOOKS

(i) Byron Gottfried, Schaum's Outline of Programming with C, McGraw-Hill
(ii) E. Balaguruswamy, Programming in ANSI C, Tata McGraw-Hill Suggested

REFERENCE BOOKS

(i) Brian W. Kernighan and Dennis M. Ritchie, The C Programming Language, Prentice Hall of India

a	b	c	d	e	f	g	h	i	j	k	l
H	M	M								L	

H: High M: Medium L: Low

MATRIX METHODS AND CALCULUS

(Common to EEE, ECE, ME, CE)

I Year B.Tech, Semester-1

	L	T	P/D	C
Code: 8HC09	**2**	**1**	**0**	**3**

Pre Requisites: Mathematics Knowledge at Pre-University Level

Course Objectives: *To make the students to understand and expected to learn*

1. *About the linear system and some analytical methods for solution.*
2. *Concept of Eigen values and Eigen vectors their properties and applications.*
3. *Concept of convergence of a series and expansion of a function in sine and cosine terms.*
4. *Mean value theorems and their applications to the given functions, series expansions of a function.*
5. *Special functions such as Beta & Gamma functions and their properties, evaluation of improper integrals.*
6. *Basic concepts of multivariable differential calculus.*

UNIT - I: MATRICES-1

Symmetric, skew-symmetric and orthogonal matrices. Inverse of a matrix by Gauss Jordan method, rank of a matrix; System of linear equations- Rank method/Gauss Elimination method.

UNIT - II: MATRICES-2

Hermitian, Skew-Hermitian and Unitary matrices. Eigen values and Eigenvectors and their properties without proofs; Cayley-HamiltonTheorem(without proof) and its applications in finding higher powers & inverse of a matrix, Diagonalization of a matrix.

UNIT - III: FOURIER SERIES

Convergence of Sequence & Series (Definitions), Fourier series, Half range Sine and Cosine series, Parseval's Theorem (without proof).

UNIT **- IV:** ***CALCULUS-1***

Rolle's Theorem and Mean value theorems (Statements and Geometrical Interpretations without proof); Taylor's and Maclaurin's theorems with remainders (without proof) and its applications in evaluating definite integrals.

UNIT - V: CALCULUS - 2

Beta and Gamma functions and their properties; Evaluation of improper integrals. Applications of definite integrals to evaluate surface areas and volumes of revolutions.

UNIT-IV: MULTIVARIABLE CALCULUS (DIFFERENTIATION)

Limit, continuity and partial derivative, Jacobian; Maxima and minima; Lagrange method of multipliers;

Vector Differentiation: Gradient, directional derivatives; Concepts of divergence and curl with physical significance.

TEXT BOOK:

1. R K Jain and S R K Iyengar Advanced Engineering Mathematics, Narosa Publications.

REFERENCE BOOKS:

i. N.P. Bali and Manish Goyal, A text book of Engineering Mathematics, Laxmi Publications,
ii. Reprint, 2008.
III. B.S. Grewal, Elementary Engineering Mathematics, Khanna Publishers
iv. C Sankaraiah, A Text book of Engineering Mathematics – I, VGS Book Links
v. G.B. Thomas and R.L. Finney, Calculus and Analytic geometry, 9th Edition, Pearson, Reprint, 2002.
vi. Ramana B.V., Higher Engineering Mathematics, Tata McGraw Hill New Delhi, 11th Reprint, 2010.
vii. P. Sivaramakrishna Das and C.Vijayakumari, Mathematics-I (calculus, Differential Equations and Linear Algebra), Pearson Publications

Course Outcomes: *After the course completion the students will be able to*

1. *Check the consistency or inconsistency of a linear system and ability to solve real time problems.*
2. *Calculate the Eigen values and Eigen vectors of a matrix and their application for orthogonal transformation.*
3. *Define the convergence, divergence or oscillating nature of a series and express the function as Fourier series.*
4. *Verify the mean value theorems and also express the given function in series form using Taylor's theorem.*
5. *Solve the problems using special functions; evaluating the improper integrals..*
6. *Compute the extreme values of a function defined with and without constraints.*

1	2	3	4	5	6	7	8	9	10	11	12
H											M

Syllabus for B. Tech I Year I semester
Electrical and Electronics Engineering (EEE)

ENGINEERING GRAPHICS

CODE:

L	T	P/D	C
1	0	4	3

Course objectives:

1: To teach students the basic principles of Engineering graphics and instruments used
2: To introduce the concept of projections in drawing and its applications for simple drawing entities
3: To impart the knowledge of various types of solids and their projections in different position wrt principle planes
4: To teach the concept of sections of solids and their applications
5: To develop a clear understanding of the basic principles involved in three dimensional Engineering drawings.
6: To train the students for the extraction of multiple views from a solid model using AutoCAD

Course outcomes

After completing this course, the student will able to:

1) Get familiar to use the instruments to solve the engineering problem and draw various type of curves used in engineering
2) Understand and Implement Orthographic projections and draw projections of simple drawing entities such as points Lines, and Planes
3) Draw projections of different types of regular solids in various positions wrt principal planes of projection
4) Draw Sections of various Solids including Cylinders, cones, prisms and pyramids and draw the developments of these solids and their sections.
5) Construct Isometric Scale, Isometric Projections and Views and convert 3D views to 2D orthographic views
6) Understand from basic sketching through 2D and 3-D solid modelling using computer aided design (CAD) software

UNIT – I

Introduction to Engineering Drawing: Drawing Instruments and their uses, types of lines, Lettering, Dimensioning-Terms & notations, placing of dimensions, general rules of dimensioning.
Curves used in Engineering Practice and their Constructions:
Conic Sections including Rectangular Hyperbola - General Method, Cycloid and Involutes of circles
Scales: Reducing, Enlarging and Full Scales, types of scales, Construction of plain scales and diagonal scales only-simple problems

UNIT – II

Orthographic Projection: Principles of Projection – Methods of projection, First angle and third angle projections, Projections of Points, Projections of straight lines –line inclined to one plane and line inclined to both reference planes

UNIT –III

Projections of regular Planes: types of planes, plane inclined to one reference plane, Oblique planes
Projections of regular Solids: types of solids, Projections of: Prisms, Cylinders, Pyramids, Cones – simple position and axis inclined to one plane only

UNIT –IV

Sections and sectional views of Solids: Sections and Sectional views of Right Regular Solids – Prism, Cylinder, Pyramid, Cone – Auxiliary views.
Development of Surfaces: Methods of development, Development of lateral Surfaces of Right Regular Solids – Prisms, Cylinders, Pyramids, Cones and their sections.

UNIT – V

Isometric Projection: Meaning, Isometric axes, lines and planes, Isometric Scale – Isometric drawing or View – Isometric drawing of planes and simple solids such as prisms, pyramids, cylinder, cone

UNIT –VI

Conversion of isometric views to orthographic views of simple objects.

(Demonstration only) Overview of Computer Graphics : Demonstrating features of the CAD software - The Menu System, Toolbars, , Dialog boxes and windows, Drawing entities - lines, circles, arcs etc and editing commands, Dimensioning of objects, 2 D drawings-simple exercises , 3D wire-frame and shaded solids-Commands, Boolean operations.

TEXT BOOK:

Bhatt N.D., Panchal V.M. & Ingle P.R., (2014), Engineering Drawing, Charotar Publishing House (In First-angle Projection Method)

REFERENCE BOOKS:

1) Shah, M.B. &Rana B.C. (2008), Engineering Drawing and Computer Graphics, Pearson Education
2) Agrawal B. &Agrawal C. M. (2012), Engineering Graphics, TMH Publication
3) AUTOCAD Software Theory and User Manuals

Syllabus for B. Tech I Year I semester
Electrical and Electronics Engineering (EEE)

WRITTEN COMMUNICATION SKILLS
IT, MECH, ECM, EEE: I/I
CSE, ECE, CIVIL: I/II

Subject Code: 8HC02
L – T –P/D – C
1 0 0 1

Lab Code: 8HC62
L – T –P/D - C
0 0 2 1

Maximum Marks: 100 (Internal – 30 / External – 70)

A	B	C	D	E	F	G	H	I	J	K	L
							X	X	X		X

Course Objectives:
1. To enable students to upgrade their knowledge of basic writing skills, writing cohesive paragraphs and effective letter writing skills
2. Understand the nuances of technical communication and apply it in their academic and professional career.
3. Acquaint themselves with the concept of soft skills, having the right attitude towards their education, career and life in general and learn the importance of building a strong resume.

Course Outcomes:
After completing this course, the student will able to:

1. Differentiate between confusing words, learn correct spellings and have a sound grip over the use of phrasal verbs
2. Upgrade their knowledge of basic writing skills, writing cohesive paragraphs and effective letters
3. Upgrade their knowledge of basic reading skills using different techniques
4. Improve the technical report writing skills
5. Learn the importance of building a strong resume
6. Acquaint themselves with the concept of soft skills, having the right attitude towards their education, career and life in general.

UNIT I : Elements of effective writing skills
1.1 Use of appropriate words and phrases
1.2 Sentence structures
1.3 Vocabulary: Synonyms – Antonyms
Homophones, Homonyms, Homographs, words often confused, One - word substitutes, Idioms and Phrases
1.4 Avoid discriminatory writing

UNIT II: Professional writing skills

2.1 Paragraph writing

2.2 Letter writing (language to be used in a formal letter)
2.3 Leave letter, letter of apology, complaint letters, enquiry letters with replies
2.4 e-correspondence

UNIT III: Reading Comprehension
3.1 Prediction techniques, Skimming and Scanning
3.2 Literal Comprehension
3.3 Evaluative Comprehension
3.4 Inferential Comprehension

UNIT IV: REPORT WRITING

4.1 Significance, types, steps, formats of a report
4.2 Detailed analysis of manuscript of a report
4.3 Language and structure to be used in a formal report
4.4 model reports – assignments

UNIT V: RESUME WRITING & COVER LETTER

5.1 Types, purpose and design of Résumé
5.2 Differences among Bio-data, Curriculum Vitaé and Résumé
5.3 Methods to build a winning Résumé
5.4 Writing an effective Cover Letter

UNIT VI: TECHNICAL COMMUNICATION AND SOFT SKILLS

6.1 Technical vocabulary
6.2 Review of technical articles
6.3 Technical research paper writing
6.4 Attitude Vs Behaviour in professional circles

TEXT BOOK:

Compiled by the faculty of English (for internal circulation only).

REFERENCE BOOKS:

1. English for Professionals by S.S. Prabhakar Rao
2. English for Technical Communication by K.R. Lakshminarayana
3. English for Business Communication by Dr.T. Farhathullah
4. Professional Communication by Alok Jain, Pravin S.R. Bhatia and A.M.Sheikh
5. Business Communication, Principles to Practice- Monipally.
6. Advanced Technical Communication: Kavita Tyagi and Padma Mistri

1	2	3	4	5	6	7	8	9	10	11	12
					M		H		M		H

Syllabus for B. Tech I Year I semester
Electrical and Electronics Engineering (EEE)
Orientation (Mandatory Course)
Common to All Branches

Code: 8HC18

L	T	P/D	C
1	0	0	0

Course Objectives:

This introductory course input is intended

- To help the students appreciate the essential 'VALUES' and 'SKILLS' to ensure sustained happiness and prosperity, which are the core aspirations of all human beings?
- 2. To facilitate the development of a Holistic perspective among students towards life and profession as well as towards happiness and prosperity based on a correct understanding of the Human reality and the rest of Existence. Such a holistic perspective forms the basis of Universal Human Values and movement towards value-based living in a natural way.
- 3. To highlight plausible implications of such a Holistic understanding in terms of ethical human conduct, trustful and mutually fulfilling human behaviour and mutually enriching interaction with Nature. Thus, this course is intended to provide a much needed orientation input in value education to the young enquiring minds.

Course Outcomes: At the end of this course, the student will be able to

1. Learns Being a human, understands human values and purpose of education
2. Understands the importance of different harmony levels needed. Understand self and being in the current moment are the sources of happiness.
3. Improves Learning capabilities and communication skills.
4. Improves Personality Development and Life Skills
5. Understands and appreciate the importance of personality development and yoga for a holistic life.
6. Understands the essence and Values and Social responsibilities for successful life.

Unit	Name of the Module	Number of Periods
a) **Orientation Course for B. Tech I year I semester Students – 3 weeks duration covering the following Two Units**		
I	Universal Human Values – Introduction	8
II	Universal Human Values – Relationships	8
b) **Orientation Course for B. Tech I year II semester Students –covering the following Four Units**		
III	Improving Learning Capabilities (ILC) - Basic Skills of Learning	12
IV	Improving Learning Capabilities (ILC)- Personality Development and Life Skills	12
V	Literature, Proficiency Modules(PM) in English, Health, Yoga & Diet, Co-Curricular & Extracurricular activities	12

VI	Lectures by Eminent Persons on Science, Technology & Environment, Research, Innovation & Patents, Local Visit to Village and City including Hi-tech City. Feedback on last but one day of Orientation Course	12
Total Number of Periods		**64**

Unit – I: Universal Human Values

Introduction -Self – Exploration, Basic human aspirations, Need for a holistic perspective, Role of Education, Understanding Happiness, Understanding the human being – Self and Body.

Unit – II: Universal Human Values

Relationships-Understanding Relationship –Trust and Respect. Harmony in the Society, Natural Environment, Participation in nature Harmony in nature/existence.

Unit – III: Improving Learning Capabilities-Basic Skills of Learning

Principles of Learning, Study Skills & E-Learning, Listening Skills, Effective Reading and Reviewing, Reading Comprehension, Textbook Reading Strategies, Test taking strategies, Introduction to Soft Skills and Employability Skills, Interpersonal skills.

Unit – IV: Improving Learning Capabilities-Personality Development and Life Skills

Goal Setting, Motivation, Time Management, Positive Attitude, Decision Making, Building Self-confidence, Attributes of a Good Personality, Memory Management, Characteristics of a successful student, Responsibilities of Students in shaping themselves, Morals, Ethics & Values, Difference between Studying in a Professional College and High School / Junior College

Unit – V: Literature, Proficiency Modules(PM) in English, Health, Yoga & Diet, Co-Curricular & Extracurricular activities

Literature -History of human civilization, Indian civilization, Indus valley civilization and culture, history of religions, the basic tenets of Christianity, Islam, Hinduism, Buddhism, Jainism, Sikkim and Judaism, Indian culture and values.

Proficiency Modules in English - Strategies to improve proficiency in English skills(L/S/R/W), Exercises based on Remedial grammar, Exercises on Remedial Vocabulary

Health- Dimensions of Health, Basic activities of daily living, Instrumental activities of daily living, Types of Health, Factors affecting health

Yoga - Introduction to Yoga, Kinds of Yoga, Pranayama and Dhyana (Meditation)

Diet- Balanced Diet, Components of Diet, Health Eating Pyramid.

Co-curricular and Extra Curricular activities

Unit – VI: Lectures by Eminent Persons, Research, Innovation & Patents and Local Visit

Lectures by Eminent Persons on Science, Technology & Environment,

Innovations R&D and Entrepreneurship-Sreenidhi HUB, Basics of Innovation, Entrepreneurship and Intellectual Property Rights (IPR)

Local Visit to Village and City including Hi-tech City.

Feedback on last but one day of Orientation Course

TEXT BOOKS:

1. RR Gaur, R Sangal, GP Bangaria, 2009, A Foundation Course in Value Education (English).

REFERENCE BOOKS:

1. Yoga, Food and Health (by Swami Guru PremanandaSaraswati)

a	b	c	d	e	F	G	h	i	j	k	l
X		X									

SREENIDHI INSTITUTE OF SCIENCE & TECHNOLOGY
(An Autonomous Institution approved by UGC and 'A' Grade Awarded by NAAC)

B.TECH. I YEAR I SEM (EEE & ECE) AND II SEM (CSE, IT & ECM)

		L	T	P	C
Code: 8HC66	**ENGINEERING PHYSICS LAB**	**0**	**0**	**2**	**1**

Course Objectives

- Understand the concept of photo electric effect using photo voltaic cell.
- Discuss the dispersive power of prism-minimum deviation method.
- Discussion of diffraction pattern using the grating – LASER.
- To study the concepts (numerical aperture) of an optical fiber.
- To explain about magnetic induction, Biot-Savart principle.
- Study the frequency of AC mains using Sonometer.
- Explaining about the electrical resonance by using the LCR circuit.
- To understand the rigidity modulus, periodicity.
- To discuss the energy gap (E_g) of a semiconductor diode.
- To study the LED characteristics and forward resistance.
- To know the time constant of RC circuit.
- To understand about the ionizing radiation by using the Geiger–Muller counter.

List of Experiments

1. Determination the Planck's constant using the photo voltaic cell - Photo voltaic cell.
2. Calculation of dispersive power of a given material of prism by using Spectrometer in minimum deviation method - Light.
3. Determination of wavelength of a given laser source of light by using diffraction grating in normal incidence method - LASER
4. Determination of a Numerical Aperture (NA) of an optical fiber – Fiber optics.
5. Determination of magnetic induction flux density along the axis of a current carrying circular coil using Stewart and Gee's experiment - Magnetism.
6. Calculating the frequency of AC supply by using the Sonometer – Magnetostriction method.
7. Study of series and parallel resonance of an LCR circuit – Electrical devices.
8. Determination of rigidity modulus of a given wire material using the Torsional pendulum - Vibrations
9. Determination of the energy gap (E_g) of a given semiconductor-Temperature/semiconductor.
10. Studying the characteristics and calculating the forward resistance of a LED – Semiconductor/devices.
11. Determination of time constant of an RC-circuit – Electrical/ Electronics.
12. Studying the characteristics of Geiger–Muller counter and verifying the inverse square law - Nuclear physics

NOTE: Any **TEN** of the above experiments are to be conducted.

