COURSE STRUCTURE AND DETAILED SYLLABI

for

B.Tech Regular (Full - Time) Four Year Degree Program

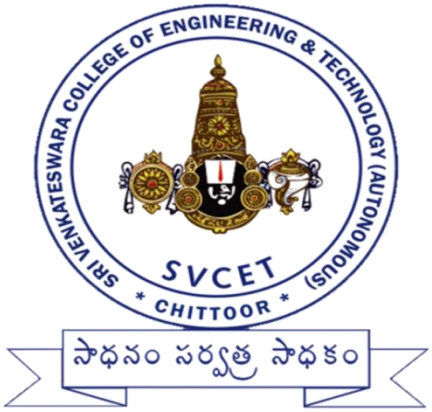
(For the batches admitted from the Academic Year 2023-24)

and

B.Tech. (Lateral Entry Scheme)

(For the batches admitted from the Academic Year 2024-25)

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING



SRI VENKATESWARA COLLEGE OF ENGINEERING AND TECHNOLOGY

(AUTONOMOUS)

Accredited by NBA, New Delhi & NAAC A^{+}, Bengaluru |

Affiliated to JNTUA, Ananthapuramu,

Recognized by the UGC under Section 12(B) and 12(F)|

Approved by AICTE, New Delhi

R.V.S. NAGAR, TIRUPATI ROAD, CHITTOOR – 517127 (A.P) – INDIA

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Academic Regulations (R23)for B.Tech (Regular-Fulltime)

(Effective for the students admitted into I year from the Academic Year 2023-24onwardsand B.Tech. (Lateral Entry Scheme) for the batches admitted from the Academic Year 2024-25 onwards)

1. Award of the Degree

(a) Award of the B.Tech. Degree / B.Tech. Degree with a Minor if he/she fulfils the following:

(i) Pursues a course of study for not less than four academic years and not more than eight academic years. However, for the students availing Gap year facility this period shall be extended by two years at the most and these two years would in addition to the maximum period permitted for graduation (Eight years).

(ii) Registers for160 credits and secures all 160 credits.

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

(i) Studentsecuresadditional15creditsfulfillingalltherequisitesofaB.Tech.program i.e., 160 credits.

(ii) Registering for Honors is optional.

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

2. Students, who fail to fulfil all the academic requirements for the award of the degree within eight academic years from the year of their admission, shall forfeit their seat in B.Tech. course and their admission stands cancelled. This clause shall be read alongwithclause1 a) i).

3. Admissions

AdmissiontotheB.TechProgramshallbemadesubjecttotheeligibility,qualifications and specialization prescribed by the A.P. State Government/University from time to time. Admissions shall be made either based on the merit rank obtainedbythestudentinthecommonentranceexaminationconductedbytheA.P. Government/UniversityoranyotherorderofmeritapprovedbytheA.P.Government/University,subjecttoreservationsasprescribedbytheGovernment/University from timeto time.

4. Programrelatedterms

Credit: A unit by which the course work is measured. It determines the number ofhoursofinstructionrequiredperweek.Onecreditisequivalenttoonehourofteaching(Lecture/Tutorial)ortwohours ofpracticalwork/fieldworkperweek.

CreditDefinition:

1Hr. Lecture(L)per week	1credit
1Hr.Tutorial (T)per week	1credit
1Hr.Practical(P)per week	0.5credit
2Hrs.Practical(Lab)per week	1credit

a) ***Academic Year:*** Two consecutive (one odd + one even) semesters constitute one academic year.

b) ***ChoiceBasedCreditSystem(CBCS):***TheCBCSprovidesachoiceforstudentsto select from the prescribed courses.

5. Semester/Credits:

i) A semester comprises 90 instructional days and an academic year is divided into two semesters.

ii) Thesummertermisforeightweeksduringsummervacation.Internship/apprenticeship / work-based vocational education and training can be carried out during the summer term, especially by students who wish to exit after two semesters or four semesters of study.

iii) Regular courses may also be completed well in advance through MOOCs satisfying pre requisites.

6. Structure of the Undergraduate Programme:

All courses offered for the under graduate program (B.Tech.) are broadly classified as follows:

S.No.	Category	Breakup ofCredits (Total160)	Percentage of totalcredits	AICTE Recommendation(%)
1.	Humanities and Social Science including Management (HM)	13	8 %	8 –9%
2.	Basic Sciences (BS)	20	13 %	12 -16%
3.	Engineering Sciences(ES)	23.5	14%	10– 18%
4.	Professional Core(PC)	54.5	34 %	30– 36%
5.	Electives – Professional (PE) &Open(OE);Domain Specific Skill Enhancement Courses(SEC)	33	21 %	19 -23%
6.	Internships & Project work(PR)	16	10 %	8 –11%
7.	Mandatory Courses(MC)	Non-credit	Non-credit	-

7. Course Classification:

All subjects /courses offered for the undergraduate programme in Engineering &Technology (B.Tech. degree programmes)are broadly classified as follows:

S.No.	Broad Course Classification	Course Category	Description
1.	Foundation Courses	Foundation courses	IncludesMathematics,PhysicsandChemistry;fundamentalengineeringcourses;humanities,socialsciences and management courses
2.	Core Courses	Professional Core Courses(PC)	Includes subjects related to the parent discipline/department/branch of Engineering
3.	Elective Courses	Professional Elective Courses(PE)	Includeselectivesubjectsrelatedtotheparentdiscipline/department/branchofEngineering
		Open Elective Courses(OE)	Elective subjects which include interdisciplinary subjects or subjects in an area outside the parent discipline/ department/branch of Engineering
		Domain specific skill enhancement courses(SEC)	interdisciplinary/job-oriented/domain co urses which are relevant to the industry
4.	Project &Internships	Project	B.Tech. Projector Major Project
		Internships	Summer Internships–Community based and Industry Internships; In Semester Internship
5.	Audit Courses	Mandatory non-credit courses	Covering subjects of developing desired attitude among the learners

8. Programme Pattern

i. Total duration of the of B.Tech(Regular) Programme is four academic years.
ii. Each academic year of study is divided into two semesters.
iii. Minimumnumberofinstructionaldaysineachsemesteris90days.
iv. There shall be mandatory student induction program for fresher's, with a three-week duration before the commencement of first semester. Physical activity,CreativeArts,UniversalHumanValues,Literary,ProficiencyModules,LecturesbyEminentPeople,VisitstolocalAreas,FamiliarizationtoDept./ Branch & Innovations etc., are included as per the guidelines issued byAICTE.
v. Health/wellness/yoga/sports and NSS /NSS /Scouts & Guides / Communityserviceactivitiesarememandatoryascreditcoursesforallthe undergraduatestudents.
vi. Courses like Environmental Sciences, Indian Constitution, Technical

PaperWriting&IPRareofferedasnon-creditmandatorycoursesforalltheundergraduatestudents.

vii. Design Thinking for Innovation & Tinkering Labs are made mandatory ascredit courses for all theundergraduatestudents.

viii. Increased flexibility for students through an increase in the elective componentof the curriculum, with 05 Professional Elective courses and 04 Open Electivecourses.

ix. ProfessionalElectiveCourses,includetheelectivecoursesrelevanttothechosenspecialization/branch.Proper choice of professionalelective coursescan lead to students specializing in emerging areas within the chosen field ofstudy.

x. A total of 04 Open Electives are offered in the curriculum. A student cancomplete the requirement for B.Tech. Degree with a Minor within the 160credits by opting for the courses offered through various verticals/tracks underOpenElectives.

xi. While choosing the electives, students shall ensure that they do not opt for thecourseswith syllabuscontents similartocourses alreadypursued.

xii. Apoolofinterdisciplinary/job-oriented/domainskillcourseswhicharerelevant to the industry are integrated into the curriculum of all disciplines.There shall be 05 skill-oriented courses offered during III to VII semesters.Amongthefiveskillcourses,fourcoursesshallfocusonthebasicandadvanced skills related to the domain/interdisciplinary courses and the othershallbeasoft skills course.

xiii. Students shall undergo mandatory summer internships, for a minimum of eightweeks duration at the end of second and third year of the programme. Theinternship at the end of second year shall be community oriented and industryinternshipat theend ofthirdyear.

xiv. Thereshallalsobemandatoryfullinternshipinthefinal semesteroftheprogrammealongwith theproject work.

xv. Undergraduate degree with Honors is introduced by the Institution for thestudentshavinggood academicrecord.

xvi. The collegeshalltakemeasurestoimplementVirtualLabs(https://www.vlab.co.in)whichprovideremoteaccesstolabsinvariousdisciplines of Engineering and will help student in learning basic and advancedconcept through remote experimentation. Student shall be made to work onvirtuallab experiments duringtheregularlabs.

xvii. The college shallassign a faculty advisor/mentor after admission to a groupofstudentsfromsamedepartmenttoprovideguidanceincoursesregistration/careergrowth/placements/opportunitiesforhigherstudies/GATE/othercompetitiveexams etc.

xviii. Preferably 25% of course work for the theory courses in every semester shallbeconducted in theblended modeoflearning.

9. Evaluation Process

The performance of a student in each semester shall be evaluated subject wise with amaximum of 100 marks for theory and 100marks for practical subject. SummerInternships shall be evaluated for 50 marks, Full Internship &Project work in finalsemester shall be evaluated for 200 marks, mandatory courses with no credits shall beevaluatedfor30 mid semestermarks.

A student has to secure not less than 35% of marks in the end examination and aminimum of 40% of marks in the sum total of the mid semester and end examinationmarks taken together for the theory, practical, design,drawing subject or project etc.Incaseofamandatorycourse, he/sheshould secure40%ofthetotal marks.

TheoryCourses

AssessmentMethod	Marks
ContinuousInternalAssessment	30
SemesterEndExamination	70
Total	**100**

i) For theory subject, thedistribution shall be 30 marks forInternal Evaluation and70marks fortheEnd-Examination.
ii) For practical subject, the distribution shall be 30 marks for Internal Evaluation and70marks fortheEnd-Examination.
iii) Ifany course contains two different branch subjects, the syllabus shall be writtenintwopartswith3unitseach(Part-AandPart-B)andexternalexaminationquestionpapershall besetwith two parts eachfor35 marks.
iv) Ifanysubjectishavingboththeoryandpracticalcomponents,theywillbeevaluated separately as theory subject and practical subject. However, they will begiven same subject code with an extension of 'T' for theory subject and 'P' forpracticalsubject.

a) ContinuousInternalEvaluation

i) For theory subjects, during the semester, there shall be two midterm examinations.Each midterm examination shall be evaluated for 30 marks of which 10 marks forobjective paper (20 minutes duration), 15 marks for subjective paper (90 minutesduration)and 5 marksforassignment.
ii) Objective paper shall contain for 05 short answer questions with 2 marks each ormaximum of 20 bits for 10 marks. Subjective paper shall contain 3 either or typequestions (totally six questions from 1 to 6) of which student has to answer onefrom each either-or type of questions. Each question carries 10 marks. The marksobtainedin thesubjectivepaperarecondensed to 15 marks.

Note:

- The objective paper shall be prepared in line with the quality of competitiveexaminationsquestions.
- The subjective paper shall contain 3 either or type questions of equal weightageof10 marks. Anyfraction shall beroundedoffto thenexthighermark.
- The objective paper shall be conducted by the respective institution on the dayofsubjectivepapertest.
- Assignments shall be in the form of problems, mini projects, design problems,sliptests,quizzesetc.,dependingonthecoursecontent.Itshould becontinuous assessment throughout the semester and the average marks shall beconsidered.

iii) If the student is absent for the mid semester examination, no re-exam shall beconducted and mid semester marks for that examination shall be considered aszero.

iv) First midterm examination shall be conducted for I, II units of syllabus with oneeither or type question from each unit and third either or type question from boththe units. The second midterm examination shall be conducted for III, IV and Vunitswith oneeitherortypequestion from each unit.

v) Final mid semester marks shall be arrived at by considering the marks secured bythe student in both the mid examinations with 80% weight age given to the bettermidexam and 20%to theother.

ForExample:

Marks obtained in first mid: 25Marksobtainedinsecondmid:20
Final mid semesterMarks: (25x0.8) +(20x0.2) =24

If the student is absent for any one midterm examination, the final mid semestermarks shall be arrived at by considering 80% weight age to the marks secured bythestudent intheappeared examinationand zero totheother. ForExample:

Marks obtained in first mid: AbsentMarksobtained insecond mid:25
Finalmid semesterMarks: (25x0.8) +(0x0.2) =20

b) **EndExaminationEvaluation:**

Endexaminationoftheorysubjectsshallhavethe followingpattern:

i) Thereshallbe6questionsandallquestionsare compulsory.

ii) QuestionIshall contain10compulsoryshort answerquestionsforatotal of20markssuch that each question carries 2 marks.Thereshallbe2 shortanswerquestionsfrom eachunit.

iii) Ineachofthequestionsfrom2to6

a) Thereshallbeeither/ortypequestionsof10marks each. Student

 shall

answeranyoneofthem.

b) The questionsfrom2to6shallbesetbycoveringoneunitof thesyllabusforeachquestion.

Endexaminationoftheorysubjectsconsistingoftwopartsofdifferentsubjects,forExample:BasicElectrical&ElectronicsEngineeringshallhavethefollowingpattern:

i) Questionpapershallbeintwopartsviz.,PartAandPartBwithequalweightageof 35marks each.
ii) Ineachpart,question1shallcontain5compulsoryshortanswerquestionsforatotalof5 marks such that eachquestioncarries 1mark.
iii) Ineachpart,questionsfrom2to4,thereshallbeeither/ortypequestionsof10markseach.Student shall answeranyoneofthem.
iv) Thequestionsfrom2to4shallbesetbycoveringoneunitofthesyllabusforeachquestion.

PracticalCourses

AssessmentMethod	Marks
ContinuousInternalAssessment	30
SemesterEndExamination	70
Total	**100**

b) For practical courses, there shall be a continuous evaluation during the semesterfor30 sessional marksandend examinationshall befor70 marks.

c) Day-to-dayworkinthelaboratoryshallbeevaluatedfor15marksbytheconcernedlaboratory teacherbasedontherecord/vivaand15marksfortheinternaltest.

d) Theendexamination shallbeevaluatedfor70marks,conducted bytheconcernedlaboratoryteacherandaseniorexpert inthesubject fromthesamedepartment.

- Procedure:20marks
- Experimentalwork&Results: 30marks
- Vivavoce:20marks.

In a practical subject consisting of two parts (Eg: Basic Electrical & ElectronicsEngineeringLab),theendexaminationshallbeconductedfor70marksasasinglelaboratoryin3hours.Midsemesterexaminationshallbeevaluated asabove for 30 marks in each part and final mid semester marks shall be arrived byconsideringtheaverageofmarks obtained in twoparts.

e) For the subject having design and/or drawing, such as Engineering Drawing, thedistribution of marks shall be 30 for mid semester evaluation and 70 for endexamination.

AssessmentMethod	Marks
ContinuousInternalAssessment	30
SemesterEndExamination	70
Total	**100**

Day-to-day work shall be evaluated for 15 marks by the concerned subject teacherbased on the reports/submissions prepared in the class. And there shall be twomidterm examinations in a semester for durationof 2 hours each for 15 markswith weight age of 80% to better mid marks and 20% for the other. The subjectivepaper shall contain 3 either or type questions of equal weight age of 5 marks.There shall be no objective paper in mid semester examination. The sum of day-to-day evaluation and the mid semester marks will be the final sessional marks forthesubject.

TheendexaminationpatternforEngineeringGraphics,shallconsistsof5questi ons, either/or type, of 14 marks each. There shall be no objective typequestions in the end examination. However, the end examination pattern for othersubjects related to design/drawing, multiple branches, etc is mentioned along withthesyllabus.

f) There shall be no external examination for mandatory courses with zero credits.However, attendance shall be considered while calculating aggregate attendanceand student shall be declared to have passed the mandatory course only whenhe/she secures40% or more in the internalexaminations.Incase, thestudentfails, a re-examination shall be conductedfor failed candidates for 30markssatisfyingtheconditionsmentionedin item 1&2 oftheregulations.

g) The laboratory records and mid semester test papers shall be preserved for aminimum of 3 years in the respective institutions as per the University norms andshall be produced to the Committees of the University as and when the same areaskedfor.

10. SkillorientedCourses

i) Thereshallbe fiveskill-orientedcoursesofferedduringIIItoVIIsemesters.

ii) Out of the five skill courses two shall be skill-oriented courses from the samedomain.Oftheremainingthreeskillcourses,oneshallbeasoftskillcoursea ndtheremainingtwoshallbeskill-advancedcoursesfromthesamedomain/Interdisciplinary/Joboriented.

iii) Thecourseshallcarry100marksandshallbeevaluatedthroughcontinuousasse ssments during the semester for 30 sessional marks and end examination shallbefor70marks.Day-to-dayworkintheclass/laboratoryshallbeevaluatedfor30 marks by the

concerned teacher based on the regularity/assignments/viva/midsemestertest.Theendexaminationsimilart opracticalexaminationpatternshallbe conducted by the concerned teacher and an expert in the subject nominated bytheprincipal.

iv) The Head of the Department shall identify a faculty member as coordinator for thecourse. A committee consisting of the Head of the Department, coordinator and asenior Faculty membernominated by the Headof the Departmentshallmonitorthe evaluation process. The marks/grades shall be assigned to the students by theabovecommitteebased on theirperformance.

v) The student shall be given anoption to choose either the skill courses beingofferedbythecollegeortochooseacertificatecoursebeingofferedbyindu stries/Professional bodies or any other accredited bodies. If a student choosesto take a Certificate Course offered by external agencies, the credits shall beawarded to the student upon producing the Course Completion Certificate from theagency. A committee shall be formed at the level of the college to evaluate thegrades/marks given for a course by external agencies and convert to the equivalentmarks/grades.

vi) Therecommendedcoursesofferedbyexternalagencies,conversionsandappro priate grades/marks are to be approved by the institutionat the beginning ofthe semester. The principal of the college shall forward such proposalsto theUniversityforapproval.

vii) If a student prefers to take a certificate course offered by external agency, thedepartment shall mark attendance of the student for the remaining courses in thatsemester excluding the skill course in all the calculations of mandatory attendancerequirementsuponproducingavalid certificate asapprovedbythe University/institution.

11. MassiveOpenOnlineCourses(MOOCs):

A Student has to pursue and complete onecourse compulsorily through MOOCsapproved by the University/institution. A student can pursue courses other than core throughMOOCs and it is mandatory to complete one course successfully through MOOCs forawarding the degree. A student is not permitted to register and pursue core coursesthroughMOOCs.

A student shall register for the course (Minimum of either 8 weeks or 12 weeks)offered through MOOCs with the approval of Head of the Department. The Head ofthe Department shall appoint one mentor to monitor the student's progression. Thestudent needs to earn a certificate by passing the exam. The student shall be awardedthecreditsassignedinthecurriculumonlybysubmissionofthecertificate. Examinationfee, ifany,will bebornebythestudent.

Studentswhohavequalifiedintheproctoredexaminationsconductedthrough MOOCs platform can apply for credit transfer as specified and are exempted fromappearing internal as well as external examination (for the specified equivalent creditcourseonly) conducted bytheuniversity.

Necessary amendments in rules and regulations regarding adoption of MOOC courseswouldbeproposed from timeto time.

12. CreditTransferPolicy

Adoption of MOOCs is mandatory, to enable Blended model of teaching-learning asalsoenvisagedintheNEP2020.AsperUniversityGrantsCommission(CreditFramework for Online Learning Courses through SWAYAM) Regulation, 2016, theUniversity/Institution shall allow up to a maximum of 20% of the total courses being offered in aparticularprogrammei.e.,maximum of32 creditsthroughMOOCs platform.

i) The University/Institution shall offer credit mobility for MOOCs and give the equivalentcreditweightagetothestudentsforthecreditsearnedthroughonlinelearningcourses.
ii) StudentregistrationfortheMOOCsshallbeonlythroughtherespectivedepartment of the institution, it is mandatory for the student to share necessaryinformationwith thedepartment.
iii) Credit transfer policy will be applicable to the Professional & Open Electivecoursesonly.
iv) Theconcerneddepartmentshallidentifythecoursespermittedforcredittransfer.
v) The University/institution shall notify at the beginning of semester the list oftheonlinelearningcourses eligibleforcredit transfer.
vi) The institution shall designate a faculty member as a Mentor for each course toguidethestudents fromregistrationtillcompletion ofthecredit course.
vii) TheUniversity/institutionshallensurenooverlapofMOOCexamswiththatof theUniversity/institution examination schedule. In case of delay in results, the University/institution willre-issuethemarks sheet forsuch students.
viii) StudentpursuingcoursesunderMOOCsshallacquiretherequiredcreditsonly aftersuccessfulcompletionofthecourseandsubmittingacertificateissuedby thecompetentauthority along withthepercentageofmarksandgrades.
ix) The institution shall submit the following to the examination section of theuniversity:
    a) ListofstudentswhohavepassedMOOCcoursesinthecurrentsemesteralongwith thecertificateof completion.
    b) Undertakingformfilledbythestudents forcredittransfer.
x) The University / institutionshallresolve any issues thatmay arise in the implementationof this policy from time to time and shall review its credit transfer policy in thelightofperiodicchangesbroughtby

UGC,SWAYAM,NPTEL andstategovernment.

Note: StudentsshallbepermittedtoregisterforMOOCsofferedthroughonlineplatformsapproved bytheUniversityfrom timetotime.

13. AcademicBankofCredits(ABC)

TheUniversity / institutionhasimplementedAcademicBankofCredits(ABC)topromoteflexibilityincurriculumas perNEP 2020 to

i. provideoptionofmobilityforlearnersacrosstheuniversitiesoftheirchoice
ii. provideoptiontogainthecreditsthroughMOOCsfromapproveddigitalplatforms.
iii. facilitateawardofcertificate/diploma/degreeinlinewiththeaccumulatedcreditsin ABC
iv. executeMultipleEntryandExitsystemwithcreditcount,credittransfer andcreditacceptancefromstudents'account.

14. MandatoryInternships

Summer Internships: Two summer internships either onsite or virtual each with aminimum of 08 weeks duration, done at the end of second and third years, respectivelyare mandatory. It shall be completed in collaboration with local industries, Govt.Organizations,constructionagencies,Powerprojects,softwareMNCsoranyindustries in the areas of concerned specialization of the Undergraduate program. Oneof the two summer internships at the end of second year (Community Service Project)shall be society oriented and shall be completed in collaboration with governmentorganizations/NGOs & others. The other internship at the end of third year is IndustryInternship and shall be completed in collaboration with Industries. The student shallregister for the internship as per course structure after commencement of academicyear.TheguidelinesissuedbytheAPSCHE/UniversityshallbefollowedforcarryingoutandevaluationofCommunityServiceProjectand IndustryInternship.

Evaluation of the summer internships shall be through the departmental committee.
AstudentwillberequiredtosubmitasummerinternshipreporttotheconcernedDepartment and appear for an oral presentation before the departmental committeecomprising of Head of the Department, supervisor of the internshipand a seniorfacultymemberofthedepartment.AcertificateofsuccessfulcompletionfromindustryIndustry shall be included in the report. The report and the oral presentation shall carry50% weight age each. It shall be evaluated for 50 external marks. There shall be nointernal marks for Summer Internship. A

student shall secure minimum 40% of marksfor successful completion. In case, if a student fails, he/she shall reappear as and whensemestersupplementaryexaminations areconductedbytheinstitution.

FullSemesterInternshipandProjectwork: Inthefinalsemester,thestudents hould mandatorily register and undergo internship (onsite/virtual) and in parallelhe/sheshouldworkonaproject withwell-definedobjectives.Attheendofthesemester the candidate shall submit an internship completion certificate and a projectreport. A student shall also be permitted to submit project report on the work carriedoutduringtheinternship.

The project report shall be evaluated with an external examiner. The total marks forproject work 200 marks and distribution shall be 60 marks for internal and 140 marksfor external evaluation. The supervisor assesses the student for 30 marks (Report: 15marks, Seminar: 15 marks). At the end of the semester, all projects shall be showcasedat the departmentfor the benefit ofall students and staff andthe same is to beevaluated by the departmental Project Review Committee consisting of supervisor, asenior faculty and HOD for 30 marks. The external evaluation of Project Work is aViva-Voce Examination conducted in the presence of internal examiner and externalexaminerappointed bytheinstitutionand is evaluated for140 marks.

The college shall facilitate and monitor the student internship programs.Completionof internships is mandatory, if any student fails to complete internship, he/she will notbeeligiblefortheawardofdegree.Insuchcases,thestudentshallrepeatandcompletetheinternship.

15. GuidelinesforofferingaMinor

Topromoteinterdisciplinaryknowledgeamongthestudents,thestudentsadmitted into B.Tech. in a major stream/branch are eligible to obtain degree in Minor in anotherstream.

i) TheMinorprogramrequiresthecompletionof12creditsinMinorstreamchosen.
ii) Two courses for 06 credits related to a Minor are to be pursued compulsorily fortheminordegree,butmaybewaivedforstudentswhohavedonesimilar/equivalent courses.If waived for a student, then the student must take anextra elective course in its place.It is recommended that students should completethecompulsorycourses(orequivalents) before registeringfortheelectives.
iii) Electives(minimumof2 courses)tocompleteatotalof12 credits.

Note: A total of 04 Open Electives are offered in the curriculum. A student cancomplete the requirement for Minor by opting for the courses offered through variousverticals/tracksunderOpen Electives.

16. GuidelinesforofferingHonors

The objective of introducing B.Tech. (Hons.) is to facilitate the students to chooseadditionally the specialized courses of their choice and build their competence in aspecialized area in the UG level. The programme is a best choice for academicallyexcellentstudentshavinggoodacademicrecordandinteresttoward shigherstudiesandresearch.

i) Honors is introduced in the curriculum of all B. Tech. programs offering amajor degree and is applicable to all B. Tech (Regular and Lateral Entry)studentsadmitted in Engineering&Technology.

ii) A studentshallearnadditional15creditsfor awardof B.Tech.(Honors)degree from same branch/department/discipline registered for major degree.This is in addition to the credits essential for obtaining the Undergraduatedegreein MajorDiscipline(i.e., 160 credits).

iii) A student is permitted to register for Honors in IV semester after the results ofIII Semester are declared and students may be allowed to take maximum twosubjectspersemesterpertainingtotheHonorsfrom VSemesteronwards.

iv) The Principal of the college shall arrange separate class work andtimetableofthecoursesoffered underHonors program.

v) Courses that are used to fulfil the student's primary major may not be doublecounted towards the Honors. Courses with content substantially equivalent tocoursesin thestudent's primaryMajormaynot becountedtowards theHonors.

vi) Students can complete the courses offered underHonors either in the collegeor in online platforms like SWAYAM with a minimum duration of 12 weeksfor a 3-credit course and 8 weeks duration for a 2-credit course satisfying thecriteriaforcreditmobility.IfthecoursesunderHonorsareofferedinconvent ional mode, then the teaching and evaluation procedure shall be similartoregularB. Tech courses.

vii) The attendance for the registered courses under Honors and regular coursesofferedforMajordegreeinasemesteraretobeconsideredseparately.

viii) A student shall maintain an attendance of 75% in all registered courses underHonorsto beeligiblefor attendingsemesterendexaminations.

ix) A student registered for Honors shall pass in all subjects that constitute therequirement for the Honors degree program. No class/division (i.e., secondclass, first class and distinction, etc.) shall be awarded for Honors degreeprogramme.

x) If a student drops or is terminated from the Honors program, the additionalcredits so far earned cannot be converted into open or core electives; they willremainextra.However,suchstudentswillreceiveaseparategradesheetm

entioningtheadditional courses completed bythem.

xi) TheHonorswillbementionedinthedegreecertificateasBachelorofTechnology (Honors) in XYZ. For example, B.Tech. (Honors) in MechanicalEngineering

EnrolmentintoHonors:

i) Students of a Department/Discipline are eligible to opt for Honors programofferedbythesameDepartment/Discipline
ii) The enrolment of student into Honors is based on the CGPA obtained in themajor degree program. CGPA shall be taken up to III semester in case ofregular entry students and only III semester in case of lateral entry students.Students having 7 CGPA without any backlog subjects will be permitted toregisterforHonors.
iii) If a student is detained due to lack of attendance either in Major or in Honors,registrationshall becancelled.
iv) Transfer of credits from Honors to regular B. Tech degree and vice-versa shallnotbepermitted.
v) Honorsistobecompletedsimultaneouslywith a Majordegreeprogram.

RegistrationforHonors:

i) The eligible and interested students shall apply through the HOD of his/herparent department. The whole process should be completed within one weekbefore the startof every semester.Selectedstudentsshallbe permittedtoregisterthecourses underHonors.
ii) The selected students shall submit their willingness to the principal throughhis/herparentdepartmentofferingHonors.Theparentdepartment shallmaintaintherecord ofstudent pursuingtheHonors.
iii) The students enrolled in the Honors courses will be monitored continuously.An advisor/mentor from parent department shall be assigned to a group ofstudentsto monitortheprogress.
iv) There is no fee for registration of subjects for Honors program offered inofflineat therespectiveinstitutions.

17. AttendanceRequirements:

i) A student shall be eligible to appear for the institution external examinations ifhe/she acquires a minimum of 40% attendance in each subject and 75% ofattendance in aggregate of all the subjects. b) Condonation of shortage ofattendance in aggregate up to 10% (65% and above and below 75%) in eachsemestermaybegrantedbytheCollegeAcademic Committee.
ii) ShortageofAttendancebelow65%inaggregateshallinNOCASEbecondoned.
iii) Astipulatedfeeshallbepayabletowardscondonationofshortageofattendan

ceto theinstitution.

iv) Students whose shortage of attendance is not condoned in any semester are noteligible to take their end examination of that class and their registration shallstandcancelled.

v) A student will not be promoted to the next semester unless he satisfies theattendance requirements of the present semester. They may seek readmissionforthat semester from thedateofcommencement ofclass work.

vi) If any candidate fulfils the attendance requirement in the present semester, heshallnot beeligibleforreadmission intothesameclass.

vii) If the learning is carried out in blended mode (both offline & online), then thetotal attendance of the student shall be calculated considering the offline andonlineattendanceofthestudent.

viii) ForinductionprogrammeattendanceshallbemaintainedasperAICTEnorms.

18. Conduct of Semester End Examination and Evaluation:

18.1 Semester end examination shall be conducted by the Controller of Examination (COE) by inviting 50% Question Papers from the External and 50% Question papers from the Internal Subject Experts. Principal will decide the External and Internal subject experts.

18.2 The answer papers of semester end examination should be evaluated externally / internally.

18.3 The marks for the internal evaluation components will be added to the external evaluation marks secured in the Semester – End examinations, to arrive at total marks for any subject in that semester.

18.4 Performance in all the subjects is tabulated program-wise and will be scrutinized by the office of the Controller of Examinations. Total marks obtained in each subject are converted into letter grades. Finally subject-wise marks and grades details, subject-wise and branch-wise pass percentages are calculated through software.

18.5Results Committee: Results Committee comprising of Principal, Controller of Examinations, Additional Controller of Examinations (Confidential), One Senior Professor nominated by the Principal and the University Nominee will oversee the details of marks, grades and pass percentages of all the subjects and branch-wise pass percentages.

18.6 Office of the Controller of Examinations will generate student-wise result sheets and the same will be published through college website.

18.7 Student-wise Grade Sheets are generated and issued to the students.

19. PromotionRules:

The following academic requirements must be satisfied in addition to the attendancerequirementsmentioned in section 16.

i) A student shall be promoted from first year to second year if he/she fulfils theminimumattendancerequirement as perUniversity / Institutionnorms.

ii) A student will be promoted fromII toIII year if he/she fulfils the academicrequirementof securing 40% of the credits (any ***decimal*** fraction shouldbe ***rounded off***to ***lower*** digit) up to in the subjects that have been studied up to IIIsemester.

iii) A student shall be promoted from III year to IV year if he/she fulfils the academicrequirementsofsecuring40% of the credits (any ***decimal*** fraction shouldbe ***roundedoff*** to ***lower*** digit)inthesubjectsthathavebeenstudieduptoVsemester.

And in case a student is detained for want of credits for a particular academicyearbyii)&iii)above,thestudentmaymakeupthecreditsthroughsup plementary examinations and only after securing the required credits he/sheshall be permitted to join in the V semester or VII semester respectively as thecasemaybe.

iv) When a studentis detained due to lack of credits/shortage of attendance he/shemay be re-admitted when the semester is offered after fulfilment of academicregulations. In such case, he/she shall be in the academic regulations into whichhe/sheis readmitted.

20. Grading:

As a measure of the student's performance, a 10-point Absolute Grading System usingthefollowing LetterGradesandcorrespondingpercentageofmarks shall befollowed:

Aftereachcourseisevaluatedfor100marks,themarksobtainedineachcoursewillb e converted to a corresponding letter grade as given below, depending on the range inwhichthemarks obtained bythestudentfall.

StructureofGradingofAcademicPerformance

Range in which the marks inthesubjectfall	Grade	Gradepoints Assigned
90 &above	S (Superior)	10
80-89	A(Excellent)	9
70-79	B(VeryGood)	8
60-69	C(Good)	7
50-59	D(Average)	6

40-49	E(Pass)	5
< 40	F(Fail)	0
Absent	Ab(Absent)	0

i) A student obtaining Grade 'F' or Grade 'Ab' in a subject shall beconsidered failedandwillberequiredtoreappearforthatsubjectwhenitisofferedthenextsupplementaryexamination.

ii) For non-credit audit courses, "Satisfactory" or "Unsatisfactory" shall beindicatedinsteadofthelettergradeandthiswillnotbecountedforthecomputationofSGPA/CGPA/Percentage.

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

The Semester Grade Point Average (SGPA) is the ratio of sum of the product of thenumber of credits with the grade point scored by a student in all the courses taken by astudentand thesum ofthenumberof creditsof allthe coursesundergone by astudent,i.e.,

$$SGPA=\Sigma(C_i\times G_i)/\Sigma C_i$$

Where, $C_i$is the number of credits of the i^{th} subject and $G_i$is the grade pointscored bythestudentintheithcourse.

The Cumulative Grade Point Average (CGPA) will be computed in the same mannerconsideringallthecoursesundergonebyastudentoverallthesemestersofaprogram,i.e.,

$$CGPA=\Sigma(C_i\times S_i)/\Sigma C_i$$

Where"S_i"istheSGPAoftheithsemesterand$C_i$isthetotalnumber$_{ofcreditsupto}$ thatsemester.

BothSGPAandCGPAshallberoundedoffto2decimalpointsandreportedinthetranscripts.

WhilecomputingtheSGPAthesubjectsinwhichthestudentisawardedZerogradepoints willalso beincluded.

Grade Point: It is a numerical weight allotted to each letter grade on a 10-point scale.Letter Grade: It is an index of the performance of students in a said course. Grades aredenotedbytheletters S, A,B,C,Dand F.

Award of Class:

After a student has satisfied the requirements prescribed for the completion of theprogram and is eligible for the award of B. Tech. Degree, he/she shall be placed in oneofthefollowingfourclasses:

ClassAwarded	**CGPASecured**
FirstClasswithDistinction	≥7.5

FirstClass	≥6.5<7.5
SecondClass	≥5.5 <6.5
PassClass	≥5.0 <5.5

CGPAtoPercentageconversionFormula – (CGPA– 0.5) x10

21. With–holdingofResults

If the candidate has any dues not paid to the university or if any case of indiscipline ormalpractice is pending against him/her, the result of the candidate shall be withheld insuchcases.

22. Personal Verification /Recounting / Revaluation / Final Valuation

22.1 Personal Verification of Answer Scripts:

Candidates appear in a particular semester end examinations may appeal for verification of their answer script(s) for arithmetic correction in totaling of marks and any omission / deletion in evaluation within 7 days from the date of declaration of results at the office of the Controller of Examinations on the prescribed proforma and by paying the prescribed fee per answer script.

It is clarified that personal verification of answer script shall not tantamount to revaluation of answer script. This is only a process of reverification by the candidate. Any mistake / deficiency with regard to arithmetic correction in totaling of marks and any omission / deletion in evaluation if found, the institution will correct the same.

22.2 Recounting / Revaluation:

Students shall be permitted for request for recounting/revaluation of the Semester-End examination answer scripts within a stipulated period after payment of prescribed fee. After recounting or revaluation, records are updated with changes if any and the student will be issued a revised grade sheet. If there are no changes, the same will be intimated to the students.

22.3 Final Valuation:

Students shall be permitted for request for final valuation of the Semester–End Examination answer scripts within a stipulated period after the publication of the revaluation results by paying the necessary fee. The final valuation shall be carried out by an expert not less than Associate Professor as per the scheme of valuation supplied by the examination branch in the presence of the student, Controller of Examinations and Principal. However students are not permitted to discuss / argue with the examiner. If the increase in marks after final valuation is equal to or more than 15% of the previous valuation marks, the marks obtained after final valuation shall be treated as final. If the variation of marks after final valuation is less than 15% of the previous valuation marks, then the earlier valuation marks shall be treated as the final marks.

23. MultipleEntry/ExitOption

(a) ExitPolicy:

Thestudentscanchoosetoexitthefour-yearprogrammeattheendoffirst/second/thirdyear.

i) **UG Certificate in (Field of study/discipline)** - Programme duration: First year(first two semesters) of the undergraduate programme, 40 credits followed by anadditional exit 10-credit bridge course(s) lasting two months, including at least 6-creditjob-specificinternship/apprenticeshipthatwouldhelpthecandidatesacquirejob-readycompetencies required to entertheworkforce.

ii) **UG Diploma (in Field of study/discipline)** - Programme duration: First two years(first four semesters) of the undergraduate programme, 80 credits followed by anadditional exit 10-credit bridge course(s) lasting two months, including at least 6-creditjob-specificinternship/apprenticeshipthatwouldhelpthecandidatesacquirejob-readycompetencies required toentertheworkforce.

iii) **BachelorofScience(inFieldofstudy/discipline)**i.e.,**B.Sc.Engineering in(Fieldofstudy/discipline)**- Programme duration:Firstthreeyears (firstsixsemesters)oftheundergraduateprogramme, 120 credits.

b) EntryPolicy:

Modalitiesonmultiple entry by thestudentintotheB.Tech.programmewillbeprovidedin duecourseoftime.

Note: TheUniversity / institutionshallresolveanyissuesthatmayariseintheimplementationof Multiple Entry and Exit policies from time to time and shall review thepolicies in the light of periodic changes brought by UGC, AICTE and Stategovernment.

24. GapYearConcept:

Gap year concept for Student Entrepreneur in Residence is introduced and outstandingstudentswhowishtopursueentrepreneurship/becomeentrepreneur areallowedtotake a break of one year at any time after II year to pursue full-time entrepreneurshipprogramme/to establishstart-ups. This period may be extended to two years at themost and these two years would not be counted for the time for the maximum time forgraduation.Theprincipalofthecollegeshallforwardsuchproposalssubmitted by the students to the University. An evaluation committee constituted bythe institutionshall evaluate the proposal submitted by the student and the committeeshalldecidewhetherto permitthestudent(s) to avail theGap Yearornot

25. TransitoryRegulations:

Discontinued, detained, or failed candidates are eligible for readmission as andwhen the semester is offered after fulfilment of academic regulations. Candidateswhohavebeendetainedforwantofattendanceornotfulfilledacademic requirementsorwhohavefailedafterhavingundergonethecourseinearlierregulations or have discontinued and wish to continue the course are eligible foradmission into the unfinished semester from the date of commencement of classwork with the same or equivalent subjects as and when subjects are offered, subjectto Section 2 and they will follow the academic regulations into which they arereadmitted.

Candidates who are permitted to avail Gap Year shall be eligible for re-joining intothe succeeding year of their B. Tech from the date of commencement of class work,subjectto Section**2**and they willfollow the academic regulations into which theyarereadmitted.

26. MinimumInstruction DaysforaSemester:

Theminimuminstructionaldaysexcludingexamsforeach semestershallbe 90days.

27. MediumofInstruction:

ThemediumofinstructionoftheentireB.Techundergraduateprogrammeinengineering & Technology (including examinations and project reports) will be inEnglishonly.

28. StudentTransfers:

StudenttransfersshallbeasperttheguidelinesissuedbytheGovernmentofAndhra Pradeshand theUniversity / institution from timeto time.

29. GeneralInstructions:

i. Theacademicregulationsshouldbereadasawholeforpurposeofanyinterpretation.
ii. Malpracticesrules-nature andpunishmentsareappended.
iii. Wherethewords"he", "him","his",occurin theregulations,theyalsoinclude"she","her", "hers", respectively.
iv. In the case of any doubt or ambiguity in the interpretation of the above rules, thedecisionoftheVice-Chancellor / Head of the Institutionis final.
v. The University / institution may change or amend theacademic regulations or syllabi atany time and the changes or amendments shall be made applicable to all thestudentson rollswith effect fromthedates notifiedbytheUniversities.

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ACADEMICREGULATIONS(R23)
FORB.TECH.(LATERALENTRYSCHEME)

*(Effectiveforthestudentsadmittedinto IIyearthrough LateralEntrySchemefromtheAcademicYear **2024-25**onwards)*

1. Awardof theDegree

(a) Award of the B.Tech. Degree / B.Tech. Degree with a Minor if he/she fulfils thefollowing:

(i) Pursues a course of study for not less than three academic years and notmore than six academic years. However, for the students availing Gapyear facility this period shall be extended by two years at the most andthese two years would in addition to the maximum period permitted forgraduation(Sixyears).

(ii) Registers for120creditsandsecuresall120credits.

(b) Awardof B.Tech.degreewithHonors ifhe/she fulfilsthefollowing:

(i) Studentsecuresadditional15creditsfulfillingalltherequisitesofaB.Tech.program i.e., 120 credits.

(ii) RegisteringforHonorsisoptional.

(iii) HonorsistobecompletedsimultaneouslywithB.Tech.programme.

2. Students,whofailtofulfiltherequirementfortheawardofthedegreewithinsixconsecutiveacademicyears fromtheyearofadmission, shallforfeittheirseat.

3. MinimumAcademicRequirements

The following academic requirements have to be satisfied in addition to the requirementsmentioned initem no.**2**

i. A student shall be deemed to have satisfied the minimum academic requirementsand earned the credits allotted to each theory, practical, design, drawing subject orproject if he secures not less than 35% of marks in the end examination and aminimum of 40% of marks in the sum total of the mid semester evaluation and endexaminationtaken together.

ii. A student shall be promoted from III year to IV year if he/she fulfils the academicrequirementsofsecuring40%ofthecredits(anydecimalfractionshould beroundedoffto lowerdigit) inthesubjects thathavebeenstudiedup toVsemester.

Andincaseifstudentisalreadydetainedforwantofcreditsforparticularacademic year, the student may make up the credits through supplementary examsof the above exams before the commencement of IV year I semester class work ofnextyear.

4. CoursePattern

i) Theentire courseofstudyisthreeacademicyearsonsemesterpattern.

ii) A student eligible to appear for the end examination in a subject but

absent at it orhasfailedintheendexaminationmayappearforthatsubjectatthenextsupplementaryexamination offered.

iii) Whenastudentisdetainedduetolackofcredits/shortageofattendancethestudentmaybere-admittedwhenthesemesterisofferedafterfulfilmentofacademic regulations, the student shall be in the academic regulations into whichhe/sheis readmitted.

5. AllotherregulationsasapplicableforB.Tech.Four-yeardegreecourse(Regular)willholdgood forB. Tech. (Lateral EntryScheme).

RULES FOR DISCIPLINARY ACTION FOR MALPRACTICE / IMPROPER CONDUCT IN EXAMINATIONS

	Nature of Malpractices / Improper Conduct	Punishment
	If the candidate	
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.
(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.
3.	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 to appear for the remaining examinations of the subjects of that Semester/year.
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 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 for two consecutive semesters from class work and all University examinations. The continuation of the course by the candidate is subject to the academic regulations in connection with forfeiture of seat.
5.	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 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 for two consecutive semesters from class work and all University examinations. The continuation of the course by the candidate is subject to the academic regulations in connection with forfeiture of seat.
6.	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 of seat.
7.	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 University

		examinations. The continuation of the course by the candidate is subject to the academic regulations in connection with forfeiture of seat. If the impostor is an outsider, he will be handed over to the police and a case is registered against him.
8.	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 or 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.
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.	Uses objectionable, abusive or offensive language in the answer paper or in letters to the examiners or writes to the	Cancellation of the performance in that subject.

	examiner requesting him to award pass marks.	
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 Examination committee for further action to award suitable punishment.	

B.TECH. - COURSE STRUCTURE – R23
(Applicable from the academic year 2023-24 onwards)

INDUCTION PROGRAMME

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

SRI VENKATESWARA COLLEGE OF ENGINEERING AND TECHNOLOGY
(AUTONOMOUS)
DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Course Structure & Scheme of Examination

I B.Tech I Semester-EEE **Regulations: R23**

S. No	Category	Course Code	Course Title	Hours per week			Credits	Scheme of Examination Max. Marks		
				L/D	T	P		CIA	SEE	Total
1	ES	23AEE01	Basic Electrical and Electronics Engineering	3	0	0	3	30	70	100
2	ES	23AME01	Engineering Graphics	1	0	4	3	30	70	100
3	PC	23ACS01	Introduction to programming	3	0	0	3	30	70	100
4	BS&H	23AHS04	Linear Algebra and calculus	3	0	0	3	30	70	100
5	BS&H	23AHS05	Engineering Physics	3	0	0	3	30	70	100
6	ES	23AIT01	IT Workshop	0	0	2	1	30	70	100
7	ES	23AEE02	Electrical and Electronics Engineering Workshop	0	0	3	1.5	30	70	100
8	PC	23ACS02	Computer Programming Lab	0	0	3	1.5	30	70	100
9	BS&H	23AHS09	Engineering Physics Lab	0	0	2	1	30	70	100
10	MC	23AHS10	Health and Wellness, Yoga and Sports	0	0	1	0.5	100	00	100
TOTAL				**13**	**0**	**15**	**20.5**	**370**	**630**	**1000**

I B.Tech II Semester, EEE

S.No	Category	Course code	Course title	Hours per week			Credits	Scheme of Examination Max. Marks		
				L/D	T	P		CIA	SEE	Total
1	BS&H	23AHS01	Communicative English	2	0	0	2	30	70	100
2	ES	23ACE01	Basic Civil and Mechanical Engineering	3	0	0	3	30	70	100
3	BS&H	23AHS02	Chemistry	3	0	0	3	30	70	100
4	PC	23AEE03	Electrical Circuits Analysis – I	3	0	0	3	30	70	100
5	BS&H	23AHS11	Differential Equations and vector calculus	3	0	0	3	30	70	100
6	ES	23AME02	Engineering Workshop	0	0	3	1.5	30	70	100
7	PC	23AEE04	Electrical Circuits Lab	0	0	3	1.5	30	70	100
8	BS&H	23AHS06	Communicative English Lab	0	0	2	1	30	70	100
9	BS&H	23AHS07	Chemistry Lab	0	0	2	1	30	70	100
10	MC	23AHS12	NSS/NCC/Scouts and Guides / Community Service	0	0	1	0.5	100	00	100
TOTAL				**14**	**0**	**11**	**19.5**	**370**	**630**	**1000**

SRI VENKATESWARA COLLEGE OF ENGINEERING AND TECHNOLOGY
(AUTONOMOUS)
DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Course Structure & Scheme of Examination

II B.Tech I Semester-EEE **Regulations: R23**

S. No	Category	Course Code	Course Title	Hours per week			Credits	Scheme of Examination Max. Marks		
				L	T	P		CIA	SEE	Total
1	BS	23AHS14	Complex Variables & Numerical Methods	3	0	0	3	30	70	100
2	BS	23AMB01	Universal Human Values Understanding Harmony	2	1	0	3	30	70	100
3	PC	23AEE07	Electromagnetic Field Theory	3	0	0	3	30	70	100
4	PC	23AEE08	Electrical Circuit Analysis-II	3	0	0	3	30	70	100
5	PC	23AEE09	DC Machines & Transformers	3	0	0	3	30	70	100
6	PC Lab	23AEE10	Electrical Circuit Analysis-II and Simulation Lab	0	0	3	1.5	30	70	100
7	PC Lab	23AEE11	DC Machines & Transformers Lab	0	0	3	1.5	30	70	100
8	SC	23ACS10	Data Structures	0	1	2	2	30	70	100
9	AC	23AHS18	Environmental Science	2	0	0	-	-	-	-
10	AC	23AHS24	Quantitative and Aptitude and Reasoning- I	2	0	0	00	-	-	-
TOTAL				18	02	08	20	240	560	800

II B.Tech II Semester, EEE

S.No	Category	Course code	Course title	Hours per week			Credits	Scheme of Examination Max. Marks		
				L	T	P		CIA	SEE	Total
1	HSS	23AMB02	Managerial Economics and Financial Analysis	2	0	0	2	30	70	100
		23AMB03	Organizational Behavior							
		23AMB04	Business Environment							
2	PC	23AEC13	Analog Circuits	3	0	0	3	30	70	100
3	PC	23AEE12	Power Systems-I	3	0	0	3	30	70	100
4	PC	23AEE13	Induction and Synchronous Machine	3	0	0	3	30	70	100
5	PC	23AEE14	Control Systems	3	0	0	3	30	70	100
6	PC Lab	23AEE15	Induction and Synchronous Machines Lab	0	0	3	1.5	30	70	100
7	PC Lab	23AEE16	Control Systems Lab	0	0	3	1.5	30	70	100
8	PC Lab	23ACS09	Python Programming	0	1	2	2	30	70	100
9	ES	23AMB05	Design Thinking & Innovation	1	0	2	2	30	70	100
10	AC	23AHS25	Quantitative and Aptitude and Reasoning- II	2	0	0	-	-	-	-
TOTAL				17	01	10	21	270	630	900
Mandatory Community Service Project of 08 weeks duration during summer vacation										

SRI VENKATESWARA COLLEGE OF ENGINEERING AND TECHNOLOGY,

(AUTONOMOUS)

I B.Tech I Semester

L	T	P	C
3	0	0	3

23AEE01 BASIC ELECTRICAL & ELECTRONICS ENGINEERING

(Common to All branches of Engineering)

COURSE OBJECTIVES

To expose to the field of Electrical & Electronics Engineering, laws and principles of electrical/ electronic engineering and to acquire fundamental knowledge in the relevant field.

PART A: BASIC ELECTRICAL ENGINEERING

UNIT I DC & AC Circuits

DC Circuits: Electrical circuit elements (R, L and C), Ohm's Law and its limitations, KCL & KVL, series, parallel, series-parallel circuits, Super Position theorem, Simple numerical problems.

AC Circuits: A.C. Fundamentals: Equation of AC Voltage and current, waveform, time period, frequency, amplitude, phase, phase difference, average value, RMS value, form factor, peak factor, Voltage and current relationship with phasor diagrams in R, L, and C circuits, Concept of Impedance, Active power, reactive power and apparent power, Concept of power factor (Simple Numerical problems).

UNIT II Machines and Measuring Instruments

Machines: Construction, principle and operation of (i) DC Motor, (ii) DC Generator, (iii) Single Phase Transformer, (iv) Three Phase Induction Motor and (v) Alternator, Applications of electrical machines.

Measuring Instruments: Construction and working principle of Permanent Magnet Moving Coil (PMMC), Moving Iron (MI) Instruments and Wheat Stone bridge.

UNIT III Energy Resources, Electricity Bill & Safety Measures

Energy Resources: Conventional and non-conventional energy resources; Layout and operation of various Power Generation systems: Hydel, Nuclear, Solar & Wind power generation.

Electricity bill: Power rating of household appliances including air conditioners, PCs, Laptops, Printers, etc. Definition of "unit" used for consumption of electrical energy, two-part electricity tariff, calculation of electricity bill for domestic consumers.

Equipment Safety Measures: Working principle of Fuse and Miniature circuit breaker (MCB), merits and demerits. Personal safety measures: Electric Shock, Earthing and its types, Safety Precautions to avoid shock.

COURSE OUTCOMES:

After the completion of the course students will be able to

CO1: Remember the fundamental laws, operating principles of motors, generators, MC and MI instruments.

CO2: Understand the problem solving concepts associated to AC and DC circuits, construction and operation of AC and DC machines, measuring instruments; different power generation mechanisms, Electricity billing concept and important safety measures related to electrical operations.

CO3: Apply mathematical tools and fundamental concepts to derive various equations related to machines, circuits and measuring instruments; electricity bill calculations and layout representation of electrical power systems.

CO4: Analyze different electrical circuits, performance of machines and measuring instruments.

CO5: Evaluate different circuit configurations, Machine performance and Power systems operation

TextBooks:

1. Basic Electrical Engineering, D. C. Kulshreshtha, Tata McGraw Hill, 2019, First Edition

2. Power System Engineering, P.V. Gupta, M.L. Soni, U.S. Bhatnagar and A. Chakrabarti, DhanpatRai& Co, 2013

3. Fundamentals of Electrical Engineering, Rajendra Prasad, PHI publishers, 2014, Third Edition

Reference Books:

1. Basic Electrical Engineering, D. P. Kothari and I. J. Nagrath, Mc Graw Hill, 2019, Fourth Edition

2. Principles of Power Systems, V.K. Mehtha, S.Chand Technical Publishers, 2020

3. Basic Electrical Engineering, T. K. Nagsarkar and M. S. Sukhija, Oxford University Press, 2017

4. Basic Electrical and Electronics Engineering, S. K. Bhatacharya, Person Publications, 2018, Second Edition.

Web Resources:

1. https://nptel.ac.in/courses/108105053

2. https://nptel.ac.in/courses/108108076

SRI VENKATESWARA COLLEGE OF ENGINEERING AND TECHNOLOGY (AUTONOMOUS)

(Common to All branches of Engineering)

23AME01 ENGINEERING GRAPHICS

L	T	P	C
1	0	4	3

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

CO1: Understandtheprinciples ofengineeringdrawing,includingengineeringcurves,scales,orthographic andisometric projections.

CO2: Drawandinterpretorthographicprojectionsofpoints,lines,planesandsolidsinfront,topandsideviews.

CO3: Understand and draw projection of solids in various positions in first quadrant.

CO4: Explainprinciplesbehinddevelopmentofsurfaces.

CO5: Prepareisometricandperspective sectionsofsimplesolids.

UNIT I

Introduction: Lines,LetteringandDimensioning,GeometricalConstructionsandConstructingregularpolygonsbygeneralmethods.

Curves: constructionof ellipse,parabolaandhyperbolabygeneral,Cycloids,Involutes,NormalandtangenttoCurves.

Scales: Plainscales,diagonalscalesandvernierscales.

UNITII

OrthographicProjections:Referenceplane,importanceofreferencelinesorPlane,Projectionsofa pointsituatedinanyoneofthefourquadrants.

Projections of Straight Lines: Projections of straight lines parallel to both reference planes,perpendicular to one reference plane and parallel to other reference plane, inclined to onereference plane and parallel to the other reference plane. Projections of Straight Line Inclinedtoboththerefereceplanes.

Projections of Planes: regular planes Perpendicular to both reference planes, parallel to onereference plane and inclined to the other reference plane; plane inclined to both the referenceplanes.

UNIT III

ProjectionsofSolids: Typesofsolids:PolyhedraandSolidsofrevolution.Projectionsofsolidsinsimplepositions:Axisperpendiculartohorizontalplane,Axisperpendiculartoverticalplaneand Axis parallel to both the reference planes, Projection of Solids with axis inclined to onereference planeandparalleltoanotherplane.

UNITIV

Sections of Solids: Perpendicular and inclined section planes, Sectional views and True shapeofsection,Sectionsofsolidsinsimplepositiononly.

DevelopmentofSurfaces: MethodsofDevelopment:Parallellinedevelopmentandradiallinedevelopment.Development of a cube,prism,cylinder,pyramid andcone.

UNITV

Conversion of Views: Conversion of isometric views to orthographic views; Conversion oforthographicviews toisometricviews.

Computergraphics:Creating2D&3DdrawingsofobjectsincludingPCBandTransformationsusingAutoCAD(*Notfor endexamination*).

Note: The practice will be carried out by using AutoCAD software.

TextBooks:

1. N. D.Bhatt,EngineeringDrawing,CharotarPublishingHouse,2016.

ReferenceBooks:

1. EngineeringDrawing,K.L.NarayanaandP.Kannaiah,TataMcGrawHill,2013.
2. EngineeringDrawing, M.B.ShahandB.C. Rana, PearsonEducationInc,2009.
3. EngineeringDrawingwithanIntroductiontoAutoCAD,DhananjayJolhe,TataMcGraw Hill,2017.

SRIVENKATESWARACOLLEGEOFENGINEERINGANDTECHNOLOGY
(AUTONOMOUS)
IB.TechI Semester,CSE
(Commonto all branches)

L	T	P	C
3	-	-	3

23ACS01: INTRODUCTIONTOPROGRAMMING

CourseObjectives:

- Tointroducestudentstothefundamentalsofcomputerprogramming.
- Toprovidehands-onexperiencewithcodinganddebugging.
- Tofosterlogicalthinkingandproblem-solvingskillsusingprogramming.
- Tofamiliarizestudentswithprogrammingconceptssuchasdatatypes,controlstructures,functions,a ndarrays.

CourseOutcomes: At the end of thecourse students willbeableto

1. Understandbasicsofcomputers,theconceptofalgorithmandalgorithmicthinking.
2. Developtheabilitytoanalyzeaproblem,developanalgorithmtosolveit.
3. ProficientlyusetheCprogramminglanguagetoimplementvariousalgorithms.
4. Understandmoreadvancedfeaturesof Clanguage.
5. Developproblem-solvingskillsandtheabilitytodebugandoptimizethecode.

UNITIIntroductiontoProgrammingandProblemSolving
History of Computers, Basic organization of a computer: ALU, input-output units, memory,program counter, Introduction to Programming Languages, Basics of a Computer Program-Algorithms, flowcharts (Using Dia Tool), pseudo code.

Problemsolvingtechniques:Algorithmicapproach,characteristicsofalgorithm,Problemsolvingstrategies: Top-down approach, Bottom-up approach, Time and space complexities ofalgorithms.

Overview of C: History Of C, Basic Structure of C Program, Primitive Data Types, Variables, andConstants,BasicInputandOutput,Operations,TypeConversion,andCasting.

UNITIIControlStructures
Simple sequential programs Conditional Statements (if, if-else, switch), Loops (for, while, do-while)BreakandContinue.

UNITIIIArraysandStrings
Definition of Arrays, Arrays indexing, memory model, programs with array of integers, two dimensional arrays, Multidimensional Arrays, IntroductiontoStrings, operations on strings

UNITIVFunctions
Introduction to Functions,Function Declaration and Definition,Function call Return Typesand Arguments, modifying parameters inside functions using pointers, arrays as parameters.ScopeandLifetimeofVariables, Recursion.

UNITVUserDefinedDatatypes,FileHandling,Pointers
User-defined data types-Structures- Introduction, Nested Structures, Array of Structures, Structures and Functions, and Unions, pointers, dereferencing and address operators,pointerandaddressarithmetic,arraymanipulationusingpointers. Operations on file handlingSelf-Referential structures, Linked List (creation and display)

Text Books:

1. B. A. Forouzan and R. F. Gilberg, Computer Science: A Structured Programming Approach Using C, 3/e, Cengage Learning, 2007.
2. Problem solving with C, M.T.Somashekara, PHI
3. "TheCProgrammingLanguage"byBrianW.KernighanandDennisM.Ritchie
4. Schaum'sOutlineofProgrammingwithCbyByronSGottfried(1996),McGraw-HillEducation(ISBN:978-0070240353)

ReferenceBooks:

1. Balagurusamy,E.(2008).ComputingfundamentalsandCProgramming.McGraw-HillEducation.
2. ProgramminginCRemaTheraja-2nd edition2016
3. C Programming,AProblemSolvingApproach,Forouzan,Gilberg,Prasad,CENGAGE
4. Jeri R. Hanly, Ellot B. Koffman, Problem Solving and Program Design in C, 5/e, Pearson

SRI VENKATESWARA COLLEGE OF ENGINEERING AND TECHNOLOGY (AUTONOMOUS)

I B.Tech I Semester (Common to All Branches)

L	T	P	C
3	0	0	3

23AHS04 LINEARALGEBRA&CALCULUS

CourseObjectives:

- To equip the students with standard concepts and tools at an intermediate to advancedlevel mathematics to develop the confidence and ability among the students to handlevariousreal-worldproblems andtheirapplications.

CourseOutcomes: Attheendofthecourse,thestudentwillbeableto

CO1:Developanduseofmatrixalgebratechniquesthatareneededbyengineersforpracticalapplications.
CO2:Utilizemeanvaluetheoremstoreallifeproblems.
CO3: Familiarize with functions of several variables which is useful in optimization.
CO4:Learnimportanttools ofcalculusinhigherdimensions.
CO5: Familiarize with double and tripleintegralsof functionsof several variablesin twodimensions usingCartesian and polar coordinates and in three dimensions using cylindricalandsphericalcoordinates.

UNITI Matrices

Rank of a matrix by echelon form, normal form. Cauchy–Binet formulae (without proof).InverseofNon-singularmatricesbyGauss-Jordanmethod,Systemoflinearequations:Solvingsystem of Homogeneous and Non-Homogeneous equations by Gauss elimination method,JacobiandGauss SeidelIterationMethods.

UNITIIEigenvalues,Eigenvectorsand OrthogonalTransformation

Eigen values, Eigenvectors and their properties, Diagonalization of a matrix, Cayley-HamiltonTheorem(withoutproof),findinginverseandpowerofamatrixbyCayley-HamiltonTheorem,QuadraticformsandNatureoftheQuadraticForms,ReductionofQuadraticformtocanonicalforms byOrthogonalTransformation.

UNITIII Calculus

MeanValueTheorems:Rolle'sTheorem,Lagrange'smeanvaluetheoremwiththeirgeometrical interpretation, Cauchy's mean value theorem, Taylor's and Maclaurin theoremswithremainders(withoutproof),Problemsand applicationsonthe abovetheorems.

UNITIV PartialdifferentiationandApplications(Multivariablecalculus)

FunctionsofseveralvariablesContinuityandDifferentiability,Partialderivatives,totalderivatives, chain rule, Directional derivative, Taylor's and Maclaurin's series expansion offunctionsoftwovariables.Jacobians,Functionaldependence,maximaandminimaoffunctionsoftwovariables,methodofLagrangemultipliers.

UNITV MultipleIntegrals(Multi variableCalculus)

Double integrals, triple integrals, change of order of integration, change of variables to polar,cylindrical and spherical coordinates. Finding areas (by double integrals) and volumes (bydoubleintegralsandtripleintegrals).

Textbooks:

1. HigherEngineeringMathematics,B. S.Grewal,Khanna Publishers, 2017,44th Edition
2. AdvancedEngineeringMathematics,ErwinKreyszig,JohnWiley&Sons,2018,10th Edition.

ReferenceBooks:

1. ThomasCalculus,GeorgeB.Thomas,MauriceD.WeirandJoelHass,PearsonPublishers,2018,14th Edition.
2. AdvancedEngineeringMathematics,R.K.JainandS.R.K.Iyengar,AlphaScience InternationalLtd.,20215th Edition(9threprint).
3. AdvancedModernEngineeringMathematics,GlynJames,Pearsonpublishers,2018,5th Edition.
4. AdvancedEngineeringMathematics,MicheaelGreenberg,,Pearsonpublishers,9th edition
5. HigherEngineeringMathematics,H.KDas,Er.RajnishVerma,S.ChandPublications,2014,ThirdEdition(Reprint2021)

SRI VENKATESWARA COLLEGE OF ENGINEERING AND TECHNOLOGY
(AUTONOMOUS)
I B.Tech I Semester (Common to EEE, ECE, IT, CAI, CSO, CSC, EBM & CSBS)
I B.Tech II Semester (Common to CE, ME, CSE, CSE (DS) &CSE(AI &ML))

L	T	P	C
3	0	0	3

23AHS05 ENGINEERING PHYSICS

COURSEOBJECTIVES

1. Bridgingthegap betweenthePhysicsinschoolat10+2levelandUGlevelengineeringcourses.
2. ToidentifytheimportanceoftheopticalphenomenonI.e.interference,diffractionandpolarizationrelatedtoitsEngineeringapplications.
3. Enlightentheperiodicarrangementofatoms inCrystallinesolids byBragg'slaw– Learningthestructuralanalysisthrough X-raydiffractiontechniques.
4. EnlightenmentoftheconceptsofQuantum Mechanicsand to provide fundamentalsofdeBroglie matter waves, quantum mechanical wave equation and its application, the importance offreeelectrontheoryformetals.
5. ToUnderstandthePhysicsofSemiconductorsandtheirworkingmechanism,Conceptsutilization oftransport phenomenonof charge carriersin semiconductors.To give an impetuson the subtle mechanism of superconductors using the concept of BCS theory and theirfascinatingapplications.
6. Toexplainthesignificantconceptsofdielectricandmagneticmaterialsthatleadstopotentialapplicationsinthe emergingmicrodevices.

COURSEOUTCOMES

a. **CO1**: **Explain**theneedofcoherentsourcesandtheconditionsforsustainedinterference (L2).**Identify** the applications of interference in engineering (L3). **Analyze** the differences betweeninterference and diffraction with applications (L4).**Illustrate** the concept of polarization oflight and its applications (L2). **Classify** ordinary refracted light and extraordinary refracted raysbytheirstatesof polarization(L2)

b. **CO2**: **Interpret** various crystal systems (L2) and**Analyze**the characterization of materials by XRD(L4). **Identify** the important properties of crystals like the presence of long-range order andperiodicity,structuredeterminationusingX-raydiffractiontechnique(L3).**Analysis**ofstructureofthecrystalsbyLaue'smethod(L2).

c. **CO3**: **Describe**thedualnatureofmatter(L1).**Explain**thesignificanceofwavefunction(L2).**Identify**the roleofSchrodinger'stimeindependentwaveequationin studying particleinone-dimensional infinite potential well (L3). **Identify** the role of classical and quantum freeelectrontheoryinthestudyofelectricalconductivity(L3).

d. **CO4**: **Classify** the crystalline solids (L2).**Outline** the properties of charge carriers in semiconductors(L2). **Identify** the type of semiconductor using Hall effect (L2). **Classify** superconductorsbased on Meissner's effect (L2). **Explain** Meissner's effect, BCS theory & Josephsoneffectinsuperconductors(L2)**.**

e. **CO5**:
Explaintheconceptofdielectricconstantandpolarizationindielectricmaterials(L2).**Summarize**varioustypes ofpolarizationofdielectrics(L2).**Interpret**LorentzfieldandClaussius-Mosottirelationindielectrics(L2).**Classify**themagneticmaterialsbasedonsusceptibility(L2).

Unit-I:WaveOptics

Interference- Principle of superposition – Interference of light – Conditions for sustained interference - Interferenceinthinfilms(ReflectionGeometry)–Colorsinthinfilms–Newton'sRings– Determinationofwavelengthandrefractiveindex.

Diffraction-Introduction–FresnelandFraunhoferdiffraction–Fraunhoferdiffractionduetosingleslit, double slit and N-slits (qualitative) – Diffraction Grating - Dispersive power and resolving power ofGrating(Qualitative).

Polarization- Introduction – Types of polarization – Polarization by reflection, refraction and doublerefraction-Nicol'sPrism-HalfwaveandQuarterwave plates.

UnitII:CrystallographyandX-raydiffraction 8hrs

Crystallography: Space lattice, Basis, Unit Cell and lattice parameters – Crystal systems - BravaisLattices — Coordination number - Packing fraction of SC, BCC & FCC - Miller indices – Separationbetweensuccessive(hkl)planes.

X- raydiffraction: Bragg'slaw-X-rayDiffractometer–CrystalstructuredeterminationbyLaue'smethod.

Unit-III: QuantumMechanicsandFreeElectronTheory 9hrs

Quantum Mechanics: Dual nature of matter – Heisenberg's Uncertainty Principle - Schrodinger's timeindependent and dependent wave equation – Significance and properties of wave function – Particle in aone-dimensionalinfinitepotentialwell.

FreeElectronTheory-Classicalfreeelectrontheory(Qualitativewithdiscussionofmeritsanddemerits) – Quantum free electron theory – Equation for electrical conductivity based on quantum freeelectrontheory–Fermi-Diracdistribution–Fermienergy-Failuresoffree electrontheory.

Unit –IV: SemiconductorsandSuperconductors 8hrs

Semiconductors: Formationofenergybands–classificationofcrystallinesolids-Intrinsicsemiconductors:Densityofchargecarriers–Electricalconductivity–Fermilevel–Extrinsicsemiconductors: density of charge carriers - Drift and diffusion currents – Einstein's equation - Halleffectandits Applications.

Superconductors: Introduction – Properties of superconductors – Meissner effect– Type I and Type IIsuperconductors–ACandDCJosephson effects–BCS theory (qualitativetreatment)–HighTcsuperconductors – Applications ofsuperconductors.

Unit–V: DielectricandMagneticMaterials 8hrs

Dielectric Materials- Introduction – Dielectricpolarization – Dielectric polarizability, Susceptibilityand Dielectric constant and Displacement Vector – Relation between the electric vectors - Types ofpolarizations-Electronic (Quantitative), Ionic (Quantitative) and Orientation polarizations (Qualitative) -Lorentzfield-Clausius-Mossottiequation-Dielectricloss.

MagneticMaterials-Introduction–Magneticdipolemoment–Magnetization–Magneticsusceptibility and Permeability – Atomic origin of magnetism – Classification of magnetic materials:Dia, Para, Ferro, Ferri & Antiferro – Domain concept of Ferromagnetism (Qualitative) – Hysteresis –SoftandHardmagneticmaterials.

Textbooks:

1. EngineeringPhysicsbyM.N.Avadhanulu,P.G.Kshirsagar&TVSArunMurthyS.ChandPublications,11th Edition2019.
2. EngineeringPhysics"byD.K.BhattacharyaandPoonamTandon,Oxfordpress(2018).
3. AppliedPhysics byP.K.Palanisamy,SciTechpublications(2018)

ReferenceBooks:

1. "EngineeringPhysics"-B.K.PandeyandS.Chaturvedi, CengageLearning
2. "FundamentalsofPhysics"-Halliday, ResnickandWalker, JohnWiley&Sons.
3. "FundamentalsofPhysicswithApplications",ArthurBeiser, SamarjitSengupta,SchaumSeries.
4. "EngineeringPhysics"-ShatendraSharma,JyotsnaSharma,PearsonEducation,2018.
5. "EngineeringPhysics"-SanjayD.Jain,D.SahasrabudheandGirish,UniversityPress.
6. "Semiconductorphysicsanddevices:Basicprinciple"-A. Donald,Neamen, McGrawHill.
7. "Solidstatephysics"–A.J.Dekker ,PanMacmillanpublishers
8. "IntroductiontoSolidStatePhysics"-CharlesKittel,Wiley

MappingbetweenCourseOutcomesandProgrammeOutcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	**3**	**3**		**1**								
CO2	**3**	**3**	**1**									
CO3	**3**	**2**	**1**	**2**								
CO4	**3**	**3**	**1**	**2**	**1**				**1**		**1**	**1**
CO5	**3**	**2**	**2**		**1**				**2**		**1**	**1**

SRIVENKATESWARACOLLEGEOFENGINEERINGANDTECHNOLOGY
(AUTONOMOUS)
IB.TechI Semester
(Commonto all branches)

L	T	P	C
0	0	2	1

23AIT01: IT WORKSHOP

Course Objectives

- To introduce the internal parts of a computer, peripherals, I/O ports, connecting cables
- To teach basic command line interface commands on Linux.
- To teach the usage of Internet for productivity and self-paced life-long learning
- To introduce Compression, Multimedia and Antivirus tools and Office Tools such as Word processors, Spread sheets and Presentation tools.

Course Outcomes:

- Perform Hardware troubleshooting.
- Understand Hardware components and inter dependencies.
- Safeguard computer systems from viruses/worms.
- Document/ Presentation preparation.
- Perform calculations using spreadsheets.

PC Hardware

Task1: Identify the peripherals of a computer, components in a CPU and its functions. Draw the block diagram of the CPU along with the configuration of each peripheral and submit to your instructor.

Task 2: Every student should disassemble and assemble the PC back to working condition. Lab instructors should verify the work and follow it up with a Viva. Also students need to go through the video which shows the process of assembling a PC. A video would be given as part of the course content.

Task 3: Every student should individually install MS windows on the personal computer. Lab instructor should verify the installation and follow it up with a Viva.

Task 4: Every student should install Linux on the computer. This computer should have windows installed. The system should be configured as dual boot with both Windows and Linux. Lab instructors should verify the installation and follow it up with a Viva

Internet & World Wide Web

Task1: Orientation & Connectivity Boot Camp: Students should get connected to their Local Area Network and access the Internet. In the process they configure the TCP/IP setting. Finally students should demonstrate, to the instructor, how to access the websites and email. If there is no internet connectivity preparations need to be made by the instructors to simulate the WWW on the LAN.

Task 2: Web Browsers, Surfing the Web: Students customize their web browsers with the LAN proxy settings, bookmarks, search toolbars and pop up blockers. Also, plug-ins like Macromedia Flash and JRE for applets should be configured.

Task 3: Search Engines & Netiquette: Students should know what search engines are and how to use the search engines. A few topics would be given to the students for which they need to search on Google. This should be demonstrated to the instructors by the student.

Task 4: Cyber Hygiene: Students would be exposed to the various threats on the internet and would be asked to configure their computer to be safe on the internet. They need to customize their browsers to block pop ups, block active x downloads to avoid viruses and/or worms.

LaTeX and WORD

Task 1 – Word Orientation: The mentor needs to give an overview of La TeX and Microsoft (MS) office or equivalent (FOSS) tool word: Importance of La TeX and MS office or equivalent (FOSS) tool Word as word Processors, Details of the four tasks and features that would be covered in each, Using La TeXand word – Accessing, overview of toolbars, saving files, Using help and resources, rulers, format painter in word.

Task 2: Using La TeX and Word to create a project certificate. Features to be covered:- Formatting Fonts in word, Drop Cap in word, Applying Text effects, Using Character Spacing, Borders and Colors, Inserting Header and Footer, Using Date and Time option in both La TeX and Word.

Task 3: Creating project abstract Features to be covered:-Formatting Styles, Inserting table, Bullets and Numbering, Changing Text Direction, Cell alignment, Footnote, Hyperlink, Symbols, Spell Check, Track Changes.

Task 4: Creating a Newsletter: Features to be covered:- Table of Content, Newspaper columns, Images from files and clipart, Drawing toolbar and Word Art, Formatting Images, Textboxes, Paragraphs and Mail Merge in word.

Excel

Excel Orientation: The mentor needs to tell the importance of MS office or equivalent (FOSS) tool Excel as a Spreadsheet tool, give the details of the four tasks and features that would be covered in each. Using Excel – Accessing, overview of toolbars, saving excel files, Using help and resources.

Task 1: Creating a Scheduler - Features to be covered: Gridlines, Format Cells, Summation, auto fill, Formatting Text

Task 2 : Calculating GPA - .Features to be covered:- Cell Referencing, Formulae in excel – average, std. deviation, Charts, Renaming and Inserting worksheets, Hyper linking, Count function,

LOOKUP/VLOOKUP

Task 3: Split cells, freeze panes, group and outline, Sorting, Boolean and logical operators, Conditional formatting

Power point

Task 1: Students will be working on basic power point utilities and tools which help them create basic power point presentations. PPT Orientation, Slide Layouts, Inserting Text, Word Art, Formatting Text, Bullets and Numbering, Auto Shapes, Lines and Arrows in PowerPoint.

Task 2: Interactive presentations - Hyperlinks, Inserting –Images, Clip Art, Audio, Video, Objects, Tables and Charts.

Task 3: Master Layouts (slide, template, and notes), Types of views (basic, presentation, slide slotter, notes etc), and Inserting – Background, textures, Design Templates, Hidden slides.

AI Tools – ChatGPT

Task 1: Prompt Engineering: Experiment with different types of prompts to see how the model responds. Try asking questions, starting conversations, or even providing incomplete sentences to see how the model completes them.

- Ex: Prompt: "You are a knowledgeable AI. Please answer the following question: What is the capital of France?"

Task 2: Creative Writing: Use the model as a writing assistant. Provide the beginning of a story or a description of a scene, and let the model generate the rest of the content. This can be a fun way to brainstorm creative ideas

- Ex: Prompt: "In a world where gravity suddenly stopped working, people started floating upwards. Write a story about how society adapted to this new reality."

Task 3: Code Generation: Test the model's ability to generate code by giving it partial code snippets and asking it to complete them. You can also ask the model to explain programming concepts or help you debug code.

- Ex:Prompt: "Complete the following Python code to swap the values of two variables: \npython\na = 5\nb = 10\ntemp = a\na = b\nb = temp\n"

Task 4: Language Translation: Experiment with translation tasks by providing a sentence in one language and asking the model to translate it into another language. Compare the output to see how accurate and fluent the translations are.

- Ex:Prompt: "Translate the following English sentence to French: 'Hello, how are you doing today?'"

Task 5: Summarization: Provide a long piece of text, such as an article or a blog post, and ask the model to summarize it. Compare the model's summary with the original text to assess its ability to condense information effectively.

- Ex: Prompt: "Summarize the article titled ‘Ramayanam' in 3-4 sentences."

Task 6: Futuristic Predictions: Have fun by asking the model to predict future technological advancements, societal changes, or even hypothetical scenarios. Compare its responses with your own ideas.

- Ex:Prompt: "Predict how artificial intelligence will transform everyday life in the next 20 years."

Task 7: Technical Explanations: Challenge the model with technical questions from different domains. Ask it to explain scientific concepts, mathematical theorems, or complex algorithms in simple terms.

- Ex:Prompt: "Explain the concept of neural networks in machine learning, including their layers and the process of backpropagation."

Reference Books:

1. Comdex Information Technology course tool kit Vikas Gupta, WILEY Dream tech
2. The Complete Computer upgrade and repair book, 3rd edition Cheryl A Schmidt, WILEY Dream tech
3. Introduction to Information Technology, ITL Education Solutions limited, Pearson Education.
4. PC Hardware - A Handbook – Kate J. Chase PHI (Microsoft)

SRI VENKATESWARA COLLEGE OF ENGINEERING AND TECHNOLOGY, (AUTONOMOUS)

	L	T	P	C
I B.TechI Semester	**0**	**0**	**3**	**1.5**

23AEE02 ELECTRICAL & ELECTRONICS ENGINEERING WORKSHOP

(Common to All branches of Engineering)

Course Objectives:

To impart knowledge on the fundamental laws & theorems of electrical circuits, functions of electrical machines and energy calculations.

Activities:

1. Familiarization of commonly used Electrical & Electronic Workshop Tools: Bread board, Solder, cables, relays, switches, connectors, fuses, Cutter, plier, screwdriver set, wire stripper, flux, knife/blade, soldering iron, de-soldering pump etc. Provide some exercises so that hardware tools and instruments are learned to be used by the students.
2. Familiarization of Measuring Instruments like Voltmeters, Ammeters, multimeter, LCR-Q meter, Power Supplies, CRO, DSO, Function Generator, Frequency counter.
3. Provide some exercises so that measuring instruments are learned to be used by the students.
4. Components:
5. Familiarization/Identification of components (Resistors, Capacitors, Inductors, Diodes, transistors, IC's etc.) – Functionality, type, size, colour coding package, symbol, cost etc.
6. Testing of components like Resistor, Capacitor, Diode, Transistor, ICs etc. -Compare values of components like resistors, inductors, capacitors etc with the measured values by using instruments

PART A: ELECTRICAL ENGINEERING LAB

List of experiments:

1. Verification of KCL and KVL
2. Verification of Superposition theorem
3. Measurement of Resistance using Wheat stone bridge
4. Magnetization Characteristics of DC shunt Generator
5. Measurement of Power and Power factor using Single-phase wattmeter
6. Measurement of Earth Resistance using Megger
7. Calculation of Electrical Energy for Domestic Premises

Reference Books:

1. Basic Electrical Engineering, D. C. Kulshreshtha, Tata McGraw Hill, 2019, First Edition
2. Power System Engineering, P.V. Gupta, M.L. Soni, U.S. Bhatnagar and A. Chakrabarti,DhanpatRai& Co, 2013
3. Fundamentals of Electrical Engineering, Rajendra Prasad, PHI publishers, 2014, Third Edition

Note: Minimum Six Experiments to be performed.

COURSE OUTCOMES:

At the end of this course students will demonstrate the ability to

Course Outcomes:

CO1: Understand the Electrical circuit design concept; measurement of resistance, power, power factor; concept of wiring and operation of Electrical Machines and Transformer.

CO2: Apply the theoretical concepts and operating principles to derive mathematical models for circuits, Electrical machines and measuring instruments; calculations for the measurement of resistance, power and power factor.
CO3: Apply the theoretical concepts to obtain calculations for the measurement of resistance, power and power factor.
CO4: Analyse various characteristics of electrical circuits, electrical machines and measuring instruments.
CO5: Design suitable circuits and methodologies for the measurement of various electrical parameters; Household and commercial wiring.

Reference Books:

1. Basic Electrical Engineering, D. C. Kulshreshtha, Tata McGraw Hill, 2019, FirstEdition
2. Power System Engineering, P.V. Gupta, M.L. Soni, U.S. Bhatnagar and A. Chakrabarti, DhanpatRai& Co, 2013
3. Fundamentals of Electrical Engineering, Rajendra Prasad, PHI publishers, 2014, ThirdEdition

SRIVENKATESWARACOLLEGEOFENGINEERINGANDTECHNOLOGY
(AUTONOMOUS)
IB.TechI Semester
(Commonto all branches)

L	T	P	C
-	-	3	1.5

23ACS02: COMPUTER PROGRAMMING LAB

CourseObjectives:

1. To use basic data types, operators, expressions and expression evaluation mechanismsusingCProgrammingLanguage.
2. To implement control flows, construct in C Programming Language and understand thesyntax,semanticsandusabilitycontextsofthesedifferentconstructs.
3. Todevelopcompositedatatypesin Candconstructsavailabletodeveloptheirdatatypes,utilizethemt omodelthingsanddealingwithdatafromandtoexternalfiles.
4. To design programs with different variations of the constructs available for practicingmodular programming and understand the pros and cons of using different variants andapplyoptimization.

CourseOutcomes : Attheendof thecourse,Studentwillbeableto

1. Read,understandandtracetheexecutionofprogramswritteninClanguage.
2. Selecttherightcontrol structureforsolvingtheproblem.
3. DevelopCprogramswhichutilizethememoryefficientlyusingprogrammingconstructslikepointer s.
4. Develop,DebugandExecuteprogramstodemonstratetheapplicationsofarrays,functions,basiccon ceptsofpointersinC.

ListofExperiments:

WEEK 1
Objective: Getting familiar with the programming environment on the computer and writing the first program.

Suggested Experiments/Activities:
Tutorial 1: Problem-solving using Computers.
Familiarization with programming environment

i) Basic Linux environment and its editors like Vi, Vim & Emacs etc.
ii) Exposure to Turbo C, gcc
iii) Writing simple programs using printf(), scanf()

WEEK 2
Objective: Getting familiar with how to formally describe a solution to a problem in a series of finite steps both using textual notation and graphic notation.

Suggested Experiments /Activities:
Tutorial 2: Problem-solving using Algorithms and Flow charts.
Converting algorithms/flow charts into C Source code.
Developing the algorithms/flowcharts for the following sample programs

i) Sum and average of 3 numbers
ii) Conversion of Fahrenheit to Celsius and vice versa
iii) Simple interest calculation

WEEK 3
Objective: Learn how to define variables with the desired data-type, initialize them with appropriate values and how arithmetic operators can be used with variables and constants.
Suggested Experiments/Activities:
Tutorial 3: Variable types and type conversions:

Simple computational problems using arithmetic expressions.

i) Finding the square root of a given number
ii) Finding compound interest
iii) Area of a triangle using heron's formulae
iv) Distance travelled by an object

WEEK 4

Objective: Explore the full scope of expressions, type-compatibility of variables & constants and operators used in the expression and how operator precedence works.

Suggested Experiments/Activities:

Tutorial4: Operators and the precedence and as associativity:

Simple computational problems using the operator' precedence and associativity

i) Evaluate the following expressions.
    a. A+B*C+(D*E) + F*G
    b. A/B*C-B+A*D/3
    c. A+++B---A
    d. J= (i++) + (++i)
ii) Find the maximum of three numbers using conditional operator
iii) Take marks of 5 subjects in integers, and find the total, average in float

WEEK 5

Objective: Explore the full scope of different variants of "if construct" namely if-else, null- else, if-else if*-else, switch and nested-if including in what scenario each one of them can be used and how to use them. Explore all relational and logical operators while writing conditionals for "if construct".

Suggested Experiments/Activities:

Tutorial 5: Branching and logical expressions:

Problems involving if-then-else structures.

i) Write a C program to find the max and min of four numbers using if-else.
ii) Write a C program to generate electricity bill.
iii) Find the roots of the quadratic equation.
iv) Write a C program to simulate a calculator using switch case.
v) Write a C program to find the given year is a leap year or not.

WEEK 6

Objective: Explore the full scope of iterative constructs namely while loop, do-while loop and for loop in addition to structured jump constructs like break and continue including when each of these statements is more appropriate to use.

Suggested Experiments/Activities:

Tutorial 6: Loops, while and for loops

Iterative problems e.g., the sum of series

i) Find the factorial of given number using any loop.
ii) Find the given number is a prime or not.
iii) Compute sine and cos series
iv) Checking a number palindrome
v) Construct a pyramid of numbers.

WEEK 7:

Objective: Explore the full scope of Arrays construct namely defining and initializing 1-D and 2-D and more generically n-D arrays and referencing individual array elements from the defined array. Using integer 1-D arrays, explore search solution linear search.

Suggested Experiments/Activities:

Tutorial 7: 1 D Arrays: searching.

D Array manipulation, linear search

i) Find the min and max of a 1-D integer array.

ii) Perform linear search on1D array.
iii) The reverse of a 1D integer array
iv) Find 2's complement of the given binary number.
v) Eliminate duplicate elements in an array.

WEEK 8:
Objective: Explore the difference between other arrays and character arrays that can be used as Strings by using null character and get comfortable with string by doing experiments that will reverse a string and concatenate two strings. Explore sorting solution bubble sort using integer arrays.

Suggested Experiments/Activities:
Tutorial 8: 2 D arrays, sorting and Strings.
Matrix problems, String operations, Bubble sort

i) Addition of two matrices
ii) Multiplication two matrices
iii) Sort array elements using bubble sort
iv) Concatenate two strings without built-in functions
v) Reverse a string using built-in and without built-in string functions

WEEK 9:
Objective: Explore the Functions, sub-routines, scope and extent of variables, doing some experiments by parameter passing using call by value. Basic methods of numerical integration

Suggested Experiments/Activities:
Tutorial 9: Functions, call by value, scope and extent,
Simple functions using call by value, solving differential equations using Eulers theorem

i) Write a C function to calculate NCR value
ii) Write a C function to find the length of a string
iii) Write a C function to transpose of a matrix
iv) Write a C function to demonstrate numerical integration of differential equations using Euler'smethod

WEEK 10:
Objective: Explore how recursive solutions can be programmed by writing recursive functions that can be invoked from the main by programming at-least five distinct problems that have naturally recursive solutions.

Suggested Experiments/Activities:
Tutorial 10: Recursion, the structure of recursive calls
Recursive functions

i) Write a recursive function to generate Fibonacci series
ii) Write a recursive function to find the lcm of two numbers
iii) Write a recursive function to find the factorial of a number
iv) Write a C Program to implement Ackermann function using recursion
v) Write a recursive function to find the sum of series.

WEEK 11:
Objective: Explore the basic difference between normal and pointer variables, Arithmetic operations using pointers and passing variables to functions using pointers

Suggested Experiments/Activities:

Tutorial 11: Call by reference, dangling pointers

Simple functions using Call by reference, Dangling pointers

i) Write a C program to swap two numbers using call by reference
ii) Demonstrate Dangling pointer problem using a C program
iii) Write a C program to copy one string into another using pointer
iv) Write a C program to find no of lowercase, uppercase, digits and other characters using pointers.

WEEK12:

Objective: Explore pointers to manage a dynamic array of integers, including memoryallocation & value initialization, resizing changing and reordering the contents of an array and memory de-allocation using malloc (), calloc (), realloc () and free () functions. Gain experience processing command-line arguments received by C

Suggested Experiments/Activities:

Tutorial 12: Pointers, structures and dynamic memory allocationPointers and structures, memory dereference.

i) Write a C program to find the sum of a 1D array using malloc()
ii) Write a C program to find the total, average of n students using structures
iii) Enter n students data using calloc() and display failed students list
iv) Read student name and marks from the command line and display the student details along with the total.
v) Write a C program to implement realloc()

WEEK 13:

Objective: Experiment with C Structures, Unions, bit fields and self-referential structures (Singly linked lists) and nested structures

Suggested Experiments/Activities:

Tutorial 13: Bitfields, Self-Referential Structures, Linked listsBitfields, linked lists

Read and print a date using dd/mm/yyyy format using bit-fields and differentiate the same without using bit-fields

i) Create and display a singly linked list using self-referential structure.
ii) Demonstrate the differences between structures and unions using a C program.
iii) Write a C program to shift/rotate using bitfields.
iv) Write a C program to copy one structure variable to another structure of the same type.

WEEK14:

Objective: To understand data files and file handling with various file I/O functions. Explore the differences between text and binary files.

Suggested Experiments/Activities:

Tutorial 14: File handling

File operations

i) Write a C program to write and read text into a file.
ii) Write a C program to write and read text into a binary file using fread() and fwrite()
iii) Copy the contents of one file to another file.
iv) Write a C program to merge two files into the third file using command-line arguments.
v) Find no. of lines, words and characters in a file
vi) Write a C program to print last n characters of a given file.

Text Books

1. Ajay Mittal, Programming in C: A practical approach, Pearson.
2. Byron Gottfried, Schaum' s Outline of Programming with C, McGraw Hill

Reference Books

1. Brian W. Kernighan and Dennis M. Ritchie, The C Programming Language, Prentice- Hall of India
2. C Programming, A Problem-Solving Approach, Forouzan, Gilberg, Prasad, CENGAGE

SRI VENKATESWARA COLLEGE OF ENGINEERING AND TECHNOLOGY
(AUTONOMOUS)
I B.Tech I Semester (Common to EEE, ECE, IT, CAI, CSO, CSC, EBM & CSBS)
I B.Tech II Semester (Common to CE, ME, CSE, CSE(DS) & CSE(AI &ML))

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23AHS09 ENGINEERING PHYSICS LAB

CourseObjectives:

- Understandstheconceptsofinterference, diffractionandtheirapplications.
- Understandtheroleofopticalfiberparametersincommunication.
- RecognizetheimportanceofenergygapinthestudyofconductivityandHallEffectinasemiconductor.
- Illustratesthemagneticanddielectric materialsapplications.
- Applytheprinciplesofsemiconductorsinvariouselectronicdevices.

(Any**TEN**ofthe followinglistedexperiments)

ListofEngineeringPhysicsExperiments

1. Determinationofradiusofcurvatureofagivenplanoconvexlensby Newton'srings.
2. Determinationofwavelengthsofdifferentspectrallinesinmercuryspectrumusing diffractiongratinginnormalincidenceconfiguration.
3. Determinationofdispersivepowerofprism.
4. VerificationofBrewster'slaw
5. Determinationofthe resistivityofsemiconductor byfourprobemethod.
6. Determinationofenergygapofasemiconductorusingp-n junctiondiode.
7. DeterminationofHallvoltageandHallcoefficientofagivensemiconductorusingHall effect.
8. Determinationofdielectricconstantusingcharginganddischargingmethod.
9. StudythevariationofBversusHbymagnetizingthemagneticmaterial(B-Hcurve).
10. Magneticfieldalongtheaxisof acurrentcarryingcircularcoilby Stewart& Gee'sMethod.
11. DeterminationofwavelengthofLaserlightusingdiffractiongrating.
12. EstimationofPlanck'sconstantusingphotoelectriceffect.
13. Determinationoftemperature coefficientsofathermistor.
14. Determination of acceleration due to gravity and radius of Gyration by using a compoundpendulum.
15. Determinationofrigiditymodulusofthematerialofthegivenwireusing Torsional pendulum.
16. Sonometer: Verificationoflawsofstretchedstring.
17. Determination of young's modulus for the given material of wooden scale by non-uniformbending(ordoublecantilever)method.
18. DeterminationofFrequencyofelectricallymaintained tuningforkbyMelde's experiment.

CourseOutcomes:

The studentswillbeable to

- **Operate**opticalinstruments likemicroscopeandspectrometer
- **Estimate**thewavelengthofdifferentcolorsusingdiffractiongratingandresolvingpower
- **Plot** theintensityofthemagneticfieldofcircular coilcarryingcurrentwithdistance
- **Determine**theresistivityofthegivensemiconductorusingfour probemethod
- **Identify**thetypeofsemiconductor i.e.,n-typeorp-typeusinghalleffect
- **Calculate** theband gap ofagivensemiconductor

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	**3**			**2**								
CO2	**3**	**2**		**2**								**1**
CO3	**3**	**1**		**2**								
CO4	**3**	**3**		**3**	**2**						**1**	**1**

References: 1. S. Balasubramanian, M.N.Srinivasan "A Text book of Practical Physics"- S.ChandPublishers,2017.

URL:*www.vlab.co.in*

SRI VENKATESWARA COLLEGE OF ENGINEERING & TECHNOLOGY
(AUTONOMOUS)
I B.Tech I Semester (Common to CSE, CSD, CSM, CE & ME)
I B.Tech II Semester (Common to ECE, EEE, CSC, IT, CAI, CSO, CSBS &EBM)

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23AHS01- COMMUNICATIVEENGLISH

CourseObjectives:

Themainobjectiveofintroducingthiscourse, *CommunicativeEnglish*,istofacilitateeffectivelistening, Reading, Speaking and Writing skills among the students. It enhances the same intheir comprehending abilities, oral presentations, reporting useful information and providingknowledge of grammatical structures and vocabulary. This course helps the students to makethemeffectiveinspeakingandwritingskillsandtomake themindustryready.

CourseOutcomes:

CO1:Understand thecontext, topic, and piecesofspecific informationfromsocialorTransactionaldialogues.
CO2: Applygrammaticalstructurestoformulatesentencesandcorrectwordforms.
CO3: Analyzediscoursemarkerstospeakclearlyonaspecifictopicininformaldiscussions.
CO4: Evaluatereading/listeningtextsandtowritesummariesbasedonglobalcomprehensionofthesetexts.
CO5: Createacoherentparagraph,essay,andresume.

UNITI

Lesson	**:**	**HUMANVALUES:**GiftofMagi**(Short Story)**
Listening	**:**	Identifyingthetopic,thecontextandspecificpiecesofinformationbylisteningto shortaudiotextsandansweringaseriesofquestions.
Speaking	**:**	Askingandansweringgeneralquestionsonfamiliartopicssuchashome, family,work,studiesandinterests; introducingoneselfand others.
Reading	**:**	Skimmingtogetthemainideaofatext;scanningtolookforspecificpiecesof information.
Writing	**:**	MechanicsofWriting-Capitalization,Spellings,Punctuation-PartsofSentences.
Grammar	**:**	PartsofSpeech,BasicSentenceStructures-forming questions
Vocabulary	**:**	Synonyms,Antonyms,Affixes(Prefixes/Suffixes),Rootwords.

UNITII

Lesson:		**NATURE: TheBrookbyAlfredTennyson(Poem)**
Listening	**:**	Answeringaseriesofquestionsaboutmainideasandsupportingideasafter listeningtoaudiotexts.
Speaking	**:**	Discussioninpairs/smallgroupsonspecifictopicsfollowedbyshortstructure talks.
Reading	**:**	Identifyingsequenceofideas;recognizingverbaltechniquesthathelptolinkthe ideasinaparagraphtogether.
Writing	**:**	Structure of a paragraph - Paragraph writing (specific topics)
Grammar	**:**	Cohesivedevices-linkers,useofarticlesandzeroarticle;prepositions.
Vocabulary	**:**	Homonyms,Homophones,Homographs.

UNITIII

Lesson :BIOGRAPHY:ElonMusk

Listening : Listeningfor globalcomprehensionandsummarizingwhatislistenedto.

Speaking : Discussingspecifictopics inpairsor smallgroupsandreportingw hatis discussed

Reading : Readingatextindetailbymakingbasicinferences-recognizingandInterpreting specificcontextclues;strategiestousetextcluesforcomprehension.

Writing : Summarizing,Note-making,paraphrasing

Grammar : Verbs-tenses;subject-verbagreement;Compoundwords,Collocations

Vocabulary : Compoundwords,Collocations

UNITIV

Lesson : **INSPIRATION:TheToysofPeaceby**Saki

Listening : Making predictions while listening to conversations/ transactional dialogueswithout video;listeningwithvideo.

Speaking : Role plays for practice of conversational English in academic contexts (formaland informal)-askingforandgivinginformation/directions.

Reading : Studying the use of graphic elements in texts to convey information, revealTrends/ patterns/relationships,communicate processes or display complicateddata.

Writing : LetterWriting:OfficialLetters,Resumes

Grammar : Reportingverbs, Direct&Indirectspeech,Active&PassiveVoice

Vocabulary : Wordsoftenconfused,Jargons

UNITV

Lesson : **MOTIVATION:**ThePowerofIntrapersonalCommunication(AnEssay)

Listening : Identifyingkeyterms, understandingconceptsandansweringaseriesofrelevant questionsthattestcomprehension.

Speaking : Formaloralpresentationsontopicsfromacademiccontexts

Reading : Readingcomprehension.

Writing : Critical Writing - Writingstructuredessaysonspecifictopics.

Grammar : Editingshorttexts–identifyingandcorrectingcommonerrorsingrammarand usage(articles,prepositions,tenses,subjectverbagreement)

Vocabulary : TechnicalJargons

Textbooks:

1. Pathfinder:CommunicativeEnglishforUndergraduateStudents,1st Edition,OrientBlackSwan,2023(Units 1,2&3)
2. EmpoweringwithLanguagebyCengagePublications,2023(Units4&5)

ReferenceBooks:

1. Dubey,ShamJi&Co. EnglishforEngineers, VikasPublishers,2020
2. Bailey,Stephen.Academicwriting:AHandbookforInternationalStudents.Routledge,2014.
3. Murphy,Raymond.EnglishGrammarinUse,FourthEdition,CambridgeUniversityPress,2019.
4. Lewis,Norman.WordPowerMadeEasy-TheCompleteHandbookforBuildingaSuperiorVocabulary.Anchor,2014.

WebResources:

GRAMMAR:

1. www.bbc.co.uk/learningenglish
2. https://dictionary.cambridge.org/grammar/british-grammar/
3. www.eslpod.com/index.html
4. https://www.learngrammar.net/
5. https://english4today.com/english-grammar-online-with-quizzes/
6. https://www.talkenglish.com/grammar/grammar.aspx

VOCABULARY

1. https://www.youtube.com/c/DailyVideoVocabulary/videos
2. https://www.youtube.com/channel/UC4cmBAit8i_NJZE8qK8sfpA

SRI VENKATESWARA COLLEGE OF ENGINEERING & TECHNOLOGY
(AUTONOMOUS)

L	T	P	C
3	0	0	3

I B.Tech - II Semester (Common to All Branches)

23ACE01 BASIC CIVIL AND MECHANICAL ENGINEERING

CourseOutcomes: Oncompletionofthecourse,thestudentshould beableto:

1. Understandvarioussub-divisionsofCivilEngineeringandtoappreciatetheirroleinensuringbettersociety.
2. Knowtheconceptsofsurveyingandtounderstandthemeasurementofdistances,anglesandlevels throughsurveying.
3. Realizetheimportanceof Transportationinnation's economy andtheengineeringmeasuresrelatedtohighwaysinterms ofgeometrics.
4. Understandtheimportanceofwaterresourcesandstoragestructuressothatthesocialresponsibilitiesofwaterconservationwillbe appreciated.
5. Understandthedifferentmanufacturingprocessesandexplainthebasicsofthermalengineeringanditsapplications.
6. Describetheworkingofdifferentmechanicalpowertransmissionsystemsandpowerplants;learnbasics ofrobotics.

PARTA:BASIC CIVILENGINEERING

UNITI

BasicsofCivilEngineering: RoleofCivilEngineersinSociety-VariousDisciplinesofCivilEngineering-StructuralEngineering-Geo-technicalEngineering-TransportationEngineering HydraulicsandWaterResourcesEngineering-EnvironmentalEngineering-Scopeofeachdiscipline-BuildingConstructionandPlanning-ConstructionMaterials-Cement–Aggregate Bricks-Cementconcrete-Steel-Testsonthese materials.

Factors to be considered in Building Planning- Nature of Buildings- Typical Layouts of aResidential Building-Industrial Building- Commercial Building like a Supermarket / Hotel /Theatre.

UNITII

Surveying: Objectivesof Surveying-HorizontalMeasurements-VerticalMeasurements-Angular Measurements-Levelling instruments used for levelling- Introduction to Bearings-Simple problemsonlevellingandbearings-Contourmapping.

UNITIII

TransportationEngineering,WaterResourcesandEnvironmentalEngineering: ImportanceofTransportationin Nation'seconomicdevelopment-TypesofHighwayPavements- Flexible Pavements and Rigid Pavements - Simple Differences - Basic geometricdesignelementsofahighway-Camber-StoppingSightDistance-Superelