

Vision of the Institution

To ignite the minds of the students through academic excellence so as to bring about social transformation and prosperity.

Mission of the Institution

- To expand the frontiers of knowledge through Quality Education.
- To provide valued added Research and Development.
- To embody a spirit of excellence in Teaching, Creativity, Scholarship and Outreach.
- To provide a platform for synergy of Academy, Industry and Community.
- To inculcate high standards of Ethical and Professional Behavior.

Vision of EEE Department

“Centre of Excellence in Education and Research in the field of Electrical and Electronics Engineering and to become the foremost academic department through its education and research programs”

Mission of EEE Department

- To develop innovative, efficient and proficient electrical engineers.
- To keep the curriculum industry friendly, with due regard to the University curriculum.
- To participate in large projects of National and International importance.
- To promote ethical and moral values among the students so as to make them emerge as responsible professionals.

Program Educational Objectives (PEOs)

PEO 1. To produce Electrical and Electronics Engineering graduates who have strong foundation in Mathematics, Sciences and Basic Engineering.

PEO 2. To provide intensive training in problem solving, laboratory skills and design skills to use modern engineering tools through higher education and research.

PEO 3. Ability to seek employment in a variety of engineering (or) engineering technology positions to specialize in specific areas of interest and work successfully in their chosen career aspirations.

PEO 4. To inculcate in students professional and ethical attitude, effective communication skills, teamwork skills, multidisciplinary approach, and an ability to relate engineering issues to broader social context through life-long learning.

Program Outcomes(POs) of EEE Department

Engineering Graduates will be able to:

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

Program Specific Outcomes (PSOs) of EEE Department

PSO 1: The EEE program must demonstrate knowledge and hands-on competence in the application of electrical and electronics circuits in a rigorous mathematical environment at or above the level of algebra and trigonometry.

PSO 2: The EEE program must demonstrate that graduates can apply interdisciplinary project management techniques to electrical and electronics systems.

PSO 3: The EEE program must demonstrate that graduates can analyze, design and develop hardware and software for control systems, measurements, power electronics and power systems

ACADEMIC REGULATIONS

B.Tech. FOUR YEAR DEGREE COURSE

R19 Regulations

(Applicable for the batches admitted from 2019-2020)



VISHNU INSTITUTE OF TECHNOLOGY : BHIMAVARAM

(Autonomous)

Approved by AICTE & Affiliated to JNTUK, Kakinada Accredited with 'A' Grade
by NAAC & NBA

Vishnupur, Bhimavaram, West Godavari Dist., Andhra Pradesh, India. PIN - 534202

Email: info@vishnu.edu.in, Website: www.vishnu.edu.in

REGULATIONS-19

THE DEGREE OF BACHELOR OF TECHNOLOGY - REGULAR (With effect from 2019-20)

RB 0.0	TITLE AND DURATION OF THE COURSE
	The course shall be called the degree course in Bachelor of Technology, abbreviated as B.Tech.
	The course shall be of four academic years duration divided into eight semesters, each semester having duration of minimum 16 weeks.
	The calendar of events in respect of the course shall be fixed by the Institute from time to time.
	The external examination in all the subjects shall be conducted at the end of each semester for all the eight semesters.
	Students joining the B.Tech. programme shall have to complete the programme in a stipulated time frame of 8 years from the date of joining and students joining the B.Tech. Programme in the third semester directly through Lateral Entry Scheme (LES) shall have to complete the programme in a stipulated time frame of 6 years from the date of joining. Otherwise, they shall forfeit their seat in B.Tech. Programme and their admission shall stand cancelled.
	When a student is detained for lack of credits / shortage of attendance, he/she may be re-admitted into the same semester / year in which he/she has been detained. However, the academic regulations under which he/she was first admitted shall continue to be applicable.
RB 1.0	ELIGIBILITY FOR ADMISSION
RB 1.1	Admissions are done as per the norms prescribed by the Government. The Government orders issued from time to time in this regard shall prevail.
RB 1.2	The Candidate shall be an Indian National.
RB 1.3	The Candidate should have passed the qualifying examination, i.e., Intermediate or equivalent on the date of admission.
RB 1.4	Seats in each programme in the college are classified into CATEGORY-A (70% of intake) and CATEGORY – B (30% of intake) besides lateral entry.
RB 1.5	Category 'A' Seats shall be filled by the Convener, EAMCET Admissions. Category 'B' Seats shall be filled by the College as per the guidelines of Andhra Pradesh State Council of Higher Education. 'Lateral Entry' candidates shall be admitted into the Third semester directly based on the rank secured by the candidate in Engineering Common Entrance Test (ECET) in accordance with the instructions given by the Convener, ECET and the Government of Andhra Pradesh.
RB 2.0	AWARD OF B.TECH. DEGREE
RB 2.1	A Regular Student shall be declared eligible for the award of the B.Tech. Degree, if he/she pursues a course of study in not less than four and not more than eight academic years. A Lateral Entry Student admitted into III semester shall be declared eligible for the award of the B.Tech. Degree, if he/she pursues a course of study in not less than three and not more than six academic years.

RB 2.2	<p>Each discipline of the B.Tech. programme is designed to have a total of 160 credits and the student shall have to complete the courses and earn all credits as per the requirements for award of the degree.</p> <p>Students joining the B.Tech. programme in the third semester directly through Lateral Entry Scheme (LES) shall have to complete the courses, excluding first year courses and credits as per the requirements for award of the degree.</p>
RB 2.3	<p>The B.Tech. Degree shall be conferred on a candidate who has satisfied the following requirements.</p> <p>A Regular student (four year programme) should register for 160 credits. In order to become eligible for the award of B.Tech. Degree, the student must obtain 160 credits.</p> <p>A Lateral Entry student should register for (160- first Year credits) credits and should obtain all the credits. However, it is mandatory for the students to complete the noncredit courses</p>
RB 3.0	MINIMUM INSTRUCTION DAYS
RB 3.1	The minimum instruction days for each semester shall be 90 working days.
RB 4.0	COURSES OF STUDY
	<p><u>Branch Code- Branch Abbreviation</u></p> <p>01-CE (Civil Engineering)</p> <p>02-EEE (Electrical and Electronics Engineering)</p> <p>03-ME (Mechanical Engineering)</p> <p>04-ECE (Electronics and Communication Engineering)</p> <p>05-CSE (Computer Science & Engineering)</p> <p>12-IT (Information Technology)</p>
RB 4.1	<p>Groups of Courses: The Courses in the B.Tech. Programme is of four kinds: Core, Professional Elective, Open Elective, and Mandatory Audit Course.</p> <p>Core Course: These are courses which are to be compulsorily studied by a student and it is the core requirement to complete the programme in a said branch.</p> <p>Professional Elective Course: A student can choose a course (subject) from a pool of courses of branch concerned, which add proficiency to the students.</p> <p>Open Elective Course: These are the courses offered by the other branches. These courses are designed to lead to knowledge enhancement in multi disciplinary domains.</p> <p>Mandatory Audit Course: These courses allow a student to attend classes without the benefit of a grade for a course. An undergraduate student who audits a course does so, for the purpose of self-enrichment and academic exploration.</p>
RB 5.0	DISTRIBUTION AND WEIGHTAGE OF MARKS
RB 5.1	The performance of a student in each semester shall be evaluated subject wise with a maximum of 100 marks for theory and 100 marks for practical subject. The Project-I shall be evaluated for 50 marks, Project-II evaluated for 200 marks, , Socially Relevant Projects for 50 marks, internship for 50 marks and seminar for 50 marks.
RB 5.2	For theory subjects, the distribution shall be 40 marks for Internal Evaluation and 60 marks for the End Examinations.

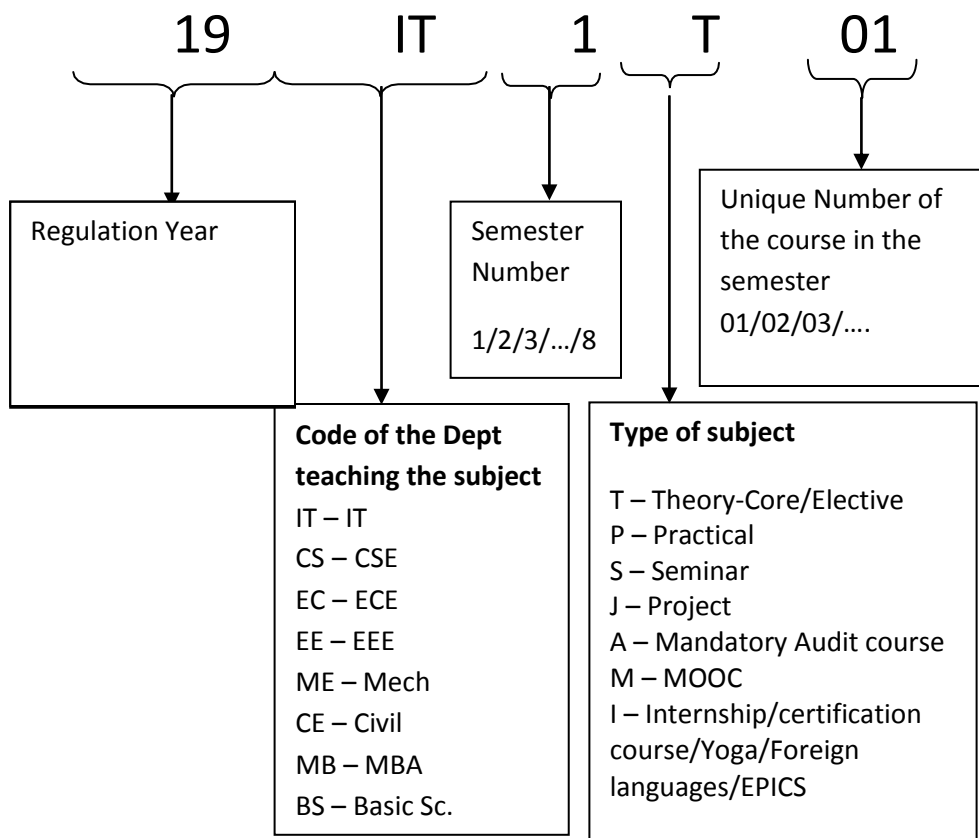
RB 5.3	<p>The Internal evaluation 40 marks shall be awarded as follows: 20 marks for Descriptive, 10 marks for Quiz and 10 marks for Assignment.</p> <p>The descriptive examination is for 90 minutes duration conducted for 30 marks. Each descriptive examination question paper consists of three questions (either - or type) from three units. Three questions to be answered, one from each unit. The descriptive examination conducted for 30 Marks is to be brought down to total marks of 20. The quiz examination is for 20 minutes duration (Conducted with 20 multiple choice questions with a weightage of ½ Mark each). Thought provoking questions shall be covered in Quiz examination.</p> <p>After every two Units, one Assignment/Tutorial shall be conducted. Two questions from each Unit and maximum of 4 questions must be set in Assignment. Assignment/Tutorial consists of Theory, Design, Analysis, Simulation, Algorithms, Drawing, etc. as the case may be. Out of the 3 Assignments / tutorials, average of best of the 2 Assignments shall be considered for awarding of marks.</p> <p>For theory subjects, during the semester there shall be 2 MID tests. As the syllabus is framed for 6 units, the First MID examination (both descriptive and quiz) is conducted on the first three units and Second MID examination (both descriptive and quiz) is considered from last three units of each subject. Average of two Mid tests (both descriptive and quiz) shall be considered as final marks of the MID. Eg: A student got 18 marks out of 20 marks in Descriptive-1, 8 marks out of 10 marks in Quiz-1 and 8 marks out of 20 marks in Descriptive-2 and 2 marks out of 10 marks in Quiz-2. Assignment-1 = 9 out of 10, Assignment-2 = 4 out of 10 and Assignment-3 = 10 out of 10. The student Internal marks are = $((26+10)/2 + ((9+10)/2) = 27.5$ is rounded to 28 marks out of 40 marks.</p> <p>If a student is absent from any one MID examination, he/she can appear for a Grand Test after MID-2. The Grand Test will be conducted with questions covering the entire syllabus. The marks in the grand test is reduced to 30 marks and to be considered for the respective mid.</p>
RB 5.4	<p>The end semester examination is conducted for 60 marks. It consists of 6 questions (either - or type) with 10 marks each. For design subjects (like Design Drawing Concrete Structures, Steel Structures, Building Planning and Drawing), the pattern will consist of 2 parts (part-A and B), where in part-A 2 questions will be given with each question carrying 24 marks, out of which the student has to answer one question and part-B consists of 6 questions with each question carrying 12 marks each, out of which the student has to answer 3 questions.</p>
RB 5.5	<p>For practical subjects, there shall be continuous evaluation during the semester for 40 internal marks. Out of the 40 marks for internal, day-to-day work 15 marks, Record 10 marks and 15 marks to be awarded by conducting an internal laboratory test. The end examination shall be conducted for 60 marks by the internal examiner and the external examiner.</p>
RB 5.6	<p>For the subject having design and/or drawing (such as Engineering Graphics, Engineering Drawing, Machine Drawing, Design Drawing Concrete Structures, Steel Structures, Building Planning and Drawing), the distribution shall be 40 marks for internal evaluation (20 marks for day-to-day work, and 20 marks for MID tests) and 60 marks for end examination. The average of 2 MIDs shall be considered as final marks of the MID.</p>
RB 5.7	<p>For the seminar, the student shall collect the information on a specialized topic and prepare a technical report showing his/her understanding over the topic, and submit to the department, which shall be evaluated by the Departmental Committee consisting of the Head of the Department, a seminar supervisor and a senior faculty member. The seminar report shall be evaluated for 50 marks. There shall be no external examination for seminar.</p>

RB 5.8	Out of a total of 200 marks for the Project-II, 80 marks shall be for Internal Evaluation and 120 marks for the End Semester Examination. The End Semester Examination (Viva – Voce) shall be conducted by the Committee. The Committee consists of an external examiner, Head of the Department and Supervisor of the Project. The evaluation of project work shall be conducted at the end of the Eighth semester. The Internal Evaluation marks shall be on the basis of two seminars given by each student on the topic of his/her project and evaluated by an Internal Committee, consisting of Head of the department, the supervisor of the project and a senior faculty member.	
RB 5.9	For the Project-I, 50 marks shall be for the Internal Evaluation. Viva- Voce shall be conducted by the Committee. The Committee consists of the Head of the Department, one Senior Faculty Member and the Supervisor of the Project. The Viva–Voce may be conducted along with respective semester lab external examinations. There shall be no external examination for mini projects.	
RB 5.10	Laboratory marks and the internal marks awarded by the department are not final. The marks are subjected to be scrutinized and scaled by the Institute wherever it is felt desirable. The internal and laboratory marks awarded by the department shall be referred to a Committee if required. The Committee shall arrive at a scaling factor and the marks shall be scaled as per the scaling factor. The recommendations of the Committee are final and binding. The laboratory records and internal test papers shall be preserved for two years after the final examinations of that semester in the respective departments as per the norms of the Institute and shall be produced to the Committees as and when they ask for.	
RB 6.0	PROGRAMME STRUCTURE	
	Basic Science Courses	15-16%
	Engineering Science Courses	10-19%
	Humanities and Social Science Courses	6-9%
	Professional Core Courses	31-40%
	Professional Elective Courses	7-13%
	Project / Internships / Certification Courses/ Seminar	8-9%
	Open Elective Courses	5-10%
Mandatory Audit Courses	-	
RB 7.0	SCHEME OF INSTRUCTION FOR I, II, III AND IV YEARS	
RB 7.1	The Schemes of Instruction and syllabi of all B.Tech. programmes are given separately, which are approved by the BOS concerned and the Academic Council.	
RB 8.0	CONTACT HOURS AND CREDITS	
RB 8.1	One hour of lecture/Tutorial is equivalent to one credit and one hour of practical work/field work is equivalent to 0.5 credit.	
RB 8.2	THEORY / TUTORIAL CLASSES Each course is prescribed with a fixed number of lecture periods per week. During lecture periods, the course instructor shall deal with the concepts of the course. For certain courses, tutorial periods are prescribed in order to give exercises to the students and to closely monitor their learning abilities and achievements.	
RB 8.3	LABORATORY / DRAWING COURSES A minimum prescribed number of experiments/drawings/jobs/programmes have to be performed by students, who shall complete these in all aspects and get each experiment evaluated by the teacher concerned and certified by the Head of the Department concerned at the end of the semester.	
RB 9.0	MEDIUM OF INSTRUCTION	
	The Medium of Instruction and examination is in English.	

RB 10	ATTENDANCE REQUIREMENTS
RB 10.1	In each semester, the candidate has to put in a minimum attendance of 75% with a provision of condonation of 10% of the attendance by the Principal on the specific recommendation of the HOD, showing some reasonable cause such as medical grounds, participation in University level sports, cultural activities, seminars, workshops, paper presentation etc.
RB 10.2	Students, having shortage of attendance and got condonation for attendance, shall have to pay requisite fee towards condonation.
RB 10.3	Shortage of attendance below 65% in aggregate shall not be condoned.
RB 10.4	Students whose shortage of attendance is not condoned will be detained and the student has to re-register for that semester when it is offered by the department.

RB 10.5	Rules for calculation of attendance for the re-admitted candidates who were detained for want of attendance or who had break – in study for various reasons: a) No. of classes conducted shall be counted from the day one of the semester concerned, irrespective of the date of payment of tuition fee. b) They should submit a written request to the Principal, along with a challan paid towards tuition and other fee, for re-admission before the commencement of class-work. c) Student should come to know about the date of commencement of class-work of the semester into which he/she wishes to get re-admission. The information regarding date of commencement of class-work for each semester is available in the college notice boards/ website.
RB 11.0	CONDITIONS FOR PASS AND AWARD OF CREDITS FOR A COURSE
RB 11.1	A candidate shall be declared to have passed in individual theory/drawing course if he/she secures a minimum of 40% aggregate marks (40 marks out of 100, Internal and semester end examination marks put together), subject to a minimum of 35% marks (21 marks out of 60) in semester end examination. For successful completion of mandatory audit course, the student must get a satisfactory grade from the department offering the course. If fails, he/she has to reappear whenever the course is offered.
RB 11.2	A candidate shall be declared to have passed in individual lab/project course if he/she secures a minimum of 40% aggregate marks (Internal and semester end examination marks put together), subject to minimum of 35% marks in semester end examination.
RB 11.3	The student has to pass the failed course by appearing the supplementary examination as per the requirement for the award of degree.
RB 11.4	On passing a course of a programme, the student shall earn assigned credits in that course.
RB 12.0	TRANSITORY REGULATIONS
RB 12.1	A candidate, who is detained or discontinued in the semester, on readmission shall be required to pass all the courses in the curriculum prescribed for such batch of students in which he/she joins subsequently. However, exemption shall be given to those candidates who have already passed in such courses in the earlier semester(s) and substitute subject may be offered as approved by College Academic Committee and ratified by the Academic Council.
RB 12.2	A student shall be eligible for promotion to the next semester of B.Tech. programme, if he/she satisfies the conditions as stipulated in Regulation RB10.

RB 12.3	<p>A student will be promoted from II year to III year if he fulfills the academic requirement of 40% of the credits up to either II year I semester or II year II semester from all the examinations, whether or not the candidate takes the examinations and secures prescribed minimum attendance in II year II semester.</p> <p>A student shall be promoted from III year to IV year if he fulfills the academic requirements of 40% of the credits up to either III year I semester or III year II semester from all the examinations, whether or not the candidate takes the examinations and secures prescribed minimum attendance in III year II semester.</p> <p>For Lateral Entry Candidates</p> <p>A student shall be promoted from III year to IV year if he fulfills the academic requirements of 40% of the credits up to either III year I semester or III year II semester from all the examinations, whether or not the candidate takes the examinations and secures prescribed minimum attendance in III year II semester.</p>
RB 13.0	<p>COURSE CODE AND COURSE NUMBERING SCHEME: The subject codes shall be given by the Department teaching the subject. Each subject code contains 8 characters. The 8 Characters for each subject shall be coded as per the following guidelines.</p>



	<p>While giving the subject codes the Departments can follow the following steps.</p> <p>i. Collect the requirements from various Departments.(subjects which they have to teach for other Departments)</p> <p>ii. Prepare a list of all the subjects the Departments have to teach in that semester (for their Department as well as the other Departments based on the requirements they have collected in point i.)</p> <p>iii. Give subject codes to all these subjects following the guidelines given.</p> <p>iv. Communicate these subject codes(identified in point i) to various Departments.</p> <p>v. Use the subject codes identified in point iii to the subjects in their course structure.</p>																																													
RB 14.0	CONSOLIDATED GRADE CARD																																													
	A consolidated grade card containing credits and grades obtained by the candidate shall be issued after completion of the four year B.Tech. Programme.																																													
RB 15.0	METHOD OF AWARDING LETTER GRADES AND GRADE POINTS FOR A COURSE																																													
	A letter grade and grade point shall be awarded to the student in each course based on his/her performance as per the grading system given below																																													
RB 15.1	<table border="1"> <thead> <tr> <th>Marks Range Theory/Lab (Max – 100)</th> <th>Marks Range for subjects with Max – 50</th> <th>Letter Grade</th> <th>Level</th> <th>Grade Point</th> </tr> </thead> <tbody> <tr> <td>≥ 90</td> <td>≥ 45</td> <td>O</td> <td>Outstanding</td> <td>10</td> </tr> <tr> <td>≥ 80 < 90</td> <td>≥ 40 < 45</td> <td>S</td> <td>Excellent</td> <td>9</td> </tr> <tr> <td>≥ 70 < 80</td> <td>≥ 35 < 40</td> <td>A</td> <td>Very Good</td> <td>8</td> </tr> <tr> <td>≥ 60 < 70</td> <td>≥ 30 < 35</td> <td>B</td> <td>Good</td> <td>7</td> </tr> <tr> <td>≥ 50 < 60</td> <td>≥ 25 < 30</td> <td>C</td> <td>Fair</td> <td>6</td> </tr> <tr> <td>≥ 40 < 50</td> <td>≥ 20 < 25</td> <td>D</td> <td>Satisfactory</td> <td>5</td> </tr> <tr> <td>< 40</td> <td>< 20</td> <td>F</td> <td>Fail</td> <td>0</td> </tr> <tr> <td></td> <td></td> <td></td> <td>Absent</td> <td>0</td> </tr> </tbody> </table>	Marks Range Theory/Lab (Max – 100)	Marks Range for subjects with Max – 50	Letter Grade	Level	Grade Point	≥ 90	≥ 45	O	Outstanding	10	≥ 80 < 90	≥ 40 < 45	S	Excellent	9	≥ 70 < 80	≥ 35 < 40	A	Very Good	8	≥ 60 < 70	≥ 30 < 35	B	Good	7	≥ 50 < 60	≥ 25 < 30	C	Fair	6	≥ 40 < 50	≥ 20 < 25	D	Satisfactory	5	< 40	< 20	F	Fail	0				Absent	0
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RB 15.2	<p>Calculation of Semester Grade Points Average(SGPA)* for semester: The Performance of each student at the end of each semester is indicated in terms of SGPA. The SGPA is calculated as below:</p> $SGPA (S_i) = \sum(C_i \times G_i) / \sum C_i \text{ (for all courses passed in that semester)}$ <p>Where C_i is the number of credits of the i^{th} course and G_i is the grade point scored by the student in the i^{th} course.</p> <p>* SGPA is calculated for the candidates who passed all the courses in that semester</p>																																													
RB 15.3	<p>Calculation of Cumulative Grade Points Average (CGPA)</p> <p>The CGPA is calculated as below:</p> $CGPA = \sum(C_i \times S_i) / \sum C_i \text{ (for entire programme)}$ <p>Where S_i is the SGPA of the i^{th} semester and C_i is the total number of credits in that semester. The SGPA and CGPA shall be rounded off to 2 decimal points and reported in the transcripts</p>																																													
RB 15.4	Equivalent Percentage for CGPA is = $(CGPA - 0.75) \times 10$																																													

RB 16.0	<p>REVALUATION</p> <p>As per the notification issued by the Controller of Examination, the student can submit the application for revaluation, along with the fee receipt for revaluation of his/her answer script(s) of theory course(s), if he/she is not satisfied with the Grade obtained. The Controller of Examination shall arrange for revaluation of those answerscript(s).</p>
RB 16.1	<p>For Revaluation, a new external examiner, other than the first examiner, shall re-evaluate the answer script(s). If there is any change in marks (below 15% of the maximum External marks) the highest of the two marks will be considered and if there is any change in marks (Equal or above 15% of the maximum External marks), the script will be evaluated by the third valuator. The marks of all the three valutors are compared and the average of two nearer marks will be awarded to the student.</p>
RB 17.0	<p>SUPPLEMENTARY EXAMINATIONS.</p> <p>Supplementary examinations shall be conducted twice in an academic year, along with regular semester end examinations.</p>
RB 18.0	<p>READMISSION CRITERIA.</p> <p>A candidate, who is detained in a semester due to lack of attendance/ credits, has to obtain written permission from the Principal for readmission in the same semester after duly fulfilling all the required norms stipulated by the college in addition to paying an administrative fee of Rs.1,000/-</p>
RB 19.0	<p>BREAK IN STUDY.</p> <p>Student, who discontinues his/her studies for whatsoever may be the reason, can get readmission into appropriate semester of B.Tech. programme after break-in study only with the prior permission of the Principal of the College provided, such candidate shall follow the transitory regulations applicable to such batch in which he/she joins. An administrative fee of Rs.1000/- per year of break in study in addition to the prescribed tuition fee and special fee has to be paid by the candidate to condone his/her break in study.</p>
RB 20.0	<p>AWARD OF DIVISION.</p> <p>The award of division for the candidates who admitted into respective B.Tech. programmes in the year 2019-2020 and onwards should be as per JNTUK regulations.</p> <p>For the purpose of awarding First Class with Distinction, the student must get CGPA within 4 years in case of candidates admitted through EAMCET & Management Quota or within 3 years in case of Lateral Entry candidates admitted through ECET, without appearing for any supplementary examinations. Detained candidates are not eligible for the award of First Class with Distinction.</p> <p>For the purpose of awarding First, Second and Pass Class, CGPA obtained in the examinations appeared within the maximum period allowed for the completion of course shall be considered.</p>

RB 21.0	BETTERMENT /IMPROVEMENT OF CUMULATIVE GRADE POINT AVERAGE
RB 21.1	A candidate, after becoming eligible for the award of the Degree, may reappear for the external Examination in any of the theory courses as and when conducted, for the purpose of improving the CGPA. But this reappearance shall be within a period of two academic years after becoming eligible for the award of the Degree, subject to fulfillment of Regulation RB 2.0.
RB 21.2	However, this facility shall not be availed by a candidate to reappear either for Internal Examination or for Semester End Examinations in Practical courses (including Project Viva-voce) and also for Semester End Examinations evaluated internally for the purpose of improvement.
RB 21.3	Modified Grade Card and New Consolidated Grade Card shall be issued after incorporating new Grades and Credits.
RB 22.0	ADVANCED SUPPLEMENTARY EXAMINATIONS
	Candidate(s), who fails in Theory or Lab courses of 4 th year second semester, can appear for advanced supplementary examinations conducted within one month after declaration of the revaluation results. However, those candidates who fail in this advanced supplementary examinations of IV year second semester shall appear for subsequent examination along with regular candidates in the examinations conducted at the end of the respective academic year.
RB 23.0	MALPRACTICES The Principal/chief superintendent shall refer the cases of malpractices in internal assessment tests and Semester End Examinations to a Malpractice Enquiry Committee, constituted for the purpose. The Principal shall take necessary action, against the erring students based on the recommendations of the Committee as per JNTUK Malpractice regulations.
RB 24.0	The physically challenged candidates who have availed additional examination time and a scribe during their Intermediate/EAMCET examinations shall be given similar concessions on production of relevant proof/documents.
RB 25.0	The students who are suffering from contagious diseases are not allowed to appear either internal or Semester end examinations with other students. A separate room will be allotted for such type of students.
RB 26.0	The students who participate in coaching/tournaments held at State/National/International levels through University / Indian Olympic Association during Semester end external examination period shall be promoted to subsequent semesters till the entire course is completed as per the guidelines of University Grants Commission Letter No. F. 1-5/88 (SPE/PES), dated 18-08-1994.

RB 27.0	The Principal shall deal with any academic problem, which is not covered under these rules and regulations, in consultation with the Heads of the Departments in an appropriate manner, and subsequently such actions shall be placed before the Academic Council for ratification. Any emergency modification of Regulation, approved in the Heads of the Departments meetings, shall be reported to the Academic Council for ratification.
RB 28.0	The Academic Council, from time to time, may revise or amend or change the Regulations, schemes of examination and/or syllabi.
RB 29.0	ELECTIVES Minimum 20% of intake of students is compulsory for offering regular electives.
RB 30.0	INTERNSHIP For internship, minimum period shall be one month. However, it can be completed in 3 to 4 slots /intervals which shall be a minimum of five day slot.

MALPRACTICES RULES

Disciplinary Action for / Improper Conduct in Examinations

S.NO	Nature of Malpractices / Improper conduct	Punishment
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 he is appearing but has not made use of (material shall include any marks on the body of the candidate which can be used as an aid in the subject of the examination)	Expulsion from the examination hall and cancellation of the performance in that subject only.
1.(b)	Gives assistance or guidance or receives it from any other candidate orally or by any other body language methods or communicates through cell phones with any candidate or persons in or outside the exam hall in respect of any matter.	Expulsion from the examination hall and cancellation of the performance in that subject only of all the candidates involved. In case of an outsider, he will be handed over to the police and a case is registered against him.
2	Has copied in the examination hall from any paper, book, programmable calculators, palm computers or any other form of material relevant to the subject of the examination (theory or practical) in which the candidate is appearing.	Expulsion from the examination hall and cancellation of the performance in that subject and all other subjects the candidate has already appeared including practical examinations and project work and shall not be permitted to appear for the remaining examinations of the subjects of that Semester/year. The Hall Ticket of the candidate is to be cancelled and held with the Institution.
3	Impersonates any other candidate in connection with the examination.	The candidate who has impersonated shall be expelled from examination hall. The candidate is also debarred and forfeits the seat. The performance of the original candidate who has been impersonated, shall be cancelled in all the subjects of the examination (including practicals and project work) already appeared and shall not be allowed to appear for examinations of the remaining subjects of that semester/year. The candidate is also debarred for two consecutive semesters from class work and all Institution examinations. The continuation of the course by the candidate is subject to the academic regulations in connection with forfeiture of seat. If the imposter is an outsider, he will be handed over to the police and a case is registered against him.
	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	Expulsion from the examination hall and cancellation of performance in that subject and all the other subjects the candidate has

4	sheet, during or after the examination.	already appeared including practical examinations and project work and shall not be permitted for the remaining examinations of the subjects of that semester/year. The candidate is also debarred for two consecutive semesters from class work and all Institution examinations. The continuation of the course by the candidate is subject to the academic regulations in connection with forfeiture of seat.
5	Uses objectionable, abusive or offensive language in the answer paper or in letters to the examiners or writes to the examiner requesting him to award pass marks.	Cancellation of the performance in that subject.
6	Refuses to obey the orders of the Chief Superintendent/Assistant– Superintendent / any officer on duty or misbehaves or creates disturbance of any kind in and around the examination hall or organizes a walk out or instigates others to walk out, or threatens the officer-in charge or any person on duty in or outside the examination hall of any injury to his person or to any of his relations whether by words, either spoken or written or by signs or by visible representation, assaults the officer-incharge, or any person on duty in or outside the examination hall or any of his relations, or indulges in any other act of misconduct or mischief which result in damage to or destruction of property in the examination hall or any part of the College campus or engages in any other act which in the opinion of the officer on duty amounts to use of unfair means or misconduct or has the tendency to disrupt the orderly conduct of the examination.	In case of students of the college, they shall be expelled from examination halls and cancellation of their performance in that subject and all other subjects the candidate(s) has (have) already appeared and shall not be permitted to appear for the remaining examinations of the subjects of that semester/year. The candidates also are debarred and forfeit their seats. In case of outsiders, they will be handed over to the police and a police case is registered against them.
7	Leaves the exam hall taking away answer script or intentionally tears 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 candidate has already appeared including practical examinations and project work and shall not be permitted for the remaining examinations of the subjects of that semester/year. The candidate is also debarred for two consecutive semesters from class work and all Institution examinations. The continuation of the course by the candidate is subject to the academic regulations in connection with forfeiture of seat.
8	Possess any lethal weapon or firearm in the examination hall.	Expulsion from the examination hall and cancellation of the performance in that subject and all other subjects the candidate has already appeared including practical examinations and project work and shall not be permitted for

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

Malpractices identified by squad or special invigilators

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

* * * *

VISHNU INSTITUTE OF TECHNOLOGY

(AUTONOMOUS)

(Approved by AICTE & Affiliated to JNTU-Kakinada)

(Accredited by NBA & NAAC 'A' Grade)






Vishnupur, BHIMAVARAM – 534 202

Ragging

Prohibition of ragging in
Educational institutions Act 26 of 1997

Salient Features

- Ragging within or outside any educational institution is prohibited.
- Ragging means doing an act which causes or is likely to cause Insult or Annoyance of Fear or Apprehension or Threat or Intimidation or outrage of modesty or Injury to a student.

	Imprisonment upto		Fine Upto
Teasing, Embarrassing & Humiliation	 6 Months	+	Rs. 1,000/-
Assaulting or Using Criminal force or Criminal intimidation	 1 Year	+	Rs. 2,000/-
Wrongfully restraining or confining or causing hurt	 2 Years	+	Rs. 5,000/-
Causing grievous hurt, kidnapping or Abducts or rape or committing unnatural offence	 5 Years	+	Rs. 10,000/-
Causing death or abetting suicide	 10 Months	+	Rs. 50,000/-

LET US MAKE VIT A RAGGING FREE COLLEGE

VISHNU INSTITUTE OF TECHNOLOGY

(AUTONOMOUS)

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(Accredited by NBA& NAAC 'A' Grade)

Vishnupur, BHIMAVARAM – 534 202



**ABSOLUTELY
NOT TO RAGGING**

1. Ragging is prohibited as per Act 26 of A.P. Legislative Assembly, 1997.
2. Ragging entails heavy fines and/or imprisonment.
3. Ragging invokes suspension and dismissal from the College.
4. Outsiders are prohibited from entering the College and Hostel without permission.
5. Girl students must be in their hostel rooms by 7.00 p.m.
6. All the students must carry their Identity Cards and show them when demanded.
7. The Principal and the Wardens may visit the Hostels and inspect the rooms any time.

LET US MAKE VIT A RAGGING FREE COLLEGE

B.Tech. (EEE)

R19 Course Structure

R19 Course Structure for B.Tech.(EEE) (With effect from 2019-2020)

I . B.Tech. I- Semester

S.No	Course Title	L	T	P	C	I	E	TM
1	Communicative English	2	-	-	2	40	60	100
2	Mathematics-I(Linear Algebra & Calculus)	2	1	-	3	40	60	100
3	Applied Chemistry	3	-	-	3	40	60	100
4	Computer Programming	3	1	-	4	40	60	100
5	English Communication Skills Lab	-	-	3	1.5	40	60	100
6	Applied Chemistry Lab	-	-	3	1.5	40	60	100
7	Computer Programming Lab	-	-	3	1.5	40	60	100
8	Engineering Workshop	-	-	3	1.5	40	60	100
9	Environmental Science	3	-	-	-	-	-	-
	Total	13	2	12	18	320	480	800

I . B.Tech. II- Semester

S.No	Course Title	L	T	P	C	I	E	TM
1	Mathematics-II(PDE & Vector Calculus)	2	1	-	3	40	60	100
2	Mathematics-III (Transform Calculus & Complex Variables)	2	1	-	3	40	60	100
3	Applied Physics	3	-	-	3	40	60	100
4	Problem Solving & Programming Using Python	2	1	-	3	40	60	100
5	Engineering Graphics & Design	1	-	2	2.5	40	60	100
6	Applied physics Lab	-	-	3	1.5	40	60	100
7	Problem Solving & Programming Lab	-	-	3	1.5	40	60	100
8	Workshop (Electrical & Electronics Engineering Lab)	-	-	3	1.5	40	60	100
9	Constitution of India	2	-	-	-	-	-	-
	Total	12	3	11	19	320	480	800

II. B.Tech. I- Semester

S.No	Course Title	L	T	P	C	I	E	TM
1	Power Systems-I	2	1	-	3	40	60	100
2	Electrical Circuit Analysis - I	2	-	-	2	40	60	100
3	Electromagnetic Fields	2	1	-	3	40	60	100
4	Electronic Devices and Circuits	2	1	-	3	40	60	100
5	Internet of Things	2	1	-	3	40	60	100
6	Electronic Devices and Circuits Lab	-	-	3	1.5	40	60	100
7	Business English Communication Lab	-	-	2	1.5	40	60	100
8	Internet of Things Lab	-	-	2	1.5	40	60	100
9	AI Tools, Techniques & Applications	2	1	-	3	40	60	100
10	AI Tools, Techniques & Applications Lab	-	-	3	1.5	40	60	100
11	Quantitative Aptitude-I	-	-	-	-	-	-	-
	Total	12	5	10	23	400	600	1000

II. B.Tech. II- Semester

S.No	Course Title	L	T	P	C	I	E	TM
1	Power Systems-II	2	1	-	3	40	60	100
2	Electrical Circuit Analysis - II	2	-	-	2	40	60	100
3	Electrical Machines-I	2	-	-	2	40	60	100
4	Control Systems	2	1	-	3	40	60	100
5	Digital Logic Design	2	-	-	2	40	60	100
6	Elements of Civil and Mechanical Engineering	2	-	-	2	40	60	100
8	Logical Reasoning	2	-	-	2	20	30	50
9	Electrical Circuit Analysis Lab	-	-	3	1.5	40	60	100
10	Civil and Mechanical Engineering Lab	-	-	3	1.5	40	60	100
11	Socially Relevant project	-	-	2	1.5	20	30	50
	Total	14	2	8	20.5	360	540	900

III. B.Tech. I- Semester

S.No	Course Title	L	T	P	C	I	E	TM
1	Power Electronics	2	1	-	3	40	60	100
2	Electrical Measurements	2	1	-	3	40	60	100
3	Electrical Machines-II	2	-	-	2	40	60	100
4	Professional Elective-I							
	1.Pulse and Digital Circuits	2	1	-	3	40	60	100
	2. Energy Audit, Conservation and Management							
	3. Modern Control Theory							
	4. Programmable Logic Controllers							
5	Open Elective-I							
	1.Data Structures	2	1	-	3	40	60	100
	2. Embedded Systems							
	3. Robotics							
	4. Principles of Communication Systems							
6	Quantitative Aptitude-II	2	-	-	2	20	30	50
7	Electrical Machines – I Lab	-	-	3	1.5	40	60	100
8	Control Systems Lab	-	-	3	1.5	40	60	100
9	Advanced English Communication Skills Lab	-	-	2	1.5	40	60	100
10	Socially Relevant project	-	-	2	1.5	20	30	50
	Total	12	4	10	22	360	540	900

III. B.Tech. II- Semester

S.No	Course Title	L	T	P	C	I	E	TM
1	Electrical Machines-III	2	-	-	2	40	60	100
2	Power System Analysis	2	1	-	3	40	60	100
3	Microprocessors and Microcontrollers	2	1	-	3	40	60	100
4	Design Thinking & Product Innovation	2	1	-	3	40	60	100
5	Humanities Elective-I							
	1.Managerial Economics and Financial Analysis	2	1	-	3	40	60	100
	2.Professional Ethics and Human Values							
	3.Business Environment							
	4. Life Science for Engineers							
6	Open Elective-II							
	1.OOPS through Java	2	1	-	3	40	60	100
	2.VLSI Design							
	3.Operations Research							
	4. Linear Integrated Circuits & Applications.							
7	Mini Project	-	-	3	2	20	30	50
8	Electrical Machines-II Lab	-	-	3	1.5	40	60	100
9	Power Electronics Lab	-	-	3	1.5	40	60	100
10	Microprocessors and Microcontrollers Lab	-	-	3	1.5	40	60	100
	Total	12	5	12	23.5	380	570	950

IV. B.Tech. I- Semester

S.No	Course Title	L	T	P	C	I	E	TM
1	High Voltage Engineering	2	1	-	3	40	60	100
2	Switch Gear Protection	2	1	-	3	40	60	100
3	Professional Elective-II							
	1.Power Systems Operation and Control 2. HVDC Transmission 3. Utilization of Electrical Energy 4. Instrumentation	2	1	-	3	40	60	100
4	Professional Elective-III							
	1.FACTS 2.Power Quality 3.Power Semiconductor Drives 4 MATLAB Applications in Electrical Engineering	2	1	-	3	40	60	100
5	Open Elective-III							
	1.Web Technologies 2.Remote Sensing Systems 3.Optimization Techniques 4.Digital Signal Processing	2	1	-	3	40	60	100
6	Humanities Elective-II							
	1.Mangement Science 2.Intellectual Property Rights and Patents 3.Fundamentals of Entrepreneurship	2	1	-	3	40	60	100
7	Power Systems and Simulation Lab	-	-	3	1.5	40	60	100
8	Electrical Measurements Lab	-	-	3	1.5	40	60	100
	Total	12	6	6	21	320	480	800

IV. B.Tech. II- Semester

S.No	Course Title	L	T	P	C	I	E	TM
1	Professional Elective-IV (MOOC)							
	1. Renewable Energy Systems 2. Electrical Distribution Systems 3. Smart Grids 4. Digital Control Systems	2	1	-	3	40	60	100
2	Open Elective-IV (MOOC)							
	1. Advanced Power Semiconductor Devices 2. Real Time Control of Power Systems 3. Power Plant Engineering 4. Biomedical Engineering	2	1	-	3	40	60	100
3	Main Project			8	7	80	120	200
	Total	4	2	8	13	160	240	400

- Its Mandatory to conduct MOOCs course for a minimum period of 8 weeks

I YEAR I SEMESTER
ELECTRICAL & ELECTRONICS ENGINEERING
R19 SYLLABUS

Year/Semester	I B. Tech/I Sem	L	T	P	C
Regulation Year	2019-20	2	0	0	2
Subject	Communicative English				
Branch	ECE, CE, ME & EEE				

Introduction:

In view of the growing importance of English as a tool for global communication and the consequent emphasis on training the students to acquire communicative competence, the syllabus has been designed to develop linguistic and communicative competence of the students of Engineering.

As far as the detailed textbook is concerned, the focus should be on the skills of listening, speaking, reading and writing.

Thus the stress in the syllabus is primarily on the development of communicative skills and fostering of ideas.

Objectives:

- Adopt activity based teaching-learning methods to ensure that the learners would be engaged in the use of language both in the classroom and the laboratory sessions.
- Facilitate effective listening skills for better comprehension of academic lectures and English spoken by native speakers
- Focus on appropriate reading strategies for comprehension of various academic texts and authentic materials
- Help improve speaking skills through participation in activities such as role plays, discussions and structured talks/oral presentations
- Impart effective strategies for good writing and demonstrate the same in summarizing, writing well organized essays, record and report useful information
- Provide knowledge of grammatical structures and vocabulary and encourage their appropriate use in speech and writing

Methodology:

1. The class are to be learner-centered where the learners are to read the texts to get a comprehensive idea of those texts on their own with the help of the peer group and the teacher.
2. Integrated skill development methodology has to be adopted with focus on individual language skills as per the tasks/exercise.
3. The tasks/exercises at the end of each unit should be completed by the learners only and the teacher intervention is permitted as per the complexity of the task/exercise.
4. The teacher is expected to use supplementary material wherever necessary and also generate activities/tasks as per the requirement.
5. The teacher is permitted to use lecture method when a completely new concept is introduced in the class.

(R-19 Regulations)**Detailed Textbook:**

Prescribed by JNTUK for Reading and Writing

Non-Detailed Textbook:
Wings of Fire: APJ Abdul Kalam
Unit 1

Reading: Skimming to get the main idea of a text

Reading for Writing: Beginnings and endings of paragraphs - introducing the topic, summarizing the main idea and/or providing a transition to the next paragraph.

Grammar and Vocabulary : Nouns and Pronouns; textual words

Learning Outcomes

At the end of the module, the learners will be able to

- employ suitable strategies for skimming to get the general idea of a text
- recognize paragraph structure with beginnings/endings
- using correct word forms of nouns and pronouns and textual words

Unit 2

Reading: Scanning to look for specific pieces of information.

Writing: Writing sentences with proper word order - Basic Sentence Structures

Grammar and Vocabulary: Verbs - tenses; use of synonyms

Learning Outcomes

At the end of the module, the learners will be able to

- Employ suitable strategies for scanning to identify specific information from a text
- Write accurately using proper grammatical structures

Unit 3

Reading: Identifying sequence of ideas; recognizing verbal techniques that help to link the ideas in a paragraph together.

Writing: Paragraph writing using suitable cohesive devices; mechanics of writing - punctuation, capital letters.

Grammar and Vocabulary: Cohesive devices - linkers, sign posts and transition signals; use of articles and zero article; prepositions; use of synonyms

Learning Outcomes

At the end of the module, the learners will be able to

- write well structured paragraphs
- understand the use of cohesive devices

Assignment-I: Each Student is required to present a report on a problem faced by individuals or the society with an analysis and possible solutions. He/she has to make an oral presentation of it in the class before the completion of MID-I Examination. It is mandatory for all the students. It is for Internal Assessment.

Unit 4

Reading: Note making; making notes from the text/material.

Writing: Types of Paragraph writing

Grammar and Vocabulary : Subject-verb agreement, Quantifying expressions - adjectives and adverbs; comparing and contrasting; degrees of comparison; use of antonyms

Learning Outcomes

At the end of the module, the learners will be able to

- make notes of the important information of a text
- understanding types of paragraphs
- use language appropriate adjective and adverbs for descriptions

Unit 5

Reading: Reading for comprehension.

Writing: Summarizing - identifying main idea/s and rephrasing what is read; avoiding redundancies and repetitions.

Grammar and Vocabulary: direct and indirect speech, reporting verbs for academic purposes.

Learning Outcomes

At the end of the module, the learners will be able to

- write summaries based on global comprehension of reading/listening texts
- understand a paragraph

Unit 6

Reading: Studying the use of graphic elements in texts to convey information, reveal trends/patterns/relationships etc.

Writing: Information transfer; describe, compare, contrast, identify significance/trends based on information provided in figures/charts/graphs/tables.

Grammar and Vocabulary: Active Voice- Passive Voice; editing short texts – identifying and correcting common errors in grammar and usage (articles, prepositions, tenses, subject verb agreement)

Learning Outcomes

At the end of the module, the learners will be able to

- interpret data from the given charts/tables/graphs
- edit short texts by correcting common errors

Assignment-II: Each Student is required to present the information regarding one novel prescribed in course. He/she has to make an oral presentation of it in the class before the completion of MID-II Examination. It is mandatory for all the students. It is for Internal Assessment.

Course Outcomes

- At the end of the course, the learners will be able to identify the context, topic, and pieces of specific information from social or transactional dialogues spoken by native speakers of English
- formulate sentences using proper grammatical structures and correct word forms

- speak clearly on a specific topic using suitable discourse markers in informal discussions
- write summaries based on global comprehension of reading/listening texts
- produce a coherent paragraph interpreting a figure/graph/chart/table
- take notes while listening to a talk/lecture to answer questions

Reference Books

- Bailey, Stephen. *Academic writing: A handbook for international students*. Routledge, 2014.
- Chase, Becky Tarver. *Pathways: Listening, Speaking and Critical Thinking*. Heinley ELT; 2nd Edition, 2018.
- Skillful Level 2 Reading & Writing Student's Book Pack (B1) Macmillan Educational.
- Hewings, Martin. *Cambridge Academic English (B2)*. CUP, 2012.

Sample Web Resources

Grammar/Listening/Writing

1-language.com

<http://www.5minuteenglish.com/>

<https://www.englishpractice.com/>

Grammar/Vocabulary

English Language Learning Online

<http://www.bbc.co.uk/learningenglish/>

<http://www.better-english.com/>

<http://www.nonstopenglish.com/>

<https://www.vocabulary.com/>

BBC Vocabulary Games

Free Rice Vocabulary Game

Reading

<https://www.usingenglish.com/comprehension/>

<https://www.englishclub.com/reading/short-stories.htm>

<https://www.english-online.at/>

Listening

<https://learningenglish.voanews.com/z/3613>

<http://www.englishmedialab.com/listening.html>

Speaking

<https://www.talkenglish.com/BBC Learning English – Pronunciation tips>

Merriam-Webster – Perfect pronunciation Exercises

All Skills

<https://www.englishclub.com/>

<http://www.world-english.org/>

<http://learnenglish.britishcouncil.org/>

Online Dictionaries

Cambridge dictionary online

MacMillan dictionary

Oxford learner's dictionaries

Year/Semester	I B. Tech/I Sem	L	T	P	C
Regulation Year	2019-20	3	0	0	3
Subject	Mathematics-I (Linear Algebra & Calculus)				
Branch	Common to all branches				

Course Objectives:

To enable the students to

1. know the importance of matrices to solve linear equations using matrices
2. identify and solve various differential equations using corresponding methods
3. apply methods of solving higher order linear differential equations
4. comprehend the theory of maxima and minima of a function of two variables.
5. analyze the techniques of tracing the curves and evaluate the lengths, areas, volumes of objects using multiple integrals

UNIT –I: Matrices - Linear system of equations

Introduction, Different types of matrices, Rank-Echelon form - Normal form , Solution of a System of Linear Equations – Non-homogeneous and homogeneous equations, Gauss- Jordan method, Gauss – Elimination Method, LU Decomposition, Applications of electric circuits.

Unit- II: Eigen values - Eigen vectors

Eigen values - Eigen vectors – Properties– Cayley-Hamilton Theorem - finding inverse and power of a matrix by using Cayley-Hamilton theorem, Diagonalization of matrices, Spectral Decomposition, Principal Component Analysis and Singular Value Decomposition

UNIT –III: Differential Equations of First Order and First Degree

Differential equations of first order and first degree–Exact and Non – exact differential equations, Linear and Bernoulli differential equations. Orthogonal trajectories, Newton’s Law of cooling, Law of natural growth and decay, L-R and R-C Circuits.

UNIT –IV: Linear Differential Equations of Higher Order

Higher order homogenous and non - homogenous linear differential equations with constant coefficients - Particular integrals for the functions of type e^{ax} , $\sin(ax+b)$, $\cos(ax+b)$, Polynomial of x , $e^{ax} V(x)$, L-C-R Circuits

Unit – V: Partial Differentiation

Functions of several variables- Partial derivatives, Total derivative, Chain rule, Change of variables, Jacobians, Functional dependence. Generalized Mean Value theorem –Taylor’s theorem and Maclaurin’s theorem (without proof) for a function of two variables, Maxima and Minima of functions of two variables, Lagrange’s method of undetermined multipliers

Unit –VI: Multiple Integrals and Applications

Review of Curve tracing-Cartesian-Polar and Parametric curves

Multiple integrals - double integrals - change of variables (Cartesian and Polar coordinates), Change of order of integration and Evaluation of triple integrals, computing area, surface areas and volume.

Text Books:

1. B. S. Grewal, Higher Engineering Mathematics, 42nd Ed., Khanna Publishers, New Delhi, 2012
2. Erwin .Kreyszig, Advanced Engineering Mathematics, 9th Ed., Wiley, 2012

References:

1. T.K.V.Iyengar, B. Krishna Gandhi, S. Ranganathan and M.V.S.S.N.Prasad, Engineering Mathematics, Volume-I, 12th Ed., S. Chand Publishers, 2014
2. B. V. Ramana, Engineering Mathematics, 4th Ed., Tata McGraw Hill, New Delhi, 2009
3. D. S. Chandrashekharaiyah, Engineering Mathematics, Volume 1, Prism Publishers, 2010
4. N.P. Bali and Manish Goyal, A text book of Engineering Mathematics, Laxmi Publications, reprint, 2008.

Course Outcomes:

After completing this course, the students will be able to

1. Solve linear system of equations in engineering problems
2. Find Eigenvalues and Eigenvectors of a matrix in engineering studies.
3. Model engineering problems as a differential equations and solve analytically.
4. Model engineering problems as a differential equations and solve analytically the higher order differential equations.
5. Find out local /global optimum of functions of several variables.
6. Compute areas, surface areas and volumes.

Year/Semester	I B. Tech/I Sem	L	T	P	C
Regulation Year	2019-20	3	0	0	3
Subject	Applied Chemistry				
Branch	CSE, IT & EEE				

COURSE OBJECTIVES:

- Plastics are nowadays used in household appliances; also they are used as composites in aerospace industries.
- Fuels as a source of energy are a basic need of any industry, particularly industries like thermal power stations, steel industry, fertilizer industry etc., and hence they are introduced.
- The basics for the construction of galvanic cells. Also if corrosion is to be controlled, one has to understand the mechanism of corrosion which itself is explained by electrochemical theory.
- With the increase in demand, a wide variety of materials are coming up; some of them have excellent engineering properties and these materials are introduced.
- Understanding of crystal structures will help to understand the conductivity, semiconductors and superconductors.
- With the increase in demand for power and also with depleting sources of fossil fuels, the demand for alternative sources of fuels is increasing. Some of the prospective fuel sources are introduced.

UNIT I: HIGH POLYMERS AND PLASTICS

Polymerization : Introduction- Methods of polymerization --Thermoplastics and Thermosetting plastics – Compounding and fabrication (4/5 techniques)- Preparation, properties and applications of polyethylene, PVC, Bakelite Teflon. Conducting polymers, Fiber Reinforced Plastics and Biodegradable Polymers.

Elastomers – Natural rubber - vulcanization – Synthetic rubbers : Buna S, Buna N and Thiokol – Applications of elastomers.

UNIT II: FUEL TECHNOLOGY

Fuels:- Introduction – Calorific value - HCV and LCV – Bomb calorimeter – Numerical problems – Coal — Proximate and ultimate analysis –Significance of the analyses – Liquid fuels – Petroleum-Refining – Cracking – Petrol knocking – Diesel knocking - Octane and Cetane ratings – Anti-knock agents –Gaseous fuels – Natural gas, LPG and CNG. – Biofuels- Biodiesel and Power alcohol

UNIT III: ELECTROCHEMICAL CELLS AND CORROSION

Galvanic cells (Construction and working) – Electro chemical series and uses of this series- Standard electrodes (Hydrogen and Calomel electrodes) Batteries: Dry Leclanche Cell - Ni-Cd cells - Li cells.

Corrosion:- Definition – Theories of Corrosion (dry & wet corrosion) – Formation of galvanic cells by different metals, differential aeration - waterline corrosion – Pitting corrosion - Factors which influence the rate of corrosion - Protection from corrosion: Methods of application on metals (Galvanizing, Tinning, Electroplating, Electroless plating)

UNIT IV: CHEMISTRY OF ADVANCED MATERIALS

Nano materials:- Introduction – Bottom up and Top down approach- Sol gel method- Self assembled layers Characterisation of nano materials by BET and TEM - Carbon nano tubes and fullerenes: Types, Preparation (Arc discharge and Laser ablation and Chemical Vapour Deposition methods) properties and applications

Liquid crystals: - Introduction – Types – Applications

Superconductors: - Type-I & Type-II, properties & applications.

Green synthesis: - Principles – Aqueous phase method, Super critical fluid Extraction method and Bio catalytic methods of synthesis-Applications.

UNIT V: SOLID STATE CHEMISTRY

Types of solids – Crystal defects- Frenkel and Schottky defects – Spinel and Inverse spinel.

Hall effect and applications.

Semiconductors: Preparation of pure semiconductors by Zone refining, distillation and Czochralski crystal pulling technique- Doping- Epitaxy, diffusion and Ion implantation technique- Intrinsic and Extrinsic semiconductors - Applications.

Insulators : Electrical Insulators and their applications.

UNIT VI: NON CONVENTIONAL ENERGY SOURCES

Solar Energy: - Introduction, application of solar energy – photovoltaic cell: design, working and its importance.

Non-conventional energy sources:

- (i) Hydropower include setup a hydropower plant (schematic diagram)
- (ii) Geothermal energy: Introduction-schematic diagram of a geothermal power plant
- (i) Tidal and wave power: Introduction- Design and working-movement of tides and their effect on sea level.

(iv) Biomass energy

Fuel cells: - Introduction - cell representation, H₂-O₂ fuel cell: Design and working, advantages and limitations. Types of fuel cells: methanol-oxygen - phosphoric acid fuel cells.

Standard Books:

1. Engineering Chemistry by Jain and Jain; Dhanpat Rai Publishing Co.
2. Engineering Chemistry by Shikha Agarwal; Cambridge University Press, 2015 edition.

Reference Books:

1. Engineering Chemistry by Prasanth Rath, Cengage Learning, 2015 edition.
2. A text book of engineering Chemistry by S. S. Dara; S. Chand & Co Ltd., Latest Edition.

Course Outcomes:

1. The advantages and limitations of plastic materials and their use in design would be understood.
2. Fuels which are used commonly and their economics, advantages and limitations are discussed.
3. Reasons for corrosion and some methods of corrosion control would be understood.
4. The students would be now aware of materials like nano-materials and fullerenes and their uses. Similarly liquid crystals and superconductors are understood. The importance of green synthesis is well understood and how they are different from conventional methods is also explained.
5. Conductance phenomenon is better understood.
6. The students are exposed to some of the alternative fuels and their advantages and limitations.

Year/Semester	I B. Tech/I Sem	L	T	P	C
Regulation Year	2019-20	3	1	0	4
Subject	Computer Programming				
Branch	EEE				

Course Objectives:

- Formulating algorithmic solutions to problems and implementing algorithms in C.
- Notion of Operation of a CPU, Notion of an algorithm and computational procedure, editing and executing programs in Linux.
- Understanding branching, iteration and data representation using arrays.
- Modular programming and recursive solution formulation.
- Understanding pointers and dynamic memory allocation.
- Understanding miscellaneous aspects of C.

UNIT-I:

Fundamentals of Computer and Computational thinking:

Computer Block Diagram, Computer Hardware, Data Representation in Memory, components, Programming Languages - Machine Language, Assembly Language, Low- and High-Level Languages, Procedural and Object-Oriented Languages, Application and System Software, Translators, Algorithms, Flowcharts, The Software Development Process.

UNIT-II:

Introduction to C Programming- Identifiers, The main () Function, The printf () Function **Programming Style** - Indentation, Comments, Data Types, Arithmetic Operations, Expression

Types, Variables and Declarations, Negation, Operator Precedence and Associativity, Declaration Statements, Initialization.

Assignment - Implicit Type Conversions, Explicit Type Conversions (Casts), Assignment Variations, Mathematical Library Functions, Interactive Input, Formatted Output, Format Modifiers.

UNIT-III:

Control Flow-Relational Expressions - Logical Operators:

Selection: if-else Statement, nested if, examples, Multi-way selection: switch, else-if, examples.

Repetition: Basic Loop Structures, Pretest and Posttest Loops, Counter-Controlled and Condition-Controlled Loops, The while Statement, The for Statement, Nested Loops, The do-while Statement.

UNIT-IV:

Arrays & Pointers:

Arrays: One-Dimensional Arrays, Input and Output of Array Values, Array Initialization, Two-Dimensional Arrays, Larger Dimensional Arrays- Matrices

Pointers: Concept of a Pointer, Initialisation of pointer variables, passing by address, Dangling memory, address arithmetic, Dynamic memory management functions, command line arguments.

UNIT-V:

Modular Programming: Function and Parameter Declarations, Returning a Value, Classifications of Functions, Variable Scope, Variable Storage Class, Local Variable Storage Classes, Global Variable Storage Classes, Pass by Reference, Passing Addresses to a Function, Array as a Function arguments.
Case Study: Recursion - Mathematical Recursion, Recursion versus Iteration

UNIT-VI:

Strings & Structures:

Strings: String Fundamentals, String Input and Output, String Processing, Library Functions.

Structures: Derived types, Structures declaration, Initialization of structures, accessing structures, nested structures, arrays of structures, structures and functions, pointers to structures, self referential structures, unions, typedef, bit-fields.

TEXT BOOKS:

1. ANSI C Programming, Gary J. Bronson, Cengage Learning.
2. Let us C Authentic Guide to C Programming Language by yashavant kanetkar.
3. The C programming Language, Dennis Richie and Brian Kernighan, Pearson Education.

REFERENCE BOOKS:

1. C Programming-A Problem Solving Approach, Forouzan, Gilberg, Cengage.
2. Programming with C, Bichkar, Universities Press.
3. Programming in C, ReemaThareja, OXFORD.
4. C by Example, Noel Kalicharan, Cambridge.

Course Outcomes:

- Understand the basic terminology used in computer programming
- Write, compile and debug programs in C language.
- Use different data types in a computer program.
- Design programs involving decision structures, loops and functions.
- Explain the difference between call by value and call by reference
- Understand the dynamics of memory by the use of pointers
Use different data structures and Strings.

Year/Semester	I B. Tech/I Sem	L	T	P	C
Regulation Year	2019-20	0	0	3	1.5
Subject	English Communication Skills Lab				
Branch	ECE, CE, ME & EEE				

Course Objectives

1. To sensitize the nuances of English speech sounds.
2. To bring about a consistent accent and intelligibility in students' pronunciation of English by providing an opportunity for practice in speaking.
3. To improve the fluency in spoken English in different contexts.
4. To demonstrate the synchronization of verbal and non verbal communication.
5. To speak with clarity and confidence.
6. To enrich the persuasive skills.

MODULE – I

Listening: Identifying the topic, the context and overall idea by listening to short audio texts and answering a series of questions. Non Verbal Communication (2 sessions)

MODULE – II

Listening: Answering a series of questions about specific information after listening to audio texts. Introduction to Phonetics – Sounds of English – Vowels and Consonants (3 sessions)

MODULE – III

Listening: Answering a series of questions about main idea and supporting ideas after listening to audio texts. Reading with proper Stress and Intonation –Speech shadowing (3 sessions)

MODULE– IV

Listening: Listening for global comprehension and summarizing what is listened to. Situational Dialogues/Role Plays, Just a Minute (4 sessions)

MODULE– V

Asking and answering general questions on familiar topics such as home, family, work, studies and interests; introducing oneself and others (2 sessions)

MODULE – VI

Formal oral presentations on topics from academic contexts - without the use of PPT slides. (3 sessions)

INFRASTRUCTURE:

1. 60 computer systems for a class of 60 students.
2. LAN facility and English Language Software for self-study by learners.
3. Audio System
4. Projector

SYSTEM REQUIREMENT: Hardware Component

1. P – IV Processor
2. Speed – 2.8 GHZ
3. RAM – 512 MB minimum
4. Hard Disk – 80 GB
5. Headphones of high quality

SUGGESTED SOFTWARE

1. Cambridge Advanced Learners‘ English Dictionary with CD.
2. Grammar Made Easy by Darling Kindersley
3. Punctuation Made Easy by Darling Kindersley
4. Clarity Pronunciation Power – Part I
5. Clarity Pronunciation Power – part II
6. Oxford Advanced Learner’s Compass, 7th Edition
7. DELTA ‘s key to the Next Generation TOEFL Test: Advanced Skill Practice.
8. MELL - K Van Solutions Software
9. TOEFL & GRE (KAPLAN, AARCO & BARRONS, USA, Cracking GRE by CLIFFS)
10. English in Mind (Series 1-4), Herbert Puchta and Jeff Stranks with Meredith Levy, Cambridge
11. English Pronunciation in Use, Cambridge University Press
12. Technical Communication, OUP
13. Communication Skills, OUP

COURSE OUTCOMES

The students will be able to:

1. Comprehend the importance of phonetics and interpret phonetic symbols, vowels and consonants.
2. Describe the speech sounds – vowels and consonants, stress and intonation.
3. Enable writing situational dialogues and enact Role Play.
4. Exemplify the synchronization of verbal and non verbal communication through the JAM session.
5. Enrich presentation skills through oral presentations - prepared and extempore.
6. Develop oratory skills through Debate.

SUGGESTED READING

1. Speaking English Effectively 2 nd Edition by Krishna Mohan and N. P. Singh, 2011. Macmillan Publishers India Ltd. Delhi.
2. Sasi Kumar, V & Dhamija, P.V. How to Prepare for Group Discussion and Interviews. Tata McGraw Hill
3. Hancock, M. 2009. English Pronunciation in Use. Intermediate. Cambridge: CUP
4. Spoken English: A Manual of Speech and Phonetics by R. K. Bansal & J. B. Harrison. 2013 Orient Blackswan. Hyderabad.
5. Hewings, M. 2009. English Pronunciation in Use. Advanced. Cambridge: CUP
6. Marks, J. 2009. English Pronunciation in Use. Elementary. Cambridge: CUP
7. Nambiar, K.C. 2011. Speaking Accurately. A Course in International Communication. New Delhi : Foundation
8. Soundararaj, Francis. 2012. Basics of Communication in English. New Delhi: Macmillan

9. Spoken English (CIEFL) in 3 volumes with 6 cassettes, OUP.
10. English Pronouncing Dictionary Daniel Jones Current Edition with CD.
11. A TEXT BOOKS of English Phonetics for Indian Students by T.Balasubramanian (Macmillan)

Year/Semester	I B. Tech/I Sem	L	T	P	C
Regulation Year	2019-20	0	0	3	1.5
Subject	Applied Chemistry Lab				
Branch	CSE,IT & EEE				

List of Experiments:

1. Trial experiment - Determination of HCl using standard Na_2CO_3 solution.
2. Determination of alkalinity of a sample containing Na_2CO_3 and NaOH.
3. Determination of KMnO_4 using standard Oxalic acid solution.
4. Determination of Copper using standard $\text{K}_2\text{Cr}_2\text{O}_7$ solution.
5. Determination of temporary and permanent hardness of water using standard EDTA solution.
6. Determination of Vitamin – C
7. Determination of P^{H} of the given sample solution using P^{H} meter.
8. Conductometric titration between strong acid and strong base.
9. Potentiometric titration between strong acid and strong base.
10. Estimation of copper by Colorometry
11. Estimation of KCl by Ion exchange resin method.
12. Photo Chemical Reduction of Ferric Salt (Blue-Printing)
13. Adsorption of acetic acid on charcoal.
14. Determination of rate of corrosion.
15. Preparation of a polymer.

Reference Books:

1. A Textbook of Quantitative Analysis, Arthur J. Vogel.
2. Dr. Jyotsna Cherukuris (2012) Laboratory Manual of engineering chemistry-II, VGS
3. Techno Series
4. Chemistry Practical Manual, Lorven Publications
5. Practical Engineering Chemistry, K. Mukkanti (2009) B.S. Publication

Outcomes: The students entering into the professional course have practically very little exposure to lab classes. The experiments introduce volumetric analysis; redox titrations with different indicators; EDTA titrations; then they are exposed to a few instrumental methods of chemical analysis. Thus at the end of the lab course, the student is exposed to different methods of chemical analysis and use of some commonly employed instruments. They thus acquire some experimental skills.

Year/Semester	I B. Tech/I Sem	L	T	P	C
Regulation Year	2019-20	0	0	3	1.5
Subject	Computer Programming Lab				
Branch	EEE				

Course Objectives:

- Understand the basic concept of C Programming, and its different modules that includes conditional and looping expressions, Arrays, Strings, Functions, Pointers Structures.
- Acquire knowledge about the basic concept of writing a program.
- Role of constants, variables, identifiers, operators, type conversion and other building blocks of C Language.
- Use of conditional expressions and looping statements to solve problems associated with conditions and repetitions.
- Role of functions involving the idea of Modularity.

Exercise - 1 Basics

- What is an OS Command, Familiarization of Editors - vi, Emacs
- Using commands like mkdir, ls, cp, mv, cat, pwd, and man
- C Program to Perform Adding, Subtraction, Multiplication and Division of two numbers From Command line

Exercise - 2 Basic Math

- Write a C Program to Simulate 3 Laws at Motion
- Write a C Program to convert Celsius to Fahrenheit and vice versa

Exercise - 3 Control Flow – I

- Write a C Program to Find Whether the Given Year is a Leap Year or not.
- Write a C Program to Add Digits & Multiplication of a number

Exercise – 4 Control Flow – II

- Write a C Program to Find Whether the Given Number is
 - Prime Number
 - Armstrong Number
- Write a C program to print Floyd Triangle
- Write a C Program to print Pascal Triangle

Exercise – 5 Functions

- Write a C Program demonstrating of parameter passing in Functions and returning values.
- Write a C Program illustrating Fibonacci, Factorial with Recursion without Recursion

Exercise – 6 Control Flow – III

- a) Write a C Program to make a simple Calculator to Add, Subtract, Multiply or Divide Using switch...case
- b) Write a C Program to convert decimal to binary and hex (using switch call function the function)

Exercise – 7 Functions – Continued

Write a C Program to compute the values of $\sin x$ and $\cos x$ and e^x values using Series expansion. (use factorial function)

Exercise – 8 Arrays

Demonstration of arrays

- a) Search-Linear. b) Sorting-Bubble, Selection. c) Operations on Matrix.

Exercises - 9 Structures

- a) Write a C Program to Store Information of a Movie Using Structure
- b) Write a C Program to Store Information Using Structures with Dynamically Memory Allocation
- c) Write a C Program to Add Two Complex Numbers by Passing Structure to a Function

Exercise - 10 Arrays and Pointers

- a) Write a C Program to Access Elements of an Array Using Pointer
- b) Write a C Program to find the sum of numbers with arrays and pointers.

Exercise – 11 Dynamic Memory Allocations

- a) Write a C program to find sum of n elements entered by user. To perform this program, allocate memory dynamically using malloc () function.
 - b) Write a C program to find sum of n elements entered by user. To perform this program, allocate memory dynamically using calloc () function.
- Understand the difference between the above two programs

Exercise – 12 Strings

- a) Implementation of string manipulation operations with library function.
 - i) copy
 - ii) concatenate
 - iii) length
 - iv) compare
- b) Implementation of string manipulation operations without library function.
 - i) copy
 - ii) concatenate
 - iii) length
 - iv) compare

Course Outcomes:

- Apply and practice logical ability to solve the problem.
- Understand C programming development environment, compiling, debugging and linking and executing a program using the development environment.
- Analyzing the complexity of problems, modularize the problems into small modules and then convert them into programs.

- Understand and apply the inbuilt functions and customized functions for solving the problems.
- Understand and apply the pointers, memory allocation techniques.

Year/Semester	I B. Tech/I Sem	L	T	P	C
Regulation Year	2019-20	0	0	3	1.5
Subject	Engineering Workshop				
Branch	EEE				

Course Objective: To impart hands-on practice on basic engineering trades and skills. Note: At least two exercises to be done from each trade.

Trades:

Fitting

1. Vee Fit
2. Square Fit
3. Half Round Fit
4. Dovetail Fit

Carpentry

1. T-Lap Joint
2. Cross Lap Joint
3. Dovetail Joint
4. Mortise and Tenon Joint

Tin Smithy

1. Taper Tray
2. Square Box without lid
3. Open Scoop
4. Funnel

Black Smithy

1. Round rod to Square
2. S-Hook
3. Round Rod to Flat Ring
4. Round Rod to Square headed bolt

House Wiring

1. Parallel / Series Connection of three bulbs
2. Stair Case wiring
3. Florescent Lamp Fitting
4. Measurement of Earth Resistance

Year/Semester	I B. Tech/I Sem	L	T	P	C
Regulation Year	2019-20	3	0	0	0
Subject	Environmental Science				
Branch	CSE, EEE & IT				

OBJECTIVES: To make the students to get awareness on environment, to understand the importance of protecting natural resources, ecosystems for future generations and pollution causes due to the day to day activities of human life to save earth from the inventions by the engineers.

UNIT – I Multidisciplinary nature of Environmental Science and Ecosystems.

Definition, Scope and Importance and sustainability – Need for public awareness- Human population and Environment.

Ecosystems: Concept of an ecosystem. - Structure and function of an ecosystem. – Types of ecosystems- Forest, Grassland, Desert and Aquatic ecosystems- Food chains, food webs and ecological pyramids.

UNIT – II Natural Resources

Forest resources: Use and over – exploitation, deforestation – Timber extraction – Mining, dams and other effects on forest and tribal people

Water resources: Conflicts over water, dams – benefits and problems

Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources.

Energy resources: Growing energy needs- renewable and non-renewable energy sources.

Food resources – World food problems

Land resources- Wasteland reclamation.

Role of an individual in conservation of natural resources.

UNIT – III Biodiversity and its conservation

Definition: Genetic, species and ecosystem diversity- classification - Value of biodiversity: consumptive use, productive use, social - Biodiversity at national and local levels. Hot-spots of biodiversity - Threats to biodiversity - Endangered and endemic species of India - conservation of biodiversity.

UNIT – IV Environmental Pollution

Definition, Cause, effects and control measures of Air pollution, Water pollution, Soil pollution, Noise pollution, Nuclear hazards. Role of an individual in prevention of pollution. - Pollution case studies.

Solid Waste Management: Sources, effects and control measures of urban and industrial solid

wastes.

Biomedical and e - waste management.

Global Environmental Challenges: Global warming and climate change, acid rains, ozone layer depletion.

UNIT – V Social Issues and the Environment

Urban problems related to energy -Water conservation, rain water harvesting-Resettlement and rehabilitation of people. Environmental Protection Act –Air Act. –Water Act - Wildlife Protection Act -Forest Conservation Act- Public awareness.

International protocols: Stockholm and Rio Summit, Kyoto protocol and Montreal protocol.

UNIT – VI Environmental Management

Impact Assessment and its significance - various stages of EIA- Environmental audit, Ecotourism.

The student Visit of an Industry / Ecosystem.