Course Outcomes

After completing the experiment, students are able to

- Understand the concepts of photo electric effect, importance, photo current, colour filters, optical sensors (photo voltaic cell).
- Know about the light properties-dispersion, prism, spectrometer and minimum deviation arrangement.
- Recognize the difference between the interference and diffraction, grating, laser characteristics.
- Analyze the concepts of fiber optics, fundamentals, numerical aperture its importance, attenuation in fiber and applications.
- Understand and search to apply the fundamentals of magnetic induction, Ampere's law, Oersted's law and the Biot-Savart law.
- Know the difference between AC and DC fundamentals, Magnetostriction, resonance, air column vibrations.
- Analyze the LCR circuit combination, parallel, series electrical resonance, inductance, reactance, capacitance and electrical and electronic fundamentals.
- Summarize the fundamentals of modulus-types, stress, strain, elasticity, plasticity and Hook's law.
- Analyze the concept a semiconductors, types, calculation of energy gap of a semiconductor diode and importance.
- Analyze the difference between normal diode, LED, forward bias, reverse bias, I-V characteristics, direct and indirect band gap semiconductors.
- Characterize the RC network, time constant, capacitor functioning and its application.
- Understand the concept of radiation, ionizing radiation, radiological protection and inverse square law.

Syllabus for B. Tech I Year I semester
Electrical and Electronics Engineering (EEE)
PROBLEM SOLVING USING C LAB
(Common to All Branches)

Code: 8FC71	**L**	**T**	**P**	**C**
	0	**0**	**2**	**1**

Course Outcomes: After completion of this course student will learn

1. *To formulate the algorithms for simple problems*
2. *To translate given algorithms to a working and correct program*
3. *To be able to correct syntax errors as reported by the compilers*
4. *To be able to identify and correct logical errors encountered at run time*
5. *To be able to write iterative as well as recursive programs*
6. *To be able to represent data in arrays, strings and structures and manipulate them through a program*
7. *To be able to declare pointers of different types and use them in defining self referential structures.*
8. *To be able to create, read and write to and from simple text files.*

[The laboratory should be preceded or followed by a tutorial to explain the approach or algorithm to be implemented for the problem given]

1. Unit I (Cycle 1)

1. Write an algorithm for converting a given Celsius temperature to its equivalent Fahrenheit temperature and draw a flowchart.
2. Write an algorithm to find the largest of three given numbers and draw a flowchart.
3. Write an algorithm and draw a flowchart for finding the roots and nature of roots of a quadratic equation, given its coefficients.
4. Write an algorithm and flowchart for finding the first n Fibonacci numbers, give n.

2. Unit II (Cycle 2)

1. Write an algorithm, flowchart, and C program for:
2. Finding the area and circumference of a circle of given radius.
3. Finding the volume of a sphere of given radius.
4. Finding the lateral surface area of a right circular cone of given base radius and height.
5. Finding selling price of an item, given its cost price and profit percent.
6. Finding the interest on a given principal for a given period of time at a given rate of per year.
7. Write a C program to display all the sizes of data types in C.
8. Write a C program to display a given decimal integer into an equivalent octal number and hexadecimal number using %o and %x in printf function.

3. Unit II (Cycle 3)

1. Write a C program to find the roots and nature of the roots of a quadratic equation, given its coefficients.
2. Write a C program for finding the largest of three given numbers.
3. A salesman gets a commission of 5% on the sales he makes if his sales is below Rs.5000/- and a commission of 8% on the sales that exceeds Rs.5000/- together with Rs.250/-. Write an algorithm or a flowchart and develop C program for computing the commission of the salesman, given his sales.

4. Unit III (Cycle 4)

1. Write three C programs to print a multiplication table for a given number using while, do-while, and for loops.
2. Write a C program to compute the sum of:
3. $1+x+x^2+x^3+\ldots\ldots\ldots\ldots+x^n$, given x and n.
4. 1! + 2! + 3! + . . . + n!, given n.
5. $1 - x^2/2! + x^4/4! - x^6/6! + x^8/8! - x^{10}/10! + \ldots$ to n terms where the n^{th} term becomes less than 0.0001.

5. Unit III (Cycle 5)

1. Write a C program in the menu driven style to perform the operations +, -, *, /, % between two given integers.
2. Write a C program to find the largest and the least of some numbers given by the user.
3. Write a C program to find the sum of the digits of a positive integer.

6. Unit III (Cycle 6)

1. Write C functions for the following:
   - **a)** A function that takes an integer n as argument and returns 1 if it is a prime number and 0 otherwise.
   - **b)** A function that takes a real number x and a positive integer n as arguments and returns x^n.
   - **c)** A function that takes a positive integer n as an argument and returns the n^{th} Fibonacci number.
2. Using recursion write C functions for the following:
   - **a)** Factorial of a non-negative integer n.
   - **b)** Number of combinations of n things taken r at a time.
   - **c)** Greatest Common Divisor of two integers.
   - **d)** Least Common Multiple of two integers.

7. Unit III (Cycle 7)

- **a)** Write a menu driven style program to compute the above functions (cycle 6) on the choice of the function given by the user.
- **b)** Define macros for the following and use them to find sum of the squares of the minimum and maximum of two given numbers.
  1. Larger of two numbers.
  2. Smaller of two numbers.
  3. Sum of the squares of two numbers.
- **c)** Write a program to generate Pascal's triangle.
- **d)** Write a program to count the number of letters, words, and lines in a given text.

8. Unit IV (Cycle 8)

1. Write a program to store the numbers given by the user in an array, and then to find the mean, deviations of the given values from the mean, and variance.
2. Write a C program to initially store user given numbers in an array, display them and then to insert a given number at a given location and to delete a number at a given location.
3. Write a program to store user given numbers in an array and find the locations of minimum and maximum values in the array and swap them and display the resulting array.

9. Unit IV (Cycle 9)

1. Write a C program to implement the operations of matrices – addition, subtraction, multiplication.
2. Write a program to find whether a given matrix is symmetric, lower triangular, upper triangular, diagonal, scalar, or unit matrix.

10. Unit V (Cycle 10)

1. Write a function to swap two numbers.
2. Write a function to compute area and circumference of a circle, having area and circumference as pointer arguments and radius as an ordinary argument.

11. Unit VI (Cycle 11)

1. Define a structure for complex number. Write functions on complex numbers (addition, subtraction, absolute value, multiplication, division, complex conjugate) and implement them in a menu driven style.
2. Define a structure point. Write a program to find the distance between two points.
3. Define a structure student having members roll no., name, class, section, marks. Create an array of 10 students give the data and find the average marks, section-wise.

12. Unit VI (Cycle 12)

1. Write a program to:
   a) Create a file by the name given by the user or by command line argument and add the text given by the user to that file.
   b) Open the file created above and display the contents of the file.
   c) Copy a file into some other file, file names given by the user or by command line arguments.
   d) Append a user mentioned file to another file.
   e) Reverse the first n characters of a file.

Syllabus for B. Tech I Year I semester
Electrical and Electronics Engineering (EEE)

WRITTEN COMMUNICATION SKILLS LAB
IT, MECH, ECM, EEE: I/I
CSE, ECE, CIVIL: I/II

Subject Code: 8HC62

L	T	P/D	C
0	**0**	**2**	**1**

Course Objectives:

- To enable students to upgrade their knowledge of basic writing skills, writing cohesive paragraphs and effective letter writing skills
- Understand the nuances of technical communication and apply it in their academic and professional career.
- Acquaint themselves with the concept of soft skills, having the right attitude towards their education, career and life in general and learn the importance of building a strong resume.

Course Outcomes:

After completing this course, the student will able to:

1. Differentiate between confusing words, learn correct spellings and have a sound grip over the use of phrasal verbs
2. Upgrade their knowledge of basic writing skills, writing cohesive paragraphs and effective letters
3. Upgrade their knowledge of basic reading skills using different techniques
4. Understand the nuances of technical communication and apply it in their academic and professional career.
5. Learn the importance of building a strong resume
6. Acquaint themselves with the concept of soft skills, having the right attitude towards their education, career and life in general.

Unit I:

Exercises on

- Words often Confused
- Synonyms – Antonyms
- Identifying Homophones, Homonyms, Homographs
- words often confused
- One - word substitutes
- Idioms and Phrases

Unit II:

Practice exercises on

- Paragraph Writing using hints/guided Paragraphs
- Writing different types of letters
- Learning e-correspondence

Unit III

Practice sessions on

- Using passages for skimming and scanning
- Reading Comprehension using different techniques

Unit IV:

- Practice Writing reports and reviewing technical Articles
- formal expressions, technical vocabulary, active voice and passive voice, introduction, body and

conclusion of a report

Unit V:
Practice exercises on
- Resume Building
- Drafting cover letters

Unit VI:
Practice exercises on
- Technical vocabulary
- Writing articles and research papers
- Activities based on Soft skills
- Developing attitude and behaviour

a	b	c	d	e	f	g	h	i	j	k	l
x	x	x									

Syllabus for B. Tech I Year I semester
Electrical and Electronics Engineering (EEE)

TECHNICAL SEMINAR -I

Code: 8A191

L	T	P	C
-	-	2	1

Course Objectives:
To make the student to learn:

i. To have good communication skill
ii. To have good presentation skill
iii. To independent learning

Course Outcomes:

Students are able to understand about conventional and non conventional power plants

i. Students are able to understand basics of electrical protection
ii. Students are able to understand about home appliances
iii. *Students are able to understand overview of power system*

Topics for Technical Seminar

1. Basic knowledge about Hydro Power Plants
2. Basic knowledge about Thermal Power Plant
3. Basic knowledge about nuclear power plant
4. Knowledge about common protection devices like Fuse, HRC Fuse, MCB.
5. Basic knowledge about solar power plant.
6. Basic knowledge about Wind mill power plant.
7. Basic working knowledge Captive Power generation and its types of sources
8. Knowledge on working principle about home applications like Fan, Wet grinder, Mixer grinder, Fluorescent Lamp, Motor pump, Refrigerator, Air conditioner.

Procedure

1. Seminar in-charges shall highlight the significance of technical seminar in the first two sessions and enlighten the students on the utility of these seminars.
2. The slots, titles shall be decided upfront and seminar in charge shall take signatures.
3. The same sheet shall be affixed in the respective classrooms and seminar register.
4. If any student fails to present his/her seminar on the given slot, to genuine reasons, they may be asked to present in the subsequent slot/week.
5. Progress of the seminars need to be reviewed by the concerned HOD once in 15 days.
6. The evaluation for technical seminars has to be informed to students and displayed in the classrooms.
7. Report and presentation must contain topic, introduction, explanation, diagrams, tables, applications and conclusions.

There shall be a technical seminar evaluated for 100 marks each from I year I Semester to II year II Semester. The evaluation is purely internal and will be 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	15

	to the end of 9th week	
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.

a	b	c	d	e	f	g	h	i	j	k	l
x	x	x									

Syllabus for B. Tech I Year I semester
Electrical and Electronics Engineering (EEE)
COMPREHENSIVE TEST AND VIVA VOCE – I

Code: 8A181

L	T	P	C
-	-	-	1

Course Objective:

Evaluate, Comprehend and Assess the concepts and knowledge gained in the Core Courses of 1st year 1st Semester

Course Outcomes: After completing this course, the student will be able to

1. Comprehend the concepts in the Core Courses of 1st year 1st Semester
2. Assess technical knowledge to face interviews.
3. Exhibit lifelong learning skills to pursue higher studies or professional practice.

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

Allocation of marks:

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, IIII, IV and V semester
B.Tech III year II semester	I, II, IIII, IV, V and VI semester
B.Tech IV year I semester	I, II, IIII, IV, V, VI and VII semester

*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 20 marks.

End Semester Examination for Comprehensive Test will be taken for 50 marks.

Total marks for Comprehensive Test will be 70.

**Average of best two of Mid Tests of Mid – I, Mid – II and Mid - III for Viva Voce will be taken for 10 marks.

End Semester Examination for Comprehensive Viva Voce shall be evaluated for 20 marks.

The total for Viva Voce will be 30.

Thus 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.

a	b	c	d	e	f	g	h	i	j	k	l
X					X	X					

ENGINEERING CHEMISTRY
(Common to all branches)
I B. Tech I Sem (for CSE, ECE and CE)
I B. Tech II Sem (for EEE, ME, IT and ECM

Course Code: 8HC04

L	T	P	C
4	0	0	4

Course Objectives:

1. To understand microscopic chemistry in terms of atomic and molecular orbitals
2. To learn the preparation and applications of commercial polymers and lubricant materials
3. To learn the industrial problems caused by water and municipal water treatment
4. To acquire knowledge about different types of batteries and their working mechanism
5. To develop the concepts and types of corrosion and the factors influence corrosion
6. To understand the control methods and protective coatings for metals and other surfaces

UNIT - I: ATOMIC AND MOLECULAR STRUCTURE (6L)

Molecular orbitals of diatomic molecules and plots of the multicentre orbitals. Equations for atomic and molecular orbitals. Energy level diagrams of diatomics. Pi-molecular orbitals of butadiene and benzene and aromaticity. Crystal field theory and the energy level diagrams for transition metal ions and their magnetic properties. Band structure of solids and the role of doping on band structures.

UNIT - II: PLASTICS AND LUBRICANTS

Plastics (8L)

Polymerization-Addition and Condensation polymerization, Plastics – Thermosetting and Thermoplastics, preparation, properties and **engineering applications of plastics:** PVC, Teflon, Bakelite. Fibers: Nylon 6,6 and Dacron.

Rubbers – natural and artificial rubber, vulcanization of natural rubber, Buna-S, Buna-N and their **engineering applications.**

Fabricated Reinforcing Polymers- **engineering applications**

Lubricants

Definition, classification and function of lubricants, Types of lubrication and mechanisms – Thick Film or Hydrodynamic Lubrication, Thin Film or Boundary Lubrication, Extreme Pressure Lubrication. Classification and properties of lubricants – Viscosity, flash and fire point, cloud and pour point and acid value. **Engineering applications.**

UNIT - III: WATER TECHNOLOGY (8L)

(a) Introduction: - Hardness of water – types of hardness (temporary and permanent), calculation of hardness- Numerical problems. Estimation of hardness of water by EDTA Method.

(b) Water for Industrial purpose: Food, sugar, textile, paper and pharma industries, water for steam making characteristics of boiler feed water, boiler troubles- scale and sludge & Carry over (priming &foaming), boiler corrosion, caustic embrittlement.

(c) Water Treatment: Internal conditioning- phosphate, carbonate & calgon conditioning. External Treatment: Ion-exchange process. Desalination-reverse osmosis. Municipal water treatment-sedimentation, coagulation, filtration, disinfection-chlorination, ozonization. **Engineering applications: Methodology and working of mineral water plant for drinking purpose.**

UNIT – IV: ELECTROCHEMISTRY (8L)

Conductance – conductors (metallic and electrolytic), types of conductance – specific, equivalent and molar conductance – effect of dilution on conductance.

Free energy and emf, cell potentials, electrode potential (oxidation and reduction). Types of electrodes - redox electrode (quinhydrode electrode), metal – metal insoluble salt electrode and Ion selective electrode. Cell notation and cell reaction –Nernst equation and applications. **Engineering Applications.**

Batteries: Types of batteries

(a) Primary batteries – Lechalanche cell (dry cell), Lithium cell
(b) Secondary batteries(Accumulators) – Lead acid battery, Lithium-ion battery
(c) Fuel cells- $H_2 – O_2$ fuel cell and MeOH-O_2 fuel cell-advantages and applications.

Engineering applications – future water powered car, Hydrogen production and storage.

UNIT - V: CORROSION AND ITS PREVENTION (7L)

Corrosion – basic concepts –types of corrosion, chemical, electrochemical corrosion (absorption of O_2 and evolution of H_2). Types of electrochemical corrosion – galvanic corrosion, pitting corrosion, waterline corrosion- factors affecting the rate of corrosion.

Cathodic protection – sacrificial anodic protection and impressed current cathodic protection method.

UNIT-VI: SURFACE TREATMENT (5L)

Mechanical surface treatment and coatings, casehardening and surface coating, thermal spraying, vapour deposition, Ion implantation, Diffusion coating.

Methods of metallic coatings-hot dipping (tinning and galvanizing), metal cladding (Al cladding), electroplating (copper plating) and electroless plating (nickel plating) and electroforming, ceramic, organic and diamond coating.

TEXT BOOKS:

1. Engineering Chemistry: PK Jain & MK Jain, Dhanapathrai Publications (2018)
2. Engineering Chemistry: by Thirumala Chary Laxminarayana & Shashikala, Pearson Publications (2020)

REFERENCE BOOKS:

1. Textbook of Engineering Chemistry: Jaya Shree Anireddy, Wiley Publications (2019)

2. Engineering Chemistry: by & B.Rama Devi, Prsanta Rath & Ch. Venkata Ramana Reddy, Cengage Publications (2018)
3. Engineering Chemistry: Shashi Chawla, Dhanapathrai Publications (2019)
4. Textbook of Engineering Chemistry: SS Dara, SS Umare S. Chand Publications (2004)

Course Outcomes

After completion of the course, the student will be able to:

1. Understand and analyse microscopic chemistry in terms of atomic orbitals, molecular orbitals and intermolecular forces.
2. Identify and differentiate polymers, thermoplastic, thermosetting plastics and various lubricants.
3. Recognize and select the domestic and industrial problems caused by hard water and also learn about the municipal water treatment using various methods.
4. Understand and interpret the important fundamental concepts of electrochemistry and solve the problems related to batteries.
5. Differentiate the types of corrosion and methods used to prevent the corrosion.
6. Learn and implement surface coating techniques.

a	b	c	d	e	f	g	h	i	j	k	l
x	x	x									

Syllabus for B. Tech I Year II semester
Electrical and Electronics Engineering (EEE)

ELECTRICAL CIRCUITS AND NETWORKS – I

Code: 8A201

L	T	P	C
2	-	-	2

Course Objectives :

To make the students to understand:

1. *The fundamentals of the basic elements and their application in electrical circuits.*
2. *The importance of network topology in analysis of electrical networks.*
3. *The basic concepts of magnetic circuits and their applications.*
4. *The concept of single phase circuits and their analysis.*
5. *The significance of resonance and its use*
6. *Verify the network theorem and their application in electrical networks.*

Course Outcomes:

After completion of the course work the student will be able to

1. *Apply Kirchhoff's laws for solving electrical circuits.*
2. *Draw the network graph and solve the problems of electrical networks.*
3. *Analyze and solve the problems of composite magnetic circuits.*
4. *Understand the basic concepts of single phase AC circuits and ability to solve the problems related to steady state analysis.*
5. *Compute for parameters like Q factor and bandwidth for resonance circuits.*
6. *Apply and solve the problem associated with electrical networks using network theorems*

UNIT – I: INTRODUCTION TO ELECTRICAL CIRCUITS:

Circuit concept, R – L – C parameters, Voltage and current sources, Independent and dependent sources, Source transformation, Kirchhoff's Laws, Network reduction techniques, Series, Parallel, Series - parallel, Star – to – delta and Delta – to – star transformation, Mesh analysis, Nodal analysis, Concept of super mesh and super node. Voltage current relationship for passive elements (for different input signals – square, ramp, saw tooth, triangular)

UNIT – II: NETWORK TOPOLOGY:

Definitions, Graph, Tree, Basic cut-set and basic tie-set matrices for planar networks, Loop and Nodal methods of analysis of Networks using graph theory, Duality & dual networks

UNIT – III: MAGNETIC CIRCUITS:

Basic terms in Magnetic Circuits, Comparison between electric and magnetic circuits, Composite magnetic circuit, Analysis of series, parallel magnetic circuits, Faraday's Laws of electromagnetic induction, Concept of self and mutual inductance, Dot convention, Co-efficient of coupling.

UNIT - IV: SINGLE PHASE A.C. CIRCUITS:

R.M.S. and Average values, Form factor for different periodic wave forms, j Notation, Complex and polar forms of representation, Steady state analysis of R,L,C circuits (in series, parallel and series parallel combinations) with sinusoidal excitation, Concept of Reactance, Impedance, Susceptance and Admittance, Phase angle, Concept of power factor, Real, Reactive powers and Complex power.

UNIT – V: LOCUS DIAGRAMS & RESONANCE:

Locus diagrams of R-L, R-C circuits with variation of various parameters (series and parallel), Resonance in series, parallel circuits, Concept of band width and Q factor.

UNIT – VI: NETWORK THEOREMS:

Tellegen's, Superposition, Reciprocity, Thevenin's, Norton's, Maximum Power transfer, Millman's and Compensation theorems with D.C.& A.C. excitations.

TEXT BOOKS:

1. Engineering circuit analysis - William Hayt and Jack E.Kemmerly, Tata McGraw - Hill Company, 6th edition.
2. Circuits & Networks - A. Sudhakar and Shyamamohan S. Palli, Tata Mc Graw Hill, 3rd edition.

REFERENCES:

1. Network Analysis - M.E. Vanvalkenberg, Printice Hall of India, 3rd edition
2. Circuit theory (Analysis & Synthesis) - A.Chakravarthy, Dhanpath Rai & Co., 6th edition.
3. Circuits & Networks – M.S. Sukhija, T.K. Nagasarkar, Oxford University Press, 2nd edition.

a	b	c	d	e	f	g	h	i	j	k	l
H	M	M								L	

H: High M: Medium L: Low

I Year B.Tech, Semester-II
ADVANCED CALCULUS AND COMPLEX VARIABLES
(Common to EEE & ECE)

	L	T	P/D	C
Code: 8HC11	**3**	1	**0**	**4**

Pre Requisites: Matrix Methods and Calculus

Course Objectives: *To make the students to understand and expected to learn*

1. *Various analytical methods to solve first order first degree and also the equations not of first degree ordinary differential equations.*
2. *Methods to solve higher order ordinary differential equations.*
3. *Multiple integration and its applications*
4. *Concepts of vector integration.*
5. *Basic concepts of Complex Analysis and conformal mapping and their properties.*
6. *Series expansion of a function using Taylor's and Laurent's series. Evaluation of definite integrals and improper integrals.*

UNIT - I: FIRST ORDER ORDINARY DIFFERENTIAL EQUATIONS: (10 L)

Exact, equations reduced to exact; linear and Bernoulli's equations; Orthogonal Trajectories, Newton's Law of Cooling, Law of natural Growth/Decay, Solution of Electric circuit problems.

UNIT - II: ORDINARY DIFFERENTIAL EQUATIONS OF HIGHER ORDER: (10 L)

Higher order linear differential equations with constant coefficients-Standard types of finding P.I, method of variation of parameters, Cauchy-Euler equation, Solution of LCR circuit problems.

UNIT - III: MULTIPLE INTEGRALS (10 L)

Double integrals, change of order of integration, change of variables (Cartesian to polar), Triple integrals (Cartesian), Applications in finding areas and volumes.

UNIT - IV: VECTOR INTEGRATION (10 L)

Line integrals, Surface integrals, Volume Integrals, Green, Gauss divergence and Stokes theorems (without proofs).

UNIT - V: COMPLEX VARIABLE – DIFFERENTIATION: (8 L)

Differentiation, analytic functions, Cauchy-Riemann equations, harmonic functions, finding harmonic conjugate. Finding Analytic Functions.

Conformal mapping: Translation, Inversion, Rotation and Magnification, Invariance of circles and cross ratio-Determination of bilinear transformation – mapping three given points.

UNIT - VI: COMPLEX VARIABLE – INTEGRATION: (12 L)

Cauchy - Integral theorem (without proof), Cauchy Integral formula (without proof), singularities, zeros of analytic functions, Taylor's series, Laurent's series; Residues, Cauchy Residue theorem (without proof), Evaluation of definite integral involving sine and cosine functions.

TEXT BOOKS:

1. R K Jain and S R K Iyengar Advanced Engineering Mathematics, Narosa Publications.

REFERENCE BOOKS:

(i) B.S.Grewal, Higher Engineering Mathematics, Khanna Publishers, 35th Edition, 2000.
(ii) Ramana B.V., Higher Engineering Mathematics, Tata McGraw Hill New Delhi, 11th Reprint, 2010.
(i) Engineering Mathematics, Srimanta Pal, OXFORD university press.
(ii) G.B. Thomas and R.L. Finney, Calculus and Analytic geometry, 9th Edition, Pearson, Reprint, 2002.
(iii) Erwin kreyszig, Advanced Engineering Mathematics, 9th Edition, John Wiley & Sons, 2006.

Course Outcomes: *After the course completion the students will be able to*

1. *Find the solutions of first order first degree and not of first degree differential equations and their applications such as Newton's law of cooling, Natural growth and decay.*
2. *Identify and solve higher order ordinary differential equations with constant coefficients using some standard methods and also their applications in LCR circuits.*
3. *Solve the problems of multiple integrals and apply these concepts for finding the parameters like surface area, volume, center of mass and centre of gravity.*
4. *Solve problems of Line, Surface and Volume integrals.*
5. *Understand the concept of analyticity of a function; solve the problems on conformal mapping.*
6. *Express the functions of a complex variable in series form also able to evaluate definite and improper integrals using complex integration.*

a	b	c	d	e	f	g	h	i	j	k	l
H	M	M								L	

H: High M: Medium L: Low

I Year B.Tech, Semester-II

BASIC MATHEMATICS, ANALYSIS AND REASONING

(Common to All Branches)

	L	T	P/D	C
Code: 8HC08	**2**	**1**	**0**	**3**

Pre Requisites: Nil

Course objectives: *By learning Quantitative Aptitude and Logical Reasoning, a student can answer general problems in his everyday life within a short time with the help of quicker methods. Also it improves the certain skills of a student such as numerical and logical ability, mental capacity and also in sharpening minds. This course is very much useful for competitive examinations.*

Unit I: Number System: Test for Divisibility, Test of prime number, Division and Remainders – HCF and LCM of Numbers – Fractions and Decimals-Vedic Mathematics-Average-Problems on Ages- Problems on Numbers-Ratio and Proportion.

Unit II: Percentage – Profit, Loss and Discount – Partnership and Share-Simple Interest - Compound Interest. Time and Work- Pipes and Cisterns-Time and Distance- Problems on Trains- Boats and Streams, Allegation or Mixtures.

Unit III: Mensuration: Area of Plane Figures, Volume and Surface Area of Solid Figures.
Data Interpretation: Tabulation, Bar Graphs, Pie Charts, Line Graphs-Logarithms-Permutation and Combination-Probability-Linear Equations-Quadratic Equations-Surds and Indices-Coordinate geometry.

Unit–IV: Series Completion: Number Series, Alphabet Series, Alpha – Numeric Series.
Analogy: Completing the Analogous Pair, Simple Analogy, Choosing the Analogous pair, Double Analogy, Word Analogy, and Number Analogy.
Classification: Word Classification, Number Classification and Letter Classification.
Coding & Decoding: Letter Coding, Number Coding, Matrix Coding, Substitution, Deciphering Message Word Codes, Jumbled Coding. Crypt arithmetic-Inequalities-Input Output Tracing

Unit–V: Blood Relations– Direction sense test- Number, Ranking & Time Sequence Test –Mathematical Operations-Arithmetical Reasoning. Puzzle Test: Classification Type Questions, Seating Arrangements, Comparison Type Questions, Sequential Order of Things, Selection Based on Given Conditions, Family Based Puzzles, Jumbled Problems.
Unit –VI: Logical Venn Diagrams –Cubes and Dice – Analytical Reasoning-Assertions and Reason–Logical Deductions-Syllogism -Statement and Arguments-Statement and Conclusions-Clocks & Calendar-Data Sufficiency.

Text Books:
1. Quantitative Aptitude by R.S. Agarwal
2. Verbal and Non Verbal Reasoning by R.S. Agarwal.

Course Outcomes: *After completion of this course students will be able to solve, the questions given on testing divisibility, HCF and LCM, averages, percentage and profit and loss, ratio and proportion simple and compound interest, time and work, time and distance and etc. Also able to solve the questions given on series completion and analogy, odd one out and coding and decoding, blood relations, directions and Arithmetical reasoning, Venn diagrams, cubes and dice, clocks and calendar.*

1	2	3	4	5	6	7	8	9	10	11	12
H											M

Syllabus for B. Tech I Year II semester
Electrical and Electronics Engineering (EEE)

WORKSHOP/MANUFACTURING PROCESSES
Common to I year I sem (CSE, IT & CE) II sem (EEE, ECE & ME)

Code: 8BC01

L	T	P	C
1	0	0	1

Course Objectives:

Upon completion of this course, the students will gain knowledge of the different manufacturing processes which are commonly employed in the industry, to fabricate components using different materials.

COURSE OUTCOMES:

- To understand various basic tools to perform simple joints using metal and wood.
- To understand the principle of various electrical and electronic appliances and their applications.
- To understand the manufacturing process of welding, casting and tin smithy and their applications.
- To understand the operation of basic as well as advanced machines used for fabrication of Metals, Plastics and Glass.

Unit-I

Fitting & Power Tools: Fitting Tools- Marking and measuring tools, Cutting tool, finishing tools-etc- basic Fitting operations, Safe working practices

Introduction to power tools- Power Hacksaw, Drill, Grinder, etc.

Unit-II

Electrical & Electronics Appliances: Introduction, wires and wires sizes, wiring boards, common house wiring methods, symbols and house hold electrical appliances.

Unit-III

Carpentry: Introduction-Timber, Wood joints- Lap, dovetail, Tools- Marking tools, Cutting tool, Finishing tools-etc- basic carpentry operations, Wood turning lathe

Unit-IV

Plastic molding & Glass Cutting: Types of Plastics, Processing of Plastics: Injection moulding and Blow moulding. Introduction to Glass materials and physical properties - Cutting tools.

Unit-V

- Casting: Importance, Advantages and limitations, Patterns, Moulding and Moulding materials, Sand Casting – Casting terms, Procedure, Applications, Die Casting– Types, Principle and Applications,

- Metal joining - Various methods of Joining, Welding - Types of Welding - Weld joints, Electric Arc welding – Principle, Coated electrode, arc welding equipment, Applications, Resistance Spot welding, Soldering and Brazing

- Metal forming – Advantages, Rolling- Principle, Rolling products, Forging- principle and applications, hand forging operations, Extrusion - basic principle and applications,

- Sheet Metal Operations - Punching, Blanking, Bending and Drawing

Unit-VI

Machining: meaning, Advantages and Drawbacks, Basic concepts of machine tool, chips and cutting tool, Principle and simple Construction of Lathe, Drilling, and Grinding, CNC machine tools - Advantages, parts of a CNC system, Advanced manufacturing methods – Need for icromachining, principle and applications of ECM and EDM, Additive manufacturing – Need, Principles of SLS, FDM methods

TEXT BOOKS:

1) Hajra Choudhury S.K., HajraChoudhury A.K. and Nirjhar Roy S.K.,
2) Elements of Workshop Technology", Vol. I 2008 and Vol. II 2010, Media promoters and publishers private limited, Mumbai.

REFERENCE BOOKS:

Rao P.N., "Manufacturing Technology", Vol. I and Vol. II, Tata Mc-Graw Hill House, 2017.

1	2	3	4	5	6	7	8	9	10	11	12
H											M

Syllabus for B. Tech I Year II semester
Electrical and Electronics Engineering (EEE)

DATA STRUCTURES AND C++
Common to All Branches

Code: 8EC01

L	T	P	C
3	0	0	3

Course Objective:

1. Understand the concepts of Abstract data Type, linear data structures such as stacks, queues and lists and their applications.
2. Comprehend different nonlinear data structures such as trees and graphs and analyze their time complexities.
3. Understand object-oriented programming and advanced C++ concepts and be able to write programs with C++ features such as composition of objects, operator overloads, dynamic memory allocation, inheritance and polymorphism, Templates etc.

Course Outcomes:

1 Explain Abstract data type, stack and Queues with their applications

2 Write programs on Singly linked lists, doubly linked lists, Circular list and explain their operations.

3 Explain concepts of Trees, AVL Trees and Graphs with examples and applications.

4 Describe and solve problems of searching and sorting and evaluate the time complexity of each algorithm.

5 Explain concepts of OOPs and implement programs using objects, classes, constructors and destructors.

6 Explain and apply concepts of oops, write programs implementing functions, operator overloading and inheritance.

UNIT I:

Introduction to data structures: Abstract data type (ADT), Stacks, Queues and Circular queues and their implementation with arrays.

Applications of Stack: infix to post fix conversion, postfix expression evaluation.
Applications of Queues.

UNIT II:

Singly linked lists, Advantages of Linked lists over Arrays, Doubly linked lists, Circular list and their operations, representing stacks and queues with Linked lists.

UNIT III:

Trees- Binary trees, terminology, representation, traversals. AVL trees, AVL tree operations: Insertion, deletion and searching. Graphs- terminology, representation, graph traversals (DFS and BFS).

UNIT IV:

Searching –Searching: Linear and binary search methods.
Sorting: Quick sort, Merge sort.

Performance analysis of Searching and Sorting Algorithms. Heaps: Introduction, Min Heap, Max Heap, Operations on Heaps, Heap Sort. Hashing: Hash Table, Hash functions, collision resolution-separate chaining, open addressing-linear probing, quadratic probing, double hashing.

UNIT V:

Introduction to C++ programming-object oriented programming concepts, Structured Vs OOP. Classes and objects-class definition, Objects, class scope and accessing members, Constructors-default constructor, parameterized constructor, copy constructor. Destructor.

UNIT VI:

Static class members, this pointer, friend functions, Dynamic memory management with operators new and delete. Overloading-function overloading, Operator overloading, restrictions on operator overloading, overloading unary and binary operators, templates, inheritance: single, multiple and multi level inheritance.

TEXT BOOKS:

1. Data Structures and C++ by Reema Thareja
2. Data Structure through C by Yashavant Kanetkar.
3. The complete reference C++ By HerbSchildt.

REFERENCES:

1. Alfred V. Aho, Jeffrey D. Ullman, John E. Hopcroft. Data Structures and Algorithms, Addison Wesley, 1983.
2. Data Structures using c Aaron M.Tenenbaum , Yedidyah Langsam,Moshe J Augenstein.
3. Introduction to Data Structures in C by Kamtane
4. Data Structures, A pseudocode Approach with C by Richard F. Gilberg and Behrouz A. Forouzan.

a	b	c	d	e	f	g	h	i	j	k	l
x		x							x		

Syllabus for B. Tech I Year II semester
Electrical and Electronics Engineering (EEE)

ENGINEERING CHEMISTRY LABORATORY

Code: 8HC64

L	T	P	C
0	0	2	1

Course Objectives:

The student will be able to learn:

1. To reparation of Inorganic compounds
2. To determine surface tension of a liquid
3. To determine viscosity of lubricant
4. To determine acid value of an oil
5. To estimate hardness of water
6. To analyze the amount of chloride content
7. To determine cell constant and conductance of solutions
8. To determine redox potential and emf of solutions
9. To determine the rate constant of acid
10. To synthesize a polymer (Thiakol rubber / Urea-Farmaldehyde resin)
11. To synthesize a drug- Aspirin
12. To estimate of Mn^{+7} by Colorimetry method

LIST OF EXPERIMENTS

1. Preparation of coordination complex NiDMG Complex
2. Determination of surface tension
3. Determination of viscosity
4. Saponification/acid value of an oil
5. Ion exchange column for removal of hardness of water / Estimation of Hardness of water by EDTA Method
6. Determination of chloride content of water
7. Determination of cell constant and conductance of solutions (HCl Vs NaOH / Mixture of acid Vs Strong base)
8. Potentiometry - determination of redox potential and emf ($FeSO_4$ Vs $KMNO_4$ / HCl Vs NaOH)
9. Determination of the rate constant of acid catalyzed hydrolysis of methylacetete
10. Synthesis of a polymer- Thiakol rubber / Urea-Farmaldehyde resin
11. Synthesis of a drug- Aspirin
12. Estimation of Mn^{+7} by Colorimetry method

Course Outcomes

After completion of the course, the student will be able to learn:

1. Preparation of Inorganic compounds
2. Determination surface tension of a liquid
3. Determination viscosity of lubricant
4. Determination acid value of an oil
5. Estimation hardness of water

6. Analysis the amount of chloride content
7. Determination of cell constant and conductance of solutions
8. Determination of redox potential and emf of solutions
9. Determination of the rate constant of acid
10. Synthesis of a polymer (Thiakol rubber / Urea-Farmaldehyde resin)
11. Synthesis of a drug- Aspirin
12. Estimation of Mn^{+7} by Colorimetry method

a	b	c	d	e	f	g	h	i	j	k	l
							X	X	X		X

Syllabus for B. Tech I Year II semester
Electrical and Electronics Engineering (EEE)
ORAL COMMUNICATION SKILLS

Common to I Year I Semester (ECE, EEE and MECH) and II Semester (ECM, CSE, IT and Civil)

	L	T	P/D	C
Code: 8HC01				
Course Objectives:	**1**	**0**	**0**	**1**

1. To enable students to enhance oral communication skills
2. Develop the skill of speaking effectively
3. Get introduced basics of soft skills and enhance their confidence levels and etiquette
4. Learn to make formal presentations both online and offline.
5. Improve their reading skills by applying different strategies of reading
6. Understand the nuances and learn the art of group discussion

Course Outcomes:

After completion of the course, the student will be able to:

1. Understand, Analyse and respond to the audience by listening effectively
2. Practice effectively the speaking skills with the apt body language
3. Develop strategies to improve speaking skills
4. Plan, prepare and present effectively to meet the standards of corporate and real world in a group
5. Comprehend the reading skills through note taking and other study skills
6. Express the opinions effectively on the given topic through role play and situational dialogues in group discussions

UNIT I: INTRODUCTION TO ORAL COMMUNICATION SKILLS

1.1. Importance and need for general and technical Communication
1.2 Barriers to effective communication
1.3 Self introduction, introducing and greeting others
1.4 Techniques to enrich vocabulary power

UNIT II: EFFECTIVE SPEAKING SKILLS

2.1 Use of cohesive devices
2.2 Achieving confidence, clarity and fluency in speaking
2.3 Body language: eye contact, facial expression, gestures, posture and body movements
2.4 Speech etiquette

UNIT III: ACTIVITIES ON LISTENING AND SPEAKING

3.1 Soft Skills
3.2 Listening to structured talks
3.3 Strategies to improve speaking skills
3.4 JAM sessions

UNIT IV: PRESENTATION SKILLS

4.1 Nature and importance of presentation skills
4.2 Planning, preparing and organizing a presentation
4.3 Making an effective online presentation
4.4 Storytelling: Nuances of delivery

UNIT V: READING COMPREHENSION

5.1 Reading comprehension Techniques
5.2 Study Skills
5.3 Note making
5.4 Reading passages from a book for practice

UNIT VI: GROUP DISCUSSION

6.1 Importance of Group Discussion
6.2 Characteristics of successful group discussions
6.3 Techniques for individual contribution in a group discussion
6.4 Group discussions for practice

TEXT BOOK: Compiled by the faculty of Sreenidhi (for internal circulation only)

SUGGESTED READINGS:

1. SPOKEN ENGLISH A Self-Learning Guide to Conversation Practice by V Sasikumar P. V. Dhamija
2. English for Professionals by S.S.Prabhakar Rao
3. English for Business Communication by Dr.T.Farhathullah
4. Professional Communication by Alok Jain, Pravin S.R.Bhatia and A.M.Sheikh
5. Objective English : Pearson's Publications
6. Word Power Made Easy: Norman Lewis
7. Business Communication Strategies: Monipally.

1	2	3	4	5	6	7	8	9	10	11	12
H											M

Syllabus for B. Tech I Year II semester
Electrical and Electronics Engineering (EEE)
WORKSHOP/MANUFACTURING PROCESSES LAB
B.Tech I year I sem (CSE, ECM, IT & CE) II sem (EEE, ECE & ME)
Code: 8BC61

L	T	P	C
0	0	2	1

COURSE OBJECTIVES:

1) To know the different popular manufacturing process
2) To gain a good basic working knowledge required for the production of various engineering products
3) To provide hands on experience about use of different engineering materials, tools, equipment's and processes those are common in the engineering field
4) To identify and use marking out tools, hand tools, measuring equipment and to work to prescribed tolerances

COURSE OUTCOMES: After completion of the course, the student will be able to:

CO-1: Use various types of conventional manufacturing Processes

CO-2: Manufacture components from wood, MS flat, GI Sheet etc. – hands on experience

CO-3: manufacturing of components by machining like shafts, holes & threaded holes, surface finishing of components etc.

CO-4: Produce small devices / products /appliances by assembling different components

LIST OF EXPERIMENTS

S.No	Trades	List of Experiments
1	Fitting Shop	**1**. Preparation of T-Shape Work piece **2.** Preparation of U-Shape Work piece which contains: Filing, Sawing, Drilling, Grinding.
2	Carpentry	3.Practice of Cross Half lap joint 4. Practice of Half lap Dovetail joint
3	Electrical & Electronics	5. One lamp one switch Practice 6. Stair case wiring: Practice
4	Welding (Arc & Gas) & Soldering shop	Demonstration of Gas and Resistance welding 7. Practice of Lap and Butt joint using Arc welding
5	Casting	8.Preparation of mould by using split pattern 9. Mould preparation and pouring of molten metal.
6	Tin Smithy	ıration of Rectangular Tray & Square box
7	Machine Shop	11. Demonstration of Turning, Drilling and grinding operations on Lathe, Drilling and grinding machines
8	Plastic molding & Glass Cutting	12 a) Demonstration of Injection Moulding b) Demonstration of Glass Cutting with hand tools
9	Domestic Appliances	13.Demonstration of assembly components of Fans, Mixers, Air blower, Iron box, Rice cooker, Emergency light

10	Lab project	14. Making various components and / or assembling the components which can be useful in domestic / engineering applications

a	b	c	d	e	f	g	h	i	j	k	l
							X	X	X		X

Syllabus for B. Tech I Year II semester
Electrical and Electronics Engineering (EEE)
ORAL COMMUNICATION SKILLS LAB

Common to I Year I Semester (ECE, EEE and MECH) and II Semester (ECM, CSE, IT and Civil)

Code: 8HC61

L	T	P/D	C
0	0	2	1

Course Objectives:

1. To enable students to enhance oral communication skills
2. Develop the skill of speaking effectively
3. Get introduced basics of soft skills and enhance their confidence levels and etiquette
4. Learn to make formal presentations both online and offline.
5. Improve their reading skills by applying different strategies of reading
6. Understand the nuances and learn the art of group discussion

Course Outcomes:

After completion of the course, the student will be able to:

1. Understand, Analyse and respond to the audience by listening effectively
2. Practice effectively the speaking skills with the apt body language
3. Develop strategies to improve speaking skills
4. Plan, prepare and present effectively to meet the standards of corporate and real world in a group
5. Comprehend the reading skills through note taking and other study skills
6. Express the opinions effectively on the given topic through role play and situational dialogues in group discussions

Practice sessions on

1. Self-introduction, introducing others and greetings
2. Sharing experiences, anecdotes and story telling
3. Confidence boosting
4. Asking for and Giving Directions
5. Discussions and Role Plays on different types of Etiquette
6. Situational Dialogues
7. JAM/Extempore/ Impromptu
8. Formal Presentations
9. Reading comprehension
10. Reading from simple and difficult passages from articles and books
11. Group Discussion

1	2	3	4	5	6	7	8	9	10	11	12
		H									

Syllabus for B.Tech I year II Semester
Computer Science and Engineering
DATA STRUCTURES (C/C++) LAB
(Common to all Branches)

Course objective:
Understand the data structures: simple and complex and use them to write the programs for implementing searching, sorting, expression evaluations. Understand the applications that use the particular data structure and its significance in the development of operating systems and the software's. Understand the object-oriented programming concepts of C++.

Course Outcomes:
1 Write programs to implement Stacks, Queues and circular queues.
2 Write programs using tree traversals. Inorder, preorder and post order.
3 Write Programs on searching, sorting and hashing operations.
4 Write programs on Binary trees
5 Write programs in C++ to implement classes and operator overloading.

UNIT –I:
1. Write a C program that implement stack and its operations using arrays
2. Write a C program that implement Queue and its operations using arrays.
3. Write a C program that implement Circular Queue and its operations using arrays.
4. Write a C program that uses Stack operations to perform the following
i) Converting infix expression into postfix expression
ii) Evaluating the postfix expression

UNIT –II:
5. Write a C program that uses functions to perform the following operations on singly linked list:
i) Creation ii) Insertion iii) Deletion iv) Traversal
6. Write a C program using functions to perform the following operations on circular singly linked list:
i) Creation ii) Insertion iii) Deletion iv) Traversal
7. Write a C program that uses functions to perform the following operations on doubly linked list:
i) Creation ii) Insertion iii) Deletion iv) Traversal in both ways
8. Write a C program to implement operations on the following Data Structures Using Singly linked list:
i) Stack ii) Queue

UNIT- III
9. Write a C program that uses functions to perform the following:
i) Creating a Binary Tree of integers
ii) Traversing the above binary tree in preorder, in order and post order.

UNIT- IV
10. Write C programs that use both recursive and non recursive functions to perform the following searching operations for a Key value in a given list of integers:
i) Linear search ii) Binary search
11. Write C programs that implement the following sorting methods to sort a given list of integers in ascending order:
i) Bubble sort ii) Insertion sort iii) Selection Sort
12. Write C programs that implement the following sorting methods to sort a given list of integers in ascending order:
i) Quick sort ii) Merge sort iii) Heap Sort
13. Write a C Program to implement Separate Chaining using Hashing. Include Insertion, Deletion and Display of the Elements.

UNIT –V

14. Write a C++ program to read and display the details of student class with data members as name, rollno and 3 subjects' marks.
15. Write a C++ program to implement all types of constructors.

UNIT VI

16. Write a C++ program to implement operator overloading for addition of two complex numbers.

a	b	c	d	e	f	g	h	i	j	k	l
x	x	x									

Syllabus for B. Tech I Year II semester
Electrical and Electronics Engineering (EEE)

COMPREHENSIVE TEST AND VIVA VOCE – II

CODE: 8A282

L	T	P	C
-	-	2	1

Course Objective:

Evaluate, Comprehend and Assess the concepts and knowledge gained in the Core Courses of 1st year.

Course Outcomes: After completing this course, the student will be able to

1. Comprehend the concepts in the Core Courses 1st year.
2. Assess technical knowledge to face interviews.
3. Exhibit lifelong learning skills to pursue higher studies or professional practice.

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, IIII, IV and V semester
B.Tech III year II semester	I, II, IIII, IV, V and VI semester
B.Tech IV year I semester	I, II, IIII, 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 20 marks.

End Semester Examination for Comprehensive Test will be taken for 50 marks.

Total marks for Comprehensive Test will be 70.

**Average of best two of Mid Tests of Mid – I, Mid – II and Mid - III for Viva Voce will be taken for 10 marks.

End Semester Examination for Comprehensive Viva Voce shall be evaluated for 20 marks.

The total for Viva Voce will be 30.

Thus 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.

a	b	c	d	e	f	g	h	i	j	k	l
x	x	x									

Syllabus for B. Tech I Year II semester
Electrical and Electronics Engineering (EEE)

TECHNICAL SEMINAR – II

Code: 8A292

L	T	P	C
-	-	2	1

Course Objectives:
To make the student to learn:

i. *To have good communication skill*
ii. *To have good presentation skill*
iii. *To independent learning*

Course Outcomes:
Students are able to understand about conventional and non conventional power plants

i. *Students are able to understand basics of electrical protection*
ii. *Students are able to understand about home appliances*
iii. *Students are able to understand overview of power system*

Topics for Technical Seminar

1. Overview of electrical Power generation and consumption scenario in Telangana state, India and world.
2. Working principle and operation of earthing / grounding with types
3. Different types of losses in generation, transmission and distribution electrical power system
4. Overview of power system and Electro Magnetic Field effect on power system.
5. Applications of different types of motors in electric vehicles
6. Overview of solar power generation in India
7. Overview of Wind power generation
8. Overview of HVDC transmission in India

Procedure

1. Seminar in-charges shall highlight the significance of technical seminar in the first two sessions and enlighten the students on the utility of these seminars.
2. The slots, titles shall be decided upfront and seminar in charge shall take signatures.
3. The same sheet shall be affixed in the respective classrooms and seminar register.
4. If any student fails to present his/her seminar on the given slot, to genuine reasons, they may be asked to present in the subsequent slot/week.
5. Progress of the seminars need to be reviewed by the concerned HOD once in 15 days.
6. The evaluation for technical seminars has to be informed to students and displayed in the classrooms.
7. Report and presentation must contain topic, introduction, explanation, diagrams, tables, applications and conclusions.

There shall be a technical seminar evaluated for 100 marks each from I year I Semester to II year II Semester. The evaluation is purely internal and will be 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 9th 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.

a	b	c	d	e	f	g	h	i	j	k	l
H	M	M								L	

II Year B.Tech, Semester-I

TRANSFORM TECHNIQUES AND NUMERICAL METHODS
(Common to ECE & EEE)

	L	T	P/D	C
Code: 8HC14	**2**	**1**	**0**	**3**

Pre Requisites: Engineering Mathematics – II

Objectives: *The students are expected to learn*

- *Concept, properties of Laplace transforms*
- *Solving ordinary differential equations using Laplace transforms techniques.*
- *Various methods to the find roots of an equation.*
- *Concept, properties of Z-Transforms, Solving Difference equations using Z-Transforms.*
- *Form partial differential equations and find the solution to first order linear and nonlinear partial differential equations.*
- *Applications of PDE.*
- *Concept of finite differences and to estimate the value for the given data using interpolation.*
- *Evaluation of integrals using numerical techniques*
- *Solving ordinary differential equations using numerical techniques.*

UNIT - I: LAPLACE TRANSFORMATIONS:

Laplace transform of standard functions, shifting theorems, change of scale property, Laplace Transform of Derivatives and Integrals, Multiplication by powers of 't', Divison by 't' (without proofs). Laplace transform of unit step function, Impulse function. Inverse Laplace_transforms**:** properties, partial fraction method and convolution theorem (without proof). Solving ordinary differential equations with constant coefficients using Laplace Transforms.

UNIT - II: Z- TRANSFORMS:

Z- Transforms and Inverse Z-transforms, properties, damping rule, Shifting properties, Initial and final value theorems Convolution theorem (without proofs).

Applications-Solution of difference equation by Z- transforms

UNIT– III: PARTIAL DIFFERENTIAL EQUATIONS:

Formation of Partial Differential Equations by Elimination of Arbitrary Constants and Arbitrary Functions. Solutions to First order Linear and Non-linear Equations-Standard Forms, Equations Reducible to Standard Forms. Classification of partial differential equations. Method of Separation of Variables, Solution of One dimensional Heat Equation.

UNIT- IV: SOLUTION OF ALGEBRAIC AND TRANSCENDENTAL EQUATIONS AND NUMERICAL INTEGRATION:

The Bisection Method – The Method of False Position –Fixed point iteration Method – Newton-Raphson Method. Newton-Cotes Quadrature Formula, Trapezoidal rule – Simpson's 1/3 rule – Simpson's 3/8 rule.

***UNIT – V: INTERPOLATION*:**

Introduction– Finite differences- Forward Differences, Backward differences, Central differences. Newton's formulae for interpolation – Gauss Central Difference Formulae (without proofs), Lagrange's Interpolation formula for unevenly spaced points.

UNIT – VI: NUMERICAL SOLUTION OF ORDINARY DIFFERENTIAL EQUATIONS:

Solution by Taylor's series – Picard's Method of successive Approximations – Euler's Method – Runge-Kutta Methods of fourth order, Predictor-Corrector Methods-Milne's Method.

TEXT BOOKS:

1. R K Jain and S R K Iyengar Advanced Engineering Mathematics, Narosa Publications.
2. B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 35th Edition, 2000.
3. S. S. Sastry, Introductory methods of numerical analysis. PHI, 4th Edition, 2005.

REFERENCE BOOKS:

(I) Ramana B.V., Higher Engineering Mathematics, Tata McGraw Hill New Delhi, 11th Reprint, 2010.

(ii) Engineering Mathematics, Srimanta Pal, OXFORD university press.

(iii) G.B. Thomas and R.L. Finney, Calculus and Analytic geometry, 9th Edition, Pearson, Reprint, 2002.

(iv) Erwin kreyszig, Advanced Engineering Mathematics, 9th Edition, John Wiley & Sons, 2006.

Course outcomes: *After learning the contents of this paper the student must be able to*

- *Use the Laplace transforms techniques for solving ODE's*
- *Use the Z-Tranforms technique for solving Difference equations*
- *Form partial differential equations and find the solution to first order linear and nonlinear partial differential equations.*
- *Find the root of a given equation.*
- *Estimate the value for the given data using interpolation*
- *Find the numerical solutions for a given ODE's*

1	2	3	4	5	6	7	8	9	10	11	12
H	H	M						M			**L**

H: High M: Medium L: Low

Syllabus for B. Tech (E.E.E.) II Year I semester

DIGITAL LOGIC DESIGN

(Common to ECE/ECM/EEE)

CODE: 8CC02

L	**T**	**P/D**	**C**
2	**-**	**-**	**2**

COURSE OBJECTIVES:

To learn the different numbering systems, Boolean functions and design of Combinational circuits

To learn design of Sequential Circuits, design using PLDs and digital controllers using Algorithmic State machines

COURSE OUTCOMES:

After completing this course, the students will have demonstrated

[1] An ability to understand number systems and apply the rules of Boolean algebra and K-maps to simplify Boolean expressions.
[2] An ability to design MSI combinational circuits such as full adders, multiplexers, decoders, encoders, Code converters.
[3] An ability to design basic memory units (latches and flip-flops) and sequential circuits such as counters and registers
[4] An ability to design digital design using PLD's such as ROM's, PLA's, PALs and digital controllers using Algorithmic State Machine Charts.

Mapping of Course Outcomes with Program Outcomes andProgram specific outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	2	2	3				2	2		2	3	3	2
CO2	3	3	3	2	3				2	2		2	3	3	2
CO3	3	3	3	2	3				2	2		2	3	3	2
CO4	3	3	2	2	3				2	2		2	3	2	2
Over all	3	3	3	2	3				2	2		2	3	3	2

UNIT – I[Lecture hrs – 9]

Number System: Binary, decimal, octal, hexa decimal, weighted and un-weighted codes.

Boolean algebra: Axiomatic definition of Boolean algebra, Binary operators, postulates of and theorems. Boolean addition, subtraction, 1's complement, 2's complement. Switching functions, Canonical forms and Standard forms, Simplification of switching functions using theorems.

UNIT – II[Lecture hrs – 8]

Logic gates: Basic gates and universal gates.

Minimization of Switching Functions: simplification rules, Karnaugh map method, Prime implicants, don't care combinations, Minimal SOP and POS forms, Quine-McCluskey Tabular Method, Prime Implicant chart.
Application: Design of a Basic Calculator Using Logic Gates.

UNIT – III[Lecture hrs – 9]

Combinational Logic Design:
Single output and multiple output combinational logic circuit design, AND-OR, OR-AND, and NAND/NOR realizations, Exclusive-OR and Equivalence functions, Binary adders/subtractors, Encoder, Decoder, Multiplexer, Demultiplexer, MUX realization of switching functions, Parity bit generator, Code-converters, Concepts of threshold logic and threshold gates.
Applications: Application of Decoder in Seven Segment Display, application of Encoders in Servomotors.

UNIT - IV [Lecture hrs – 9]

Sequential Circuits-1:
Classification of sequential circuits (Synchronous, Asynchronous Pulse mode, and Level mode with examples). Basic flip-flops-Triggering and excitation tables. Conversion of flip-flops.
Applications: Application of SR Flip Flop in Switch Debounce Circuit.

UNIT – V[Lecture hrs – 9]

Sequential Circuits-2:
The sequential circuit model, Asynchronous counters, Design of simple synchronous sequential circuits such as counters (Design of modulo-N counter, Ring counter, twisted ring counter) and Shift registers
Applications: Design of 1010 sequence detector, Design of Digital Clock using Counters

UNIT – VI[Lecture hrs – 9]

Programmable LogicDevices:
Basic PLD's-ROM, PROM, PLA, and PLD Realization of Switching functions using PLDs. Algorithmic State Machines: State machines and state diagrams.
Applications: Design of a Weighing machine and Binary multiplier.

TEXT BOOKS:

[1] Morris Mano-,Digital design –PHI, 2nd Edition.

[2] ZviKohavi and Niraj K Jha -Switching & Finite Automata theory – Cambridge, 3rd Edition.

REFERENCES:

[1] Fletcher -An Engineering Approach to Digital Design – PHI.

[2] Fundamentals of Logic Design, Roth, Kenny, Seventh Edition, Cengage Learning

[3] R.P.Jain-Switching Theory and Logic Design- TMH Edition,2003.

[4] CVS Rao -Switching Theory and Logic Design –Pearson Education, 2005

1	2	3	4	5	6	7	8	9	10	11	12
M	H	M	H	M							L

H: High M: Medium L: Low

Syllabus for B. Tech (E.E.E.) II Year I semester

L	T	P/D	C
2	1	-	3

Code: 8CC01 **ELECTRONIC DEVICES AND CIRCUITS**
(Common to ECE/EEE/ECM)

Course Objectives

- To provide the learners a comprehensive understanding of electronic Components like Diodes, Transistors, Field Effect transistors and their applications.
- To maintain the right blend of theory and practice in analyzing and designing of Amplifiers and Oscillators.

Course Outcomes

After studying this course, the students will be able to

[CO1] Demonstrate the concepts of pn Diode, Zener Diode, Bipolar Junction Transistor, Field Effect Transistor and their characteristics.
[CO2] Design and Analyze the Amplifier circuit's using BJT and FET.
[CO3] Classify and characterize the Feed Back amplifiers and design various Oscillator circuits.
[CO4] Understand the Basic regulator circuits and voltage multipliers.

Mapping of Course Outcomes with Program Outcomes and Program Specific Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	2	2									1	3		1
CO2	3	3	3									1	3		1
CO3	3	3	3									1	3		1
CO4	3	3	3									1	3		**1**
Overall mapping	3	3	3									1	3		1

UNIT-I : PN JUNCTION DIODE: [CO1][T1][Lecture hrs – 10]

P-N Junction diode characteristics and applications under forward & reverse bias. Transition capacitance and Diffusion capacitance. Break down of junctions (Avalanche Break Down and Zener Break down). Zener Diode Characteristics.
P-N junction diode as a Rectifier :Half wave Rectifier, Full wave Rectifier, Bridge Rectifier, Analysis of Rectifier circuits without and with filters (Inductor and Capacitor Filters).

UNIT- II : BIPOLAR JUNCTION TRANSISTOR:[CO1][T1][Lecture hrs – 10]

Fundamentals of BJT& Operation, Minority carrier profiles. I/P and O/P Characteristics CB, CE and CC configurations. Transistor as a switch. Switching characteristics (Rise time, Fall time, Delay Time and Storage time), Design of transistor as switch. Problems on transistor switch. BJT Biasing Methods & Stabilization. - Fixed Bias, Collector to Base Bias, Voltage Divider Bias and Problems, Concept of Thermal runway in BJT.

UNIT-III : Small signal & High frequency analysis of BJT:[CO2][T1][Lecture hrs – 8]

Small signal Low frequency Model of BJT, h-parameter representation – Exact analysis of .CE Amplifier-. Approximate analysis of CE, CB and CC Amplifiers. Concept of Multistage amplifier -

N-stage cascaded amplifier, equivalent circuits, Frequency response of single & two stage RC coupled Amplifier, Analysis at Low and High frequencies.
Hybrid π model – relationship between high frequency parameters and h- parameters, β cut off Frequency (common Emitter short circuit Current gain), Millers Theorem.

UNIT-IV: FIELD EFFECT TRANSISTOR:[CO1][CO2][T1] [Lecture hrs – 9]

Construction & Working of JFET, JFET characteristics, FET Parameters, Construction & Working of MOSFET, MOSFET characteristics,(Enhancement and depletion mode); Comparison of JFET & MOSFET
Biasing of JFET - Self bias and fixed bias, Small signal Analysis of common source, common drain and common gate amplifier configurations

UNIT- V [CO3] [T1][Lecture hrs – 8]

FEED BACK AMPLIFIERS
Fundamentals-classification- Characteristics of feedback Amplifier effect of feedback in voltage series, voltage shunt, current series and current shunt amplifiers. Problems

OSCILLATORS
Classification of Oscillators. Condition for Oscillations. RC Phase shift Oscillator, Wein bridge oscillator- Hartley oscillator, Colpitts oscillator, Quartz crystal Oscillator,

UNIT-VI: VOLTAGE REGULATORS: [CO4][T1][T2][Lecture hrs – 9]

Classification of Voltage Regulators - Basic regulator circuit: Zener, Transistor Based: Shunt and Series Voltage regulators. Protection Circuits: Current limiting, Short circuit protection. Specifications of Voltage regulator, Voltage multipliers. Switching Regulators – (boost up, step down (buck) &Flyback.

TEXT BOOKS

[1] Electronic Devices and Crcuits-J.Millman, C.C.Halkias and satyabrathajit Tata McGraw Hill,2 Ed. 2007
[2] Electronic Devices AND Circuits-R.L.Boylestad&LouisNashelsky, Pearson/Prentice Hall, 9th edition, 2006.

REFERENCES

[1]Electronic circuit analysis-K.Lal Kisshore,2004, BSP

[2] Electronic Devices and Circuits by S.Salivahanan and N.Suresh Kumar, Tata Mc Graw Hill Publications

[3] Electronic Devices and Crcuits by Sanjeev Guptha,Dhapat Rai Publications.

[4] Electronic Devices and Circuits – K. LalKishore, 2 ed., 2005, BSP

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H	M			L							L

H: High M: Medium L: Low

Syllabus for B. Tech (E.E.E.) II Year I semester

Electrical and Electronics Engineering

Code: 8A302 **ELECTRO MAGNETIC FIELDS**

L	T	P/D	C
2	--	--	2

Course Objective: Students learn about fundamental concepts of static and dynamic electric fields.

Course Outcomes:

1. Understand the Principle of electrostatics.
2. Understand the principle of dipole and field due to dipole.
3. Understand the Fundamentals of dielectrics and calculation of capacitance.
4. Understand the Fundamentals of Ampere circuital law and force in magnetic field.
5. Understand the magnetic dipole and magnetic potential.
6. Understand the self and mutual inductance and time varying fields.

UNIT – I ELECTROSTATICS:

Coordinate systems-Cartesian, Spherical and Cylindrical coordinate systems- Conversion of coordinates to other systems.

Electrostatic Fields – Coulomb's Law – Electric Field Intensity (EFI) – EFI due to a line and a surface charge – Work done in moving a point charge in an electrostatic field – Electric Potential – Properties of potential function – Potential gradient – Guass's law – Application of Guass's Law – Maxwell's first law, div (D)=ρv- Laplace's and Poison's equations.

UNIT – II ELECTRIC DIPOLE & CONDUCTORS:

Electric dipole –Dipole moment – potential and EFI due to an electric dipole – Torque on an Electric dipole in an electric field, Energy stored and energy density in a static electric field.

Behavior of conductors in an electric field, Conductors and Insulators, Current density – conduction and Convection current densities – Ohm's law in point form – Equation of continuity.

UNIT – III DIELECTRICS, CAPACITANCE & MAGNETO STATICS:

Electric field inside a dielectric material – polarization – Dielectric – Conductor and Dielectric – Dielectric boundary conditions, Capacitance – Capacitance of parallel plate and spherical and co-axial capacitors with composite dielectrics.

Static magnetic fields – Biot-Savart's law – Oesterd's experiment - Magnetic field intensity (MFI) – MFI due to a straight current carrying filament – MFI due to circular, square and solenoid current – Carrying wire – Relation between magnetic flux, magnetic flux density and MFI – Maxwell's second Equation, div(B)=0-

UNIT – IV AMPERE'S CIRCUITAL LAW & FORCE IN MAGNETIC FIELDS:

Ampere's circuital law and its applications viz. MFI due to an infinite sheet of current and a long current carrying filament – Point form of Ampere's circuital law – Maxwell's third equation, Curl (H)=Jc, Field due to a circular loop, rectangular and square loops.

Magnetic force - Moving charges in a Magnetic field – Lorentz force equation – force on a current element in a magnetic field – Force on a straight and a long current carrying conductor in a magnetic field – Force between two straight long and parallel current carrying conductors –

UNIT – V MAGNETIC DIPOLE & MAGNETIC POTENTIAL:

Magnetic dipole and dipole moment – a differential current loop as a magnetic dipole – Torque on a current loop placed in a magnetic field.

Scalar Magnetic potential and its limitations – vector magnetic potential and its properties – vector magnetic potential due to simple configurations – vector Poisson's equations.

UNIT – VI SELF & MUTUAL INDUCTANCE AND TIME VARYING FIELDS:

Self and Mutual inductance – Neumans's formulae – determination of self-inductance of a solenoid and toroid and mutual inductance between a straight long wire and a square loop wire in the same plane – energy stored and density in a magnetic field.

Time varying fields – Faraday's laws of electromagnetic induction – Its integral and point forms –Maxwell's fourth equation, Curl (E)=-∂B/∂t – Statically and Dynamically induced EMFs – Simple problems -Modification of Maxwell's equations for time varying fields – Displacement current – Poynting Theorem and Poynting vector.

TEXT BOOKS:

1. Engineering Electromagnetism - William H. Hayt & John. A. Buck Mc. Graw-Hill Companies, 7th Editon.2006.
2. Electro magnetic Fields - Sadiku, Oxford Publications

REFERENCES:

1. "Introduction to Electro Dynamics" - D J Griffiths, Prentice-Hall of India Pvt. Ltd, 2nd edition
2. "Electromagnetics" - J P Tewari.
3. "Electromagnetics" - J. D Kraus Mc Graw-Hill Inc. 4th edition 1992.
4. "Electromagnetic fields", S. Kamakshaiah, Right Publishers, 2007.

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M	H										L

H: High M: Medium L: Low

II Year I semester

Electrical and Electronics Engineering

Code: 8A303 **ELECTRICAL MACHINES – I**

L	T	P/D	C
3	--	--	3

Course Objective: Electrical machines course is one of the important courses of the Electrical discipline. In this course the different types of DC generators and motors which are widely used in industry are covered and their performance aspects will be studied.

Course Outcomes:

1. Understand the Electromechanical Energy conversion.
2. Understand the constructional features & Principle of operation of DC machine.
3. Understand the characteristic features of DC machines.
4. Understand the starting & speed control techniques of various types of DC motors.
5. Analyze the various testing procedures of DC machines.
6. Understand the various applications of DC machines.

UNIT – I: ELECTROMECHANICAL ENERGY CONVERSION:

Electromechanical Energy conversion – forces and torque in magnetic field systems – energy balance – energy and force in a singly excited magnetic field system, determination of magnetic force - co-energy – multi excited magnetic field systems.

UNIT – II: D.C. GENERATORS & ARMATURE REACTION:

D.C. Generators, Principle of operation, Action of commutator, Constructional features, Armature windings, Lap and wave windings, Simplex and multiplex windings, Use of laminated armature, E. M.F Equation, Problems. Armature reaction, Cross magnetizing and de-magnetizing AT/pole, compensating winding, Commutation reactance voltage, Methods of improving commutation, Simple Problems.

UNIT – III TYPES OF D.C GENERATORS:

Methods of Excitation, Separately excited and self excited generators, Build-up of E.M.F, Critical field resistance and critical speed, Causes for failure to self excite and remedial measures, Problems.

UNIT –IV LOAD CHARACTERISTICS OF GENERATORS:

Load characteristics of shunt, Series and compound generators, Parallel operation of d.c shunt and series generators, Load sharing, Problems.

UNIT – V D.C. MOTORS AND SPEED CONTROL METHODS:

D.C Motors, Principle of operation, Back E.M.F, Torque equation, Characteristics and application of shunt, Series and compound motors, Speed control of d.c. Motors: Armature voltage and field flux control methods. Ward-Leonard system, Principle of 3 point and 4 point starters, Protective devices, Problems.

UNIT – VI TESTING OF D.C. MACHINES:

Losses in a D.C. Machines, Calculation of efficiency, Condition for maximum efficiency, Methods of Testing, brake test , Swinburne's test, Hopkinson's test and Field's test, Problems.

TEXT BOOKS:

1. Electrical Machines, P.S. Bimbra, Khanna Publishers.
2. Principles of Electrical Machines, V. K. Mehta, Rohit Mehta, S. Chand Publishing.

REFERENCE BOOKS:

1. Electric Machines, Mulukutla S. Sarma, Mukesh K. Pathak, Cengage Learning.
2. Electric Machines by I.J. Nagrath & D.P. Kothari, Tata Mc Graw – Hill Publishers.
3. Fundamentals of Electric Machines, B. R. Gupta, Vandana Singhal, New Age International Publishers.
4. Electrical Machines, M. V. Deshpande, PHI Learning Private Limited.
5. Electrical Machines, R. K. Srivastava, Cengage Learning.

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H	M										L

H: High M: Medium L: Low

II Year I semester

Electrical and Electronics Engineering

Code: 8A304 ELECTRICAL CIRCUITS and NETWORKS- II

L	T	P/D	C
3	-	-	3

Course Objective: Students learn about fundamental concepts of electrical engineering.

Course Outcomes:

1. Understand the three phase circuits.
2. Understand the DC and AC transients.
3. Understand the network functions.
4. Analyze the network parameters.
5. Understand the different types of filters.
6. Understand the Fourier analysis of AC circuits.

UNIT – I: THREE PHASE CIRCUITS:

Phase sequence, Star and delta connection, Relation between line and phase voltages and currents in balanced system, Analysis of balanced and unbalanced 3 phase circuits, Measurement of 3Φ active power by two watt meter method and reactive power by one watt meter method.

UNIT – II: D.C AND A.C. TRANSIENT ANALYSIS:

Transient response of R- L, R-C, R-L-C circuits (Series and parallel combination) for D.C. excitation, Initial conditions, Solution method using differential equation and Laplace transforms. Transient response of R- L, R-C, R-L-C circuits (Series and parallel combination) for sinusoidal excitations, Initial conditions, Solution method using differential equation and Laplace transforms.

UNIT – III: NETWORK FUNCTIONS:

The concept of complex frequency, Physical interpretation of complex frequency, Transform impedance and transform circuits, Series and parallel combination of elements, Terminal pairs or ports, Network functions for the one port and two-port, Poles and zeros of network functions, Significance of poles and zeros, Properties of driving point functions, Properties of transfer Functions, Necessary conditions for driving point functions, Necessary conditions for transfer functions, Time domain response from pole zero plot.

UNIT – IV: NETWORK PARAMETERS:

Two port network parameters, Z, Y, ABCD and hybrid parameters and their relations, Series, parallel and cascaded networks, Concept of transformed network, 2 port network parameters using transformed variables.

UNIT – V: FILTERS:

Classification of filters, Filter networks, Characteristic impedance in the pass and stop bands, Constant k and m – derived T – Section filters (Low pass, High pass, Band pass and Band stop), illustrative problems.

UNIT – VI: FOURIER ANALYSIS OF A.C. CIRCUITS:

The Fourier theorem, Consideration of symmetry, Exponential form of Fourier series, Line spectra and phase angle spectra, Fourier integrals and Fourier transforms, Properties of Fourier transforms.

TEXT BOOKS:

1. Circuit theory (Analysis & Synthesis) - A.Chakravarthy, Dhanpath Rai & Co., 6th edition.
2. Circuits & Networks (Analysis, Design & Synthesis) – M.S. Sukhija, T.K. Nagasarkar, Oxford University Press, 2nd edition.

REFERENCES:

1. Engineering circuit analysis - William Hayt and Jack E.Kemmerly, Tata McGraw - Hill Company, 6th edition.
2. Circuits & Networks - A.Sudhakar and Shyamamohan S.Palli, Tata McGraw – Hill, 3rd edition.

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H		M									L

H: High M: Medium L: Low

B. Tech. II Year I semester
Electrical and Electronics Engineering

Code: 8EC42 **PROGRAMMING IN JAVA**
(ONLY FOR EEE)

L	T	P/D	C
2	--	--	**2**

Course Objective:

Understand the concepts of Object oriented programming principles of Java. Write the programs and execute using OOP principles such as garbage collection, overloading methods, constructors, recursion, string handling, String Tokenizer, inheritance and its types, packages, multithreading and threads.

Course Outcomes:

1. Understand the concept of OOP with the need of constructing objects, and classes. Write programs using classes, objects, members of a class and the relationships among them needed for a specific problem.
2. Identify the purpose and usage of principles of inheritance and polymorphism. Implement concepts of polymorphism, encapsulation and methodoverloading
3. Create Java application programs using sound OOP practices (e.g., interfaces and APIs) and proper program structuring (e.g., by using access control identifiers, automatic documentation through comments)
4. Students understand and implement error exception handling and multi- threading.
5. Students learn to create GUI for the specificapplications.
6. Write programs for event-handling using various user interface components on applets.

UNIT-I

History of Java, Java buzzwords, data types, variables, simple java program, scope and life time of variables, operators, expressions, control statements, type conversion and costing, arrays, classes and objects – concepts of classes, objects, constructors, methods, access control, this keyword, overloading methods and constructors, string handling, String Tokenizer.

UNIT-II

Inheritance: Definition, single inheritance, benefits of inheritance, Member access rules, super class, polymorphism- method overriding, Dynamic method dispatch, using final with inheritance, abstract class, Base class object.

UNIT-III

Interfaces: definition, variables and methods in interfaces, differences between classes and interfaces, usage of implements and extends keyword, uses of interfaces.
Packages: Definition, types of packages, Creating and importing a user defined package.
Applications using interface

UNIT-IV

Exception handling -exception definition, benefits of exception handling, exception hierarchy, usage of try, catch, throw, throws and finally, built in exceptions, creating user defined exceptions.
Multi-Threading: Thread definition, types of multitasking, uses of multitasking, thread life cycle, creating threads using Thread class and Runnable interface, synchronizing threads, daemon thread.
Applications of multithreading.

UNIT-V

Advantages of GUI over CUI ,The AWT class hierarchy, Component, Frame, user interface components- labels, button, scrollbars, text components, check box, check box groups, choices, lists panels – scroll pane, menu bar, graphics, layout, managers –boarder, grid, flow and card layouts.
Applications: developing calculator, developing feedback form, developing biodata.

UNIT-VI

Event handling: Delegation event model, closing a Frame, mouse and keyboard events, Adapter classes.
Applets – Concepts of Applets, differences between applets and applications, life cycle of an applet, types of applets, creating applets, passing parameters to applets.
Applications: Developing of simple advertisements.

TEXT BOOKS

1. Java; the complete reference, 6th editon, Herbert schildt, TMH.
2. Introduction to Java programming 6th edition, Y. Daniel Liang, pearson education.

a	b	c	d	e	f	g	h	i	j	k	l	m
L					H	H	M					

L	T	P	C
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CODE: 8HC05

ENVIRONMENTAL SCIENCE AND ECOLOGY

II B. Tech I Sem (for EEE, ME, IT and ECM)
II B. Tech II Sem (for CSE, ECE and CE)

Course Objectives:

1. To understand structure and function of ecosystem
2. To learn classification and uses of natural resources
3. To learn about Understanding the impacts of developmental activities and mitigation measures.
4. To know the source, causes and preventive methods of pollution
5. To understand the importance of ecological balance for sustainable development.
6. To understand the environmental policies and regulations

UNIT-I: ECOSYSTEMS:
Definition, Scope, and Importance of ecosystem. Classification, structure, and function of an ecosystem, Food chains, food webs, and ecological pyramids. Flow of energy, Biogeochemical cycles, Bioaccumulation, Bio magnification, ecosystem value, services and carrying capacity.

UNIT-II: NATURAL RESOURCES:
Classification of Resources: Living and Non-Living resources, water resources: use and over utilization of surface and ground water, floods and droughts, Dams: benefits and problems. Mineral resources: use and exploitation, environmental effects of extracting and using mineral resources, Land Energy resources: growing energy needs, renewable and non renewable energy sources, use of alternate energy source.

UNIT-III: BIODIVERSITY AND BIOTIC RESOURCES:
Introduction, Definition, genetic, species and ecosystem diversity. Value of biodiversity; consumptive use, productive use, social, ethical, aesthetic and optional values. India as a mega diversity nation, Hot spots of biodiversity. Field visit. Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts; conservation of biodiversity: In-Situ and Ex-situ conservation.

UNIT-IV: ENVIRONMENTAL POLLUTION AND CONTROL TECHNOLOGIES:
Environmental Pollution: Classification of pollution, Air Pollution: Primary and secondary pollutants. Acid rain-Threshold limit values of chemicals present in environment, Global warming, Ozone layer depletion, Water pollution: Sources and types of pollution. Soil Pollution: Sources and types, Impacts of modern agriculture, degradation of soil. Noise Pollution: Sources and Health hazards, standards, Solid waste: Municipal Solid Waste management, composition and characteristics of e-Waste and its management. Pollution control technologies: Sewage water Treatment, Kyoto protocol, and Montréal Protocol.

UNIT-V: SUSTAINABLE DEVELOPMENT AND GREEN TECHNOLOGY:
Concept of sustainable development, threats to sustainability population and its explosion, Crazy consumerism, over- exploitation of resources, strategies for achieving sustainable development environmental education, conservation of resources, urban sprawl sustainable cities and sustainable communities, human health , role of IT in Environment, Environmental Ethics, Environmental Economic – Concept of Green Building, Clean Development Mechanism (CDM).

UNIT-VI: ENVIRONMENTAL POLICY, LEGISLATION & ENVIRONMENT IMPACT ASSESSMENT:

Environmental Protection act, Legal aspects Air Act- 1981, Water Act, Forest Act, Wild life Act, Municipal solid waste management and handling rules, biomedical waste management and handling rules, hazardous waste management and handling rules. EIA: EIA structure, methods of baseline data acquisition. Overview on Impacts of air, water, biological and Socio-economical aspects. Strategies for risk assessment, Concepts of Environmental Management Plan (EMP).

Course Outcomes

After completion of the course, the student will be able to:

1. Understand about ecosystem and energy flow among the organisms.
2. Know the resources available, use of them and overexploitation of the resources in the nature.
3. Learn the value, use and value of biodiversity.
4. Understand the causes and effect of pollution and implement measures in control of pollution.
5. Understand the sustainable development and implement green technology for sustainable development.
6. Learn and implement policy to protect the environment.

TEXT BOOKS:

1. Perspectives in ***Environmental Studies***: ***Kaushik*** A. and ***Kaushik***, C.P. New Age International (P) Ltd. (2008)

REFERENCE BOOKS:

1. Environmental Studies by Erach Bharucha, 2005 University Press.
2. Environmental Science: towards a sustainable future by Richard T. Wright. 2008 PHL Learning Private Ltd. New Delhi.
3. Environmental Engineering and science by Gilbert M. Masters and Wendell P. Ela. 2008 PHI Learning Pvt. Ltd.
4. Environmental Science by Daniel B. Botkin & Edward A. Keller, Wiley INDIA edition.
5. Environmental Studies by Anubha Kaushik, 4th Edition, New age international publishers.
6. Text book of Environmental Science and Technology - Dr. M. Anji Reddy 2007, BS Publications.

H: High M: Medium L: Low

a	b	c	d	e	f	g	h	i	j	k	l	m
X	X	X	X									

II Year, I - Sem.
Electrical and Electronics Engineering
ELECTRONIC DEVICES & CIRCUITS LAB
(Common to ECE/ECM/EEE)

Code: 8CC71

L	T	P/D	C
-	-	2	1

Course Objectives:

This course introduces the characteristics and applications of semiconductor devices; emphasis is placed on characteristics and testing practically to strengthen the knowledge.

Course Outcomes:

After studying this course, the students will be able to

1. Understand color coding, operations on Diode, BJT, FET and other electronic components.
2. Correlate theoretical concepts with practical implementation.
3. Apply the knowledge of Diodes, Capacitors and Transistors for the realization of rectifiers, regulators, amplifiers and Oscillator circuits.
4. Adapt effective Communication, presentation and report writing skills

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2	PSO 3
CO1	3	3	3	3	3				2			2	3	3	2
CO2	3	3	3	3	3				2			2	3	3	2
CO3	3	2	2	2	2						1	2		3	
CO4									2	1					
Overal l	3	3	3	3	3				2	1	1	2	3	3	2

Mapping of Course Outcomes with Program Outcomes and Program specific outcomes

PART A

Electronic Workshop Practice (in 3 lab sessions):

1. Identification, Specifications, Testing of R, L, C Components (Colour Codes), Potentiometers, Bread Boards.
2. Identification and Specifications of Active Devices like Diodes, BJTs and JFETs.
3. Study and operation of
    - Digital Multimeters
    - Function Generator
    - Regulated Power Supplies
    - Soldering
    - SMD components

PART B

(For Laboratory examination – Minimum of 10 experiments)

1. Study and Operation of CRO: Oscilloscope, CRT features, vertical amplifiers, horizontal deflection system, sweep, trigger Pulse, delay line, probes for CRO, Measurement of amplitude and frequency. Time Period measurement, Lissajous patterns.
2. Determination of Cut-in Voltage, Forward and Reverse resistances of PN Junction diode using V-I Characteristics.
3. Zener diode characteristics and Zener as voltage Regulator.
4. Input and output characteristics of BJT in CB Configuration.
5. Input and output characteristics of BJT in CE Configuration.
6. Half wave rectifier with and without filters.
7. Full wave rectifier (Center trapped and Bridge) with and without filters.
8. Drain and Transfer characteristics of FET in CS Configuration.
9. Common Emitter Amplifier Characteristics
10. Common Collector Amplifier Characteristics (Emitter Follower).
11. FET amplifier (Common Source).
12. RC Phase Shift Oscillator.

Major Equipment required for Laboratories:

1. Regulated Power Suppliers, 0-30V
2. 20 MHz, Dual Channel Cathode Ray Oscilloscopes.
3. Functions Generators-Sine and Square wave signals
4. Multimeters
5. Electronic Components

a	b	c	d	e	f	g	h	i	j	k	l
x		x							x		

Syllabus for B. Tech II Year I semester
Electrical and Electronics Engineering (EEE)
ELECTRICAL CIRCUITS AND NETWORKS ANALYSIS LAB

Code: 8A371

L	T	P/D	C
-	-	2	1

Course Objectives:

To make the student to learn:

i. *Verification of network theorems experimentally.*
ii. *To measure frequency of RLC series and parallel circuits under resonance*
iii. *To determine self & mutual inductance and co-efficient of coupling for coupled circuits*
iv. *The construction of current locus diagram for a given parallel circuit.*
v. *Simulation for analysis of electrical networks*
vi. *Method for determining the parameters of a coil*

Course Outcomes:

At the end of the course, students will be able to

i. *Perform the test for verification of various network theorems*
ii. *Measure the frequency for a RLC series/parallel circuits under resonance.*
iii. *Conduct an experiment for determination of self & mutual inductance and coefficient of coupling*
iv. *Construct current locus diagram by performing a test on single phase parallel circuits*
v. *Simulate for analysis of electrical circuits.*
vi. *Determine the parameters of the coil*

List of Experiments (ANY 10 Experiments to be conducted)

1. Verification Thevenin's Theorem and Norton's Theorem
2. Verification of Maximum Power Transfer Theorem
3. Verification of Superposition Theorem
4. Verification of Compensation Theorem
5. Verification of Reciprocity Theorem and Millmann's Theorem
6. Finding resonant frequency in Series and Parallel circuits
7. Determination of Self Inductance, Mutual Inductance and Coefficient of coupling
8. Calculation of Z and Y Parameters
9. Construction of current locus diagram for RL and RC circuit
10. Mesh and Nodal Analysis by simulation
11. Determination of Average value and RMS value of a complex wave
12. Determination of parameters of a coil.
13. Determination of Time constant of RL and RC series circuit.

1	2	3	4	5	6	7	8	9	10	11	12
								L	H		M

H: High M: Medium L: Low

II Year I semester

Electrical and Electronics Engineering	**L**	**T**	**P/D**	**C**
TECHNICAL SEMINAR – III	**-**	**-**	**2**	**1**

Code: 8A393

Course objective

Develop an ability to understand and present the latest technological developments in computer science. Identify one of them, understand its impact on the event/method/society as a whole and present the seminar on the same which enhances oratory and interview facing skills.

COURSE OUTCOMES :

1 Deliver lecture on emerging technologies.

2 Explain domain knowledge to resolve real time technical issues

3 Demonstrate ability to lead and explain concepts and innovative ideas.

4 Demonstrate team leading qualities.

5 Demonstrate public speaking skills.

6 Exchange new information that would not have been available otherwise.

7. Develop debating and interview skills.

Procedure

1. Seminar in-charges shall highlight the significance of technical seminar in the first two sessions and enlighten the students on the utility of these seminars.
2. The slots, titles shall be decided upfront and seminar in charge shall take signatures.
3. The same sheet shall be affixed in the respective classrooms and seminar register.
4. If any student fails to present his/her seminar on the given slot, to genuine reasons, they may be asked to present in the subsequent slot/week.
5. Progress of the seminars need to be reviewed by the concerned HOD once in 15 days.
6. The evaluation for technical seminars has to be informed to students and displayed in the classrooms.
7. Report and presentation must contain topic, introduction, explanation, diagrams, tables, applications and conclusions.

Distribution of marks

There shall be a Technical Paper writing and seminar evaluated for 100 marks in First Year First Semester. The evaluation is purely internal and will be conducted as follows:

Literature survey, topic and Content	: 10 marks
Presentation including PPT	: 15 marks
Seminar Notes	: 10 marks
Interaction	: 5 marks
Report	: 10 marks
Attendance in the seminar class	: 10 marks
Punctuality in giving seminar as per schedule time and date	: 10 marks
Mid semester viva (on the seminar topics completed up to the end of 9th week	: 10 marks
End semester Viva	: 20 marks
Total	100 marks

1	2	3	4	5	6	7	8	9	10	11	12
								H	M		L

H: High M: Medium L: Low

II Year I Semester
Electrical and Electronics Engineering
COMPREHENSIVE TEST AND VIVA VOCE – III

Code: 8A383

L	T	P/D	C
-	-	-	1

Course Objective:

Evaluate, Comprehend and Assess the concepts and knowledge gained in the Core Courses of 1st year and 2nd year 1st Semester.

Course Outcomes: After completing this course, the student will be able to

1. Comprehend the concepts in the Core Courses 1st yearand 2nd year 1st Semester.
2. Assess technical knowledge to face interviews.
3. Exhibit lifelong learning skills to pursue higher studies or professional practice.

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, IIII, IV and V semester
B.Tech III year II semester	I, II, IIII, IV, V and VI semester
B.Tech IV year I semester	I, II, IIII, 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 20 marks.

End Semester Examination for Comprehensive Test will be taken for 50 marks.

Total marks for Comprehensive Test will be 70.

**Average of best two of Mid Tests of Mid – I, Mid – II and Mid - III for Viva Voce will be taken for 10 marks.

End Semester Examination for Comprehensive Viva Voce shall be evaluated for 20 marks.

The total for Viva Voce will be 30.

Thus 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.

a	b	c	d	e	f	g	h	i	j	k	l
X											

II Year B.Tech, Semester-II
PROBABILITY & STATISTICS
(Common to CSE, IT, ECM & EEE)

	L	T	P/D	C
Code: 8HC16	**2**	1	**0**	**3**

Pre Requisites: Mathematics Knowledge at Pre-University Level

Course Objectives: *To make the students to understand and expected to learn*

1. *Concepts of the probability, types of random variables and probability distributions.*
2. *Sampling distributions and their properties, concepts on estimation.*
3. *Concepts on testing the hypothesis concerning to large samples.*
4. *Different kinds of tests related to small samples and tests concerned to small size samples and goodness of fit and independence of attributes using chi-square distribution.*
5. *Preliminaries of basic statistics also correlation.*
6. *Method of least squares and regression*.

UNIT-I: RANDOM VARIABLES AND PROBABILITY DISTRIBUTIONS:
Conditional probability, Multiplication theorem, Baye's Theorem (without Proof). Random variables – Discrete and Continuous, Probability Mass and Density functions, Expectation and Variance. Probability Distributions: Binomial, Poisson and Normal Distributions.

UNIT-II: SAMPLING DISTRIBUTIONS AND ESTIMATION:
Populations and Samples, Sampling distribution of the Mean (σ - known and unknown), Sums and Differences, Central limit theorem. Estimation: Point Estimation and Interval Estimation concerning Means for Large Samples.

UNIT-III: TESTS OF HYPOTHESIS FOR LARGE SAMPLES:
Tests of Hypothesis, Type–I and Type-II Errors, Hypothesis testing concerning one mean and two means and test of hypothesis concerning to one Proportion and difference of proportions.

UNIT-IV: TESTS OF HYPOTHESIS FOR SMALL SAMPLES*:*
Student t-test, Hypothesis testing concerning one mean and two Means, F-test and χ^2 test-Goodness of fit, Independence of Attributes.

UNIT-V: BASIC STATISTICS AND CORRELATION: (10L)
Measures of Central tendency: Moments, skewness and kurtosis – Types of correlation, coefficient of correlation, Properties. Methods of finding the coefficient of correlation, Scatter diagram, direct method, Spearman's rank correlation, Karl Pearson's formula.

UNIT-VI: CURVE FITTING AND REGRESSION: (10L)
Curve fitting by the method of least squares- fitting of straight lines, second degree parabolas and more general curves. Types of Regression, linear regression, multiple regressions.

TEXT BOOKS:

1. Miller and Freund's, Probability and Statistics for Engineers, 8th Edition, Pearson Educations.

2. SCHAUM'S outlines: Probability and Statistics, Murray R. Spiegel, John Schiller, R. Alu Srinivasan, Mc Graw Hill publishers.

REFERENCE BOOKS:

1. Ramana B.V., Higher Engineering Mathematics, Tata McGraw Hill New Delhi, 11th Reprint, 2010.
2. Probability and Statistics, T.K.V. Iyengar, B. Krishna Gandhi, S. Ranganatham, M.V.S.S.N. Prasad, S. Chand Publications.
3. A.Ross, A First Course in Probability, 6th Ed., Peasrson Education India, 2002.
4. Ronald E. Walpole,Raymond H. Myers,Sharon L. Myers,Keying Ye, Probability & Statistics For Engineers & Scientists, 9th Ed. Pearson Publishers.
3. S C Gupta and V K Kapoor, Fundamentals of Mathematical statistics, Khanna publications.

Course Outcomes: *After the course completion the students will able to*

i. Solve the random variable problems and probability distributions.
ii. Estimate the parameters and solve the problems using central limit theorem.
iii. Test the hypothesis related to samples concerning to the means and proportions of large size samples.
iv. Apply and solve the problems using t-test, Chi-square test also testing the hypothesis problems on small size samples, goodness of fit and independence of attributes.
v. *Solve the problems on measures of central tendency, Correlation and regression models*

1	2	3	4	5	6	7	8	9	10	11	12
	M	H									L

H: High M: Medium L: Low

II Year II Semester

Electrical and Electronics Engineering

Code: 8A405 ELECTRICAL MACHINES-II

L	T	P/D	C
3	-	-	3

Course Objective: Students learn about fundamental concepts of transformers and induction motors with applications.

Course Outcomes: Students

1. Learn basic concepts of single phase transformer.
2. Study about testing of single phase transformer and auto transformer.
3. Study about poly phase transformer.
4. Study about poly phase induction motors.
5. Study about torque speed characteristics and circle diagram of induction motor.
6. Study about different starting methods of induction motor.

UNIT-I SINGLE PHASE TRANSFORMERS – CONSTRUCTION, OPERATION AND PERFORMANCE:

Single phase transformers-types - constructional details-minimization of hystersis and eddy current losses-emf equation - operation on no load and on load - phasor diagrams- Equivalent circuit - losses and efficiency-regulation. All day efficiency - Effect of variations of frequency & supply voltage on iron losses

UNIT-II - TESTING OF SINGLE PHASE TRANSFORMER AND AUTOTRANSFORMER:

OC and SC tests - Sumpner's test - predetermination of efficiency and regulation-separation of losses test-parallel operation with equal and unequal voltage ratios - auto transformers-equivalent circuit - comparison with two winding transformers.

UNIT-III - POLYPHASE TRANSFORMER:

Polyphase transformers - Polyphase connections - Y/Y, Y/Δ, Δ/Y, Δ/Δ and open Δ, Third harmonics in phase voltages-three winding transformers-tertiary windings-determination of Zp, Zs and Zt transients in switching - off load and on load tap changing; Scott connection.

UNIT- IV POLYPHASE INDUCTION MOTORS:

Polyphase induction motors-construction details of cage and wound rotor machines-production of a rotating magnetic field - principle of operation - rotor emf and rotor frequency - rotor reactance, rotor current and pf at standstill and during operation- Rotor power input, rotor copper loss and mechanical power developed and their inter relation.

UNIT-V - TORQUE- SPEED CHARACTERISTICS AND CIRCLE DIAGRAM OF INDUCTION MOTORS:

Torque equation-deduction from torque equation- expressions for maximum torque and starting torque - torque slip characteristic- Double cage and deep bar rotors - crawling and cogging - equivalent circuit - phasor diagram-Circle diagram-no load and blocked rotor tests-predetermination of performance.

UNIT-VI METHODS OF STARTING AND SPEED CONTROL OF INDUCTION MOTOR:

Methods of starting and starting current and torque calculations-Speed control-change of frequency; change of poles and methods of consequent poles; cascade connection. Injection of an emf into rotor circuit (qualitative treatment only)-induction generator-principle of operation.

TEXT BOOKS:

1. Electrical machines- P S Bhimbra, Khanna Publishers.
2. Theory & Performance of Electrical Machines, J. B. Gupta, S.K. Kataria & Sons.

REFERENCES:

1. Performance and Design of AC Machines – MG. Say, BPB Publishers
2. Theory of Alternating Current Machinery – Langsdorf, Tata McGraw-Hill Companies, 2nd edition.
3. Electric Machines – I.J. Nagrath & D.P. Kothari, Tata Mc Graw Hill, 7th Edition, 2005.
4. Electric machinery - A.E. Fitzgerald, C. Kingsley and S. Umans, Mc Graw Hill Companies, 5th edition.

1	2	3	4	5	6	7	8	9	10	11	12
	M	H		L							L

H: High M: Medium L: Low

II Year II Semester
Electrical and Electronics Engineering

Code: 8A406 POWER SYSTEMS - I

L	T	P/D	C
2	-	-	2

Course Objective: Students learn about fundamental concepts of different conventional power generation methods and transmission requirements.

Course Outcomes: Students

1. Learn basic concepts of hydro electric and thermal power plants.
2. Study about gas and nuclear power plants.
3. Study about transmission line parameters and efficiency.
4. Study about performance of transmission lines.
5. Learn basic about over head insulators and mechanical design.
6. Learn fundamentals of underground cables.

UNIT -1 HYDROELECTRIC POWER STATION:

Elements of hydro electric power station, Types, Concept of pumped storage plants, Storage requirements, Mass curve(explanation only) Estimation of power developed from a given catchments area, Heads and efficiencies

THERMAL POWER STATIONS:

Line diagram of Thermal Power Station (TPS) showing paths of coal, Steam, Water, Air, ash and flue gasses, Brief description of TPS components, Economizers, Boilers, Super heaters, Turbines, Condensers, Chimney and Cooling towers.

UNIT -II GAS AND NUCLEAR POWER STATIONS:

Nuclear Fission and Chain reaction, Nuclear fuels, Principle of operation of Nuclear reactor, Reactor Components, Moderators, Control rods, Reflectors and Coolants, Radiation hazards, Shielding and Safety precautions, Types of Nuclear reactors and brief description of PWR, BWR and FBR.

Gas Power Stations, Principle of Operation and Components (Block Diagram Approach Only).

BASIC OF PLANT ECONOMICS:

Connected Load, Average load, Maximum demand, Load factor, Demand factor, Diversity factor, Plant capacity factor, Use factor, Load curve, Load duration curve, Integrated Load duration curve.

UNIT-III TRANSMISSION LINE PARAMETERS:

Types of conductors - calculation of resistance for solid conductors - Calculation of inductance for single phase and three phase, single and double circuit lines, concept of GMR & GMD, symmetrical and asymmetrical conductor configuration with and without transposition, Numerical Problems. Calculation of capacitance for 2 wire and 3 wire systems, effect of ground on capacitance, capacitance calculations for symmetrical and asymmetrical single and three phase, single and double circuit lines, Numerical Problems.

UNIT-IV PERFORMANCE OF SHORT, MEDIUM AND LONG LENGTH TRANSMISSION LINES:

Classification of Transmission Lines - Short, medium and long line and their model representations -Nominal-T, Nominal-Pie and A, B, C, D Constants for symmetrical & Asymmetrical Networks, Numerical Problems. Mathematical Solutions to estimate regulation and efficiency of all types of lines - Numerical Problems.

Long Transmission Line-Rigorous Solution, evaluation of A,B,C,D Constants, Interpretation of the Long Line Equations, Surge Impedance and SIL of Long Lines, Wave Length and Velocity of Propagation of Waves - Representation of Long Lines - Equivalent-T and Equivalent Pie network models (numerical problems).

UNIT-V OVERHEAD LINE INSULATORS:

Types of Insulators, String efficiency and Methods for improvement, Numerical Problems – voltage distribution, calculation of string efficiency, Capacitance grading and Static Shielding.

SAG AND TENSION CALCULATIONS:

Sag and Tension Calculations with equal and unequal heights of towers, Effect of Wind and Ice on weight of Conductor, Numerical Problems - Stringing chart and sag template and its applications.

Skin and Proximity effects - Description and effect on Resistance of Solid Conductors -Ferranti effect - Charging Current - Effect on Regulation of the Transmission Line, Shunt Compensation. Corona - Description of the phenomenon, factors affecting corona, critical voltages and power loss, Radio Interference.

UNIT-VI UNDERGROUND CABLES:
Types of Cables, Construction, Types of Insulating materials, Calculations of Insulation resistance and stress in insulation, Numerical Problems. Capacitance of Single and 3-Core belted cables, Numerical Problems. Grading of Cables - Capacitance grading, Numerical Problems, Description of Inter-sheath grading.

TEXT BOOKS:
1. A Text Book on Power System Engineering - M.L. Soni, P.V. Gupta, U.S. Bhatnagar, A. Chakrabarthy, Dhanpat Rai & Co Pvt. Ltd.
2. Electrical power systems - C.L. Wadhwa, New Age International (P) Limited, Publishers, 1998.

REFERENCES:
1. Power system Analysis- John J Grainger William D Stevenson, TMC Companies, 4th edition
2. Power System Analysis and Design - B.R. Gupta, Wheeler Publishing.
3. Power System Analysis - Hadi Saadat – TMH Edition.
4. Modern Power System Analysis - I.J. Nagaraj and D.P. Kothari, Tata McGraw Hill, 2nd Edition.

1	2	3	4	5	6	7	8	9	10	11	12
H	M										L

H: High M: Medium L: Low

II Year II Semester

Electrical and Electronics Engineering

Code: 8AC07 LINEAR CONTROL SYSTEMS

L	T	P	C
2	1	-	3

Course Objective: Students learn about fundamental concepts of time and frequency domain analysis of a given system.

Course Outcomes: Students

1. Learn basic concepts of control systems.
2. Study about time response analysis.
3. Learn basic concepts of stability and root locus method.
4. Study about frequency response analysis.
5. Learn basic concepts stability analysis in frequency domain.
6. Learn fundamentals of state space analysis.

UNIT – I INTRODUCTION:

Concepts of Control Systems- Open Loop and closed loop control systems and their differences- Classification of control systems, Feed-Back Characteristics, Effects of feedback. Mathematical models – Differential equations, Impulse Response and transfer functions – Translational and Rotational mechanical systems

Transfer function representation:

Transfer Function of Synchro transmitter and Receiver, Block diagram representation of systems considering electrical systems as examples -Block diagram algebra – Representation by Signal flow graph - Reduction using Mason's gain formula.

UNIT-II TIME RESPONSE ANALYSIS:

Standard test signals - Time response of first order systems – Characteristic Equation of Feedback control systems, Transient response of second order systems - Time domain specifications – Steady state response - Steady state errors and error constants – Effects of proportional derivative, proportional integral systems, PID controllers.

UNIT – III STABILITY ANALYSIS IN S-DOMAIN:

The concept of stability – Routh's stability criterion – qualitative stability and conditional stability – limitations of Routh's stability.

Root Locus Technique: The root locus concept - construction of root loci-effects of adding poles and zeros to G(s)H(s) on the root loci.

UNIT – IV FREQUENCY RESPONSE ANALYSIS:

Introduction, Frequency domain specifications-Bode diagrams-Determination of Frequency domain specifications and transfer function from the Bode Diagram-Phase margin and Gain margin-Stability Analysis from Bode Plots.

UNIT – V STABILITY ANALYSIS IN FREQUENCY DOMAIN:

Polar Plots-Nyquist Plots-Stability Analysis.

CLASSICAL CONTROL DESIGN TECHNIQUES: Compensation techniques – Lag, Lead, Lead-Lag Controllers design in frequency Domain.

UNIT – VI STATE SPACE ANALYSIS OF CONTINUOUS SYSTEMS:

Concepts of state, state variables and state model, derivation of state models from block diagrams, Diagonalization- Solving the Time invariant state Equations- State Transition Matrix and its Properties.

TEXT BOOKS:

1. Automatic Control Systems 8th edition –B. C. Kuo 2003– John wiley and sons.
2. Control Systems Engineering – I. J. Nagrath and M. Gopal, New Age International (P) Limited, Publishers, 2nd edition.

REFERENCES:

1. Modern Control Engineering – Katsuhiko Ogata – Prentice Hall of India Pvt. Ltd., 3rd edition, 1998.
2. Control Systems – N.K. Sinha, New Age International (P) Limited Publishers, 3rd Edition, 1998.
3. Control Systems Engg. – NISE 3rd Edition – John wiley.
4. "Modeling & Control of Dynamic Systems" – Narciso F. Macia George J. Thaler, Thomson Publishers.

II Year II Semester
Electrical and Electronics Engineering

L	T	P	C
3	-	-	3

CODE : 8CC05 **ANALOG CIRCUITS**

Course Objectives:
To understand the basic functioning and applications of the basic building blocks of analog electronic circuits - amplifiers and oscillators.

COURSE OUTCOMES:
After studying this course, the students will be able to

1. Distinguish between small and large signal amplifier and able to compare the conversion efficiency levels
2. Analyze and Design tuned RF amplifiers and different types of sweep generators
3. Understand linear and non-linear wave shaping methods and able to Analyze various types of Logic gates and Sampling gates.
4. Understand and design various types of multivibrators and applications

Mapping of Course Outcomes with Program Outcomes andProgram specific outcomes

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2	PSO 3
CO1	2	2	3										3		
CO2	2	2	3										3		
CO3	2	2	2										3		
CO4	2	3	3										3		
Overal l	2	2	3										3		

UNIT I [Lecture hrs – 9] : **POWER AMPLIFIERS [T1] [CO1]**

Classification of Power Amplifiers - Class A, B, AB & C power amplifiers –push pull configuration, complementary symmetry circuits, Distortion in Amplifiers. Harmonic distortion and Crossover Distortion in Power Amplifiers– Conversion efficiency and relative performance.

UNIT II [Lecture hrs – 9] : **TUNED AMPLIFIERS [T1] [CO2]**

Introduction to Tuned Amplifiers, Q-Factor. single tuned capacitive coupled amplifier, tapped single tuned capacitance coupled amplifier, single tuned inductively coupled amplifier, stagger tuning, synchronous tuned Amplifier.

UNIT III [Lecture hrs – 9] : **WAVE SHAPING – Linear and Non-linear**: **[T2,T3] [CO3]**

RC high pass, low pass circuit response for sinusoidal, step, pulse, square, ramp & exponential inputs- Differentiator –Integrator. RL, Diode clippers- Transistor clipper- clipping at two independent levels – Emitter coupled clipper- comparator-– Applications of voltage comparators.
Clamping operation – clamping with source, diode resistances- clamping circuits theorem- practical clamping circuits.

UNIT IV [Lecture hrs – 9] : **MULTIVIBRATORS: [T2] [CO4]**

Stable states of Bistable Multivibrator A fixed bias transistor Bistable Multivibrator -A self biased transistor Bistable Multivibrator - commutating capacitor – Unsymmetric triggering of

BistableMultivibrator - triggering through a unilateral device- symmetrical triggering – Schmitt trigger circuit.
General operation of monostablemultivibrator, collector coupled monostablemultivibrator - wave forms of collector coupled monostablemultivibrator - Emitter coupled monostablemultivibrator - triggering of monostablemultivibrator. Astablemultivibrator, collector coupled Astablemultivibrator - Emitter coupled Astablemultivibrator. Designing ofBistable, Monostable and AstableMultivibrators.

UNIT V [Lecture hrs – 9] : **TIME BASE GENERATORS: [T2] [CO2]**

General features of time base signals-sweep circuit using a transistor switch-UJT,UJT characteristics, UJT as a sweep circuit, - General considerations & principles of Miller & Boot strap time base generators- the transistor miller time base- the transistor, Boot strap time base generator- A simple current sweep transistor current time base generator.

UNIT VI [Lecture hrs – 9] : **SAMPLING and LOGIC GATES: [T2] [CO3]**

Basic operating principle unidirectional, Bidirectional sampling gates using diodes, transistors-reduction of pedestal effect and sampling oscilloscope.
LOGIC GATES: Digital operation of a system- OR, AND, NOT, NAND &NOR gates- DTL Logic– RTL Logic, TTL logic – comparison.

TEXT BOOKS:

[1] Integrated electronics-J.Milliman and C.C.Halkias, MC Graw –Hill-1972
[2] Pulse digital and switching wave forms-J. Millman and H. Taub, Tata McGraw-Hill, New Delhi, 2001.
[3] Solid State Pulse circuits - David A. Bell, PHI, 4th Edn., 2002 .

REFERENCES:

[1] Pulse and Digital Circuits – A. Anand Kumar, PHI, 2005.
[2] Wave Generation and Shaping - L. Strauss
[3] Electronic Circuit Analysis-K.Lal Kishore, 2004, BSP

a	b	c	d	e	f	g	h	i	j	k	l

L	T	P	C
2	0	0	2

II Year II Semester
Electrical and Electronics Engineering

CODE: 8EC44 **DATABASE SYSTEMS CONCEPTS**

Course Objective:

To understand the different issues involved in the design and implementation of a database system. Study the physical and logical database designs, database modeling, relational, hierarchical, and network models and to understand and use data manipulation language to query, update, and manage a database. Develop an understanding of essential DBMS concepts such as: database security, integrity, concurrency and design and build a simple database system and demonstrate competence with the fundamental tasks involved with modeling, designing, and implementing a DBMS.

Course Outcomes:

1. Students will learn basics of databases and understand the architecture of database management systems.
2. Students will learn about good database design techniques and database theories behind.
3. Understand conceptual database designs, and functional dependencies and normalization.
4. Students will understand the Mathematical foundation for relational databases.
5. Student will be able to understand concept of Constraints, Views and will be able to create dynamic databases.
6. Learn transaction management, concurrency controls.

UNIT – I

Introduction to databases and transactions what is database system, purpose of database system, view of data, relational databases, database architecture, transaction management

UNIT- II

Data models the importance of data models, basic building blocks, business rules, the evolution of data models, degrees of data abstraction.

UNIT-III

Database design, ER-diagram and unified modeling language database design and ER model: Overview, ER-model, constraints, ER-diagrams, ERD issues, weak entity sets, Codd's rules, relational schemas, introduction to UML relational database model: Logical view of data, keys, integrity rules. Relational database design: Features of good relational database design, atomic domain and normalization (1nf, 2nf, 3nf, BCNF).

UNIT- IV

Relational algebra and calculus relational algebra: Introduction, selection and projection, set operations, renaming, joins, division, syntax, semantics. Operators, grouping and ungrouping,

relational comparison. Calculus: Tuple relational calculus, domain relational calculus, calculus vs algebra, computational capabilities.

UNIT- V

Constraints, views and SQL what is constraints, types of constrains, integrity constraints, views: Introduction to views, data independence, security, updates on views, comparison between tables and views SQL: Data definition, aggregate function, null values, nested sub queries, joined relations.

UNIT-VI

Transaction management and concurrency control transaction management: Acid properties, serializability and concurrency control, lock based concurrency control (2pl, deadlocks), time stamping methods, optimistic methods, database recovery management.

TEXT BOOKS:

[1] A SILBERSCHATZ, H KORTH, S SUDARSHAN, “DATABASE SYSTEM AND CONCEPTS”, FIFTH EDITION MCGRAW-HILL, ROB, CORONEL, “DATABASE SYSTEMS”, SEVENTH EDITION, CENGAGELEARNING.

II Year II Semester
Electrical and Electronics Engineering

UNIVERSAL HUMAN VALUES (UHV)

CODE: 8HC17

L	T	P	C
2	1	0	3

Curricular Structure

Semester	L-T-P-C	Course No. & Title
3 or 4	2-1-0-3	H-102 Universal Human Values 2: Understanding Harmony

Human Values Courses: This course also discusses their role in their family. It, very briefly, touches issues related to their role in the society and the nature, which needs to be discussed at length in one more semester for which the foundation course named as "H-102 Universal Human Values 2: Understanding Harmony" is designed which may be covered in their III or IV semester. During the Induction Program, students would get an initial exposure to human values through Universal Human Values – I. This exposure is to be augmented by this compulsory full semester foundation course.

OBJECTIVE: The objective of the course is four fold:
1. Development of a holistic perspective based on self-exploration about themselves (human being), family, society and nature/existence.
2. Understanding (or developing clarity) of the harmony in the human being, family, society and nature/existence
3. Strengthening of self-reflection.
4. Development of commitment and courage to act.

COURSE TOPICS: The course has 28 lectures and 14 practice sessions in 5 modules:

Module 1: Course Introduction - Need, Basic Guidelines, Content and Process for Value Education
1. Purpose and motivation for the course, recapitulation from Universal Human Values- I
2. Self-Exploration–what is it? - Its content and process; 'Natural Acceptance' and Experiential Validation- as the process for self-exploration
3. Continuous Happiness and Prosperity- A look at basic Human Aspirations
4. Right understanding, Relationship and Physical Facility- the basic requirements for fulfillment of aspirations of every human being with their correct priority
5. Understanding Happiness and Prosperity correctly- A critical appraisal of the current scenario
6. Method to fulfill the above human aspirations: understanding and living in harmony at various levels.
Include practice sessions to discuss natural acceptance in human being as the innate acceptance for living with responsibility (living in relationship, harmony and co-existence) rather than as arbitrariness in choice based on liking-disliking.

Module 2: Understanding Harmony in the Human Being - Harmony in Myself!
7. Understanding human being as a co-existence of the sentient 'I' and the material 'Body'
8. Understanding the needs of Self ('I') and 'Body' - happiness and physical facility
9. Understanding the Body as an instrument of 'I' (I being the doer, seer and enjoyer)
10. Understanding the characteristics and activities of 'I' and harmony in 'I'
11. Understanding the harmony of I with the Body: Sanyam and Health; correct appraisal of Physical needs, meaning of Prosperity in detail
12. Programs to ensure Sanyam and Health. Include practice sessions to discuss the role others have played in making material goods available to me. Identifying from one's own life. Differentiate between prosperity and accumulation. Discuss program for ensuring health vs dealing with disease.

Module 3: Understanding Harmony in the Family and Society- Harmony in Human-Human Relationship
13. Understanding values in human-human relationship; meaning of Justice (nine universal values in relationships) and program for its fulfillment to ensure mutual happiness; Trust and Respect as the foundational values of relationship
14. Understanding the meaning of Trust; Difference between intention and competence
15. Understanding the meaning of Respect, Difference between respect and differentiation; the other salient values in relationship

16. Understanding the harmony in the society (society being an extension of family): Resolution, Prosperity, fearlessness (trust) and co-existence as comprehensive Human Goals
17. Visualizing a universal harmonious order in society- Undivided Society, Universal Order- from family to world family.
Include practice sessions to reflect on relationships in family, hostel and institute as extended family, real life examples, teacher-student relationship, goal of education etc. Gratitude as a universal value in relationships. Discuss with scenarios. Elicit examples from students' lives.

Module 4: Understanding Harmony in the Nature and Existence - Whole existence as Coexistence
18. Understanding the harmony in the Nature
19. Interconnectedness and mutual fulfilment among the four orders of nature- recyclability and self-regulation in nature
20. Understanding Existence as Co-existence of mutually interacting units in all-pervasive space
21. Holistic perception of harmony at all levels of existence.

Include practice sessions to discuss human being as cause of imbalance in nature (film "Home" can be used), pollution, depletion of resources and role of technology etc.

Module 5: Implications of the above Holistic Understanding
22. Natural acceptance of human values
23. Definitiveness of Ethical Human Conduct
24. Basis for Humanistic Education, Humanistic Constitution and Humanistic Universal Order

Module 6: Harmony on Professional Ethics
25. Competence in professional ethics:
a. Ability to utilize the professional competence for augmenting universal human order
b. Ability to identify the scope and characteristics of people-friendly and eco-friendly production systems,
c. Ability to identify and develop appropriate technologies and management patterns for above production systems.
26. Case studies of typical holistic technologies, management models and production systems
27. Strategy for transition from the present state to Universal Human Order:
a. At the level of individual: as socially and ecologically responsible engineers, technologists and managers
b. At the level of society: as mutually enriching institutions and organizations
28. Sum up.
Include practice Exercises and Case Studies will be taken up in Practice (tutorial) Sessions eg. to discuss the conduct as an engineer or scientist etc.

3. READINGS:

TEXT BOOK
1. Human Values and Professional Ethics by R R Gaur, R Sangal, G P Bagaria, Excel Books, New Delhi, 2010

REFERENCE BOOKS
1.Jeevan Vidya: Ek Parichaya, A Nagaraj, Jeevan Vidya Prakashan, Amarkantak, 1999.
2.Human Values, A.N. Tripathi, New Age Intl. Publishers, New Delhi, 2004.
3.The Story of Stuff (Book).
4.The Story of My Experiments with Truth - by Mohandas Karamchand Gandhi
5.Small is Beautiful - E. F Schumacher.
6.Slow is Beautiful - Cecile Andrews
7.Economy of Permanence - J C Kumarappa
8.Bharat Mein Angreji Raj - PanditSunderlal
9.Rediscovering India - by Dharampal
10.Hind Swaraj or Indian Home Rule - by Mohandas K. Gandhi
11.India Wins Freedom - Maulana Abdul Kalam Azad
12.Vivekananda - Romain Rolland (English)
13.Gandhi - Romain Rolland (English)

Proposed Syllabus
SOFT SKILLS
CSE, ECE, CIVIL: II/I
IT, MECH, ECM, EEE: II/II

Subject Code: 8HC03

Maximum Marks: 100 (Internal – 30 / External – 70)

L	T	P/D	C
1	0	2	2

Course objectives:

1. To enable students to make self-assessment and know the importance of certain soft skills and team spirit
2. Know their emotional quotient which guides their thinking, behavior and helps them manage stress efficiently.
3. Equip themselves with the prerequisites, and relevant techniques to effectively attend corporate interviews.

Course Outcomes: After completion of the course, the student will be able to:

1. Assess themselves using SWOT analysis.
2. Appraise the importance of certain soft skills like time management and goal setting.
3. Improve their verbal ability to handle the competitive exams.
4. Enhance their team skills and design thinking capabilities for effective problem solving and decision making.
5. Know their emotional quotient which guides their thinking, behavior and helps them manage stress efficiently.
6. Equip themselves with the prerequisites, and relevant techniques to effectively attend corporate interviews.

Units	Tutorial (1 per week)	No. of Periods	Lab (2 per week)	No. of Periods
1. Know Yourself	1.1 Importance of knowing yourself 1.2 SWOT / SWOC Analysis 1.3 SWOT / SWOC Grid	**1** **1**	Practice exercises on Self-Analysis Questionnaire, SWOT Practice	**4**
2. Organizing Oneself	Developing positive outlook towards life 2.2 Time management 2.3 Goal Setting	**1** **1**	Practice activities on Managing time Goal Setting	**4**

3. Verbal Aptitude	3.1 Reading Comprehension: Strategies to comprehend difficult passages from a book; SQ3R (survey, question, read, recite, and review) 3.2 Word Analogies 3.3 Spotting Errors Sentence Completion / Sentence Equivalence	**1** **1** **1** **1**	Practice exercises on Reading from difficult passages from books Word analogies Spotting Errors Sentence Completion / Sentence Equivalence	**8**
4. Skills to Excel	Team work and Team Dynamics - Collaboration and Leadership Decision Making, Design Thinking Critical thinking and Creative Problem Solving.	**1** **1** **1**	Practice activities on Team building activities Practice Activities, Case Studies and Group Discussions on decision making and problem solving, creativity and innovation.	**6**
elf-Management Skills	5.1 Emotional Intelligence 5.2 Stress Management	**1** **1**	Practice activities on Case Studies and Group Discussions on managing stress and enhancing emotional intelligence.	**4**
6. Interview Skills	Interview Skills: Meaning and Purpose of an Interview Types of interviews; Interview Preparation techniques Dress code at an interview FAQs in HR Interview	**1** **1** **1**	ck Interviews	**6**

Text Book: SOFT SKILLS – Dr. K. Alex, S. Chand publications

Suggested Readings: * SOFT SKILLS – Meenakshi Raman ; * Word Power made Easy – Norman Lewis ; * Objective English - Pearson's Publications ; * Skill Sutras- Jayashree Mohanraj * The Power of Soft Skills – Robert A. Johnson ; * Soft Skills for Everyone – Jeff Butterfield

1	2	3	4	5	6	7	8	9	10	11	12
	H	M									L

H: High M: Medium L: Low

II Year II Semester

Electrical and Electronics Engineering

Code: 8A473 **ELECTRICAL MACHINES LAB – I**

L	T	P/D	C
-	-	2	1

Course Objective:

To understand the basics of Electrical machines concepts and applications

Course Outcomes:

After completion of the course, the student will be able to:

1. Understand the principles of DC electrical machines.
2. Understand the load characristics.
3. Understand the principle and operation of DC machine speed control methods.
4. Understand the calculation of losses in DC machines

The following experiments are required to be conducted:

1. Magnetization characteristics of DC shunt generator for the calculation of critical field resistance and critical speed.
2. Determination of characteristics from the Load test on DC shunt generator.
3. Determination of characteristics from the Load test on DC series generator.
4. Determination of characteristics from the Load test on DC compound generator.
5. Hopkinson's test on DC shunt machines for the determination of the efficiency.
6. Fields test on DC series machines for the determination of efficiency.
7. Swinburne's test and speed control of DC shunt motor and Predetermination of efficiencies.
8. Brake test on DC compound motor for the determination of performance curves.
9. Brake test on DC shunt motor for the determination of performance curves.
10. Separation of losses in DC shunt motor.

1	2	3	4	5	6	7	8	9	10	11	12
M	H	M	M					M		M	

H: High M: Medium L: Low

II Year II Semester
Electrical and Electronics Engineering
Analog Circuits Lab

Code: 8CC74

L	T	P/D	C
-	-	2	1

Course Objectives
To prepare students to practice the design and analysis of any Analog electronics circuit.

Course Outcomes:
At the end of the laboratory course, the students will be able to

1. To understand the design and working of various linear and non-linear wave shaping circuits.
2. To demonstrate the working principle of various multivibrators and functionalities of various logic gates.
3. To perform and verify the working of oscillators, feedback amplifiers and voltage regulators.
4. To perform laboratory experiment to verify the conversion efficiency of various power amplifiers.

Mapping of Course Outcomes with Program Outcomes andProgram specific outcomes

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2	PSO 3
CO1	2		3		3				2			1	2	2	2
CO2	2		3		3				2			1	2	2	2
CO3	2		3		3				2			1	2	2	2
CO4	2		3		3				2			1	2	2	2
Overal l	2		3		3				2			1	2	2	2

Syllabus Content:

Part-A: Hardware based experiments

1. Linear wave shaping.
2. Non Linear wave shaping – Clippers. clampers.
3. UJT Relaxation Oscillator
4. Astable and monostableMultivibrator.
5. BistableMultivibrator.
6. Study of Logic Gates with discrete components.

Part-B : Software Simulation based experiments (Multisim OR Pspice OR Tina Pro Or Equivalent Simulation Software)

1. Common Emitter and Common Source amplifier
2. Voltage shunt and Feedback Amplifier
3. Cascade Amplifier (CE+CE, CE+CC)
4. RC Phase Shift Oscillator using Transistors
5. Class- A and Class-B Complementary Symmetry Power Amplifier
6. Series and Shunt Voltage Regulator.

1	2	3	4	5	6	7	8	9	10	11	12
								H	M		M

H: High M: Medium L: Low

II Year II Semester

Electrical and Electronics Engineering

TECHNICAL SEMINAR - IV

L	T	P/D	C
-	-	2	1

Code: 8A494

Course objective

Develop an ability to understand and present the latest technological developments in computer science. Identify one of them, understand its impact on the event/method/society as a whole and present the seminar on the same which enhances oratory and interview facing skills.

COURSE OUTCOMES:

1Deliver lecture on emerging technologies.
2 Explain domain knowledge to resolve real time technical issues
3 Demonstrate ability to lead and explain concepts and innovative ideas.
4 Demonstrate team leading qualities.
5 Demonstrate public speaking and lifelong learning skills for higher studies and to pursue professional practice.
6 Exchange new information that would not have been available otherwise.
7 Develop debating and interview skills.

Procedure

1. Seminar in-charges shall highlight the significance of technical seminar in the first two sessions and enlighten the students on the utility of these seminars.
2. The slots, titles shall be decided upfront and seminar in charge shall take signatures.
3. The same sheet shall be affixed in the respective classrooms and seminar register.
4. If any student fails to present his/her seminar on the given slot, to genuine reasons, they may be asked to present in the subsequent slot/week.
5. Progress of the seminars need to be reviewed by the concerned HOD once in 15 days.
6. The evaluation for technical seminars has to be informed to students and displayed in the classrooms.
7. Report and presentation must contain topic, introduction, explanation, diagrams, tables, applications and conclusions.

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

1	2	3	4	5	6	7	8	9	10	11	12
								H	M		L

H: High M: Medium L: Low

II Year II Semester
Electrical and Electronics Engineering

COMPREHENSIVE VIVA TEST – IV

Code: 8A484

L	T	P/D	C
-	-	-	1

Objective:

Evaluate, Comprehend and assess the concepts and knowledge gained in the Core Courses of 1st year and 2nd year.

Course Outcomes: After completing this course, the student will be able to

1. Comprehend the concepts in the Core Courses 1st year and 2nd year.
2. Assess technical knowledge to face interviews.
3. Exhibit lifelong learning skills to pursue higher studies or professional practice.

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, IIII, IV and V semester
B.Tech III year II semester	I, II, IIII, IV, V and VI semester
B.Tech IV year I semester	I, II, IIII, 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 20 marks.

End Semester Examination for Comprehensive Test will be taken for 50 marks.

Total marks for Comprehensive Test will be 70.

**Average of best two of Mid Tests of Mid – I, Mid – II and Mid - III for Viva Voce will be taken for 10 marks.

End Semester Examination for Comprehensive Viva Voce shall be evaluated for 20 marks.

The total for Viva Voce will be 30.

Thus the total sessional marks in this subject of Comprehensive Test and Viva Voce will be: 30 for sessional 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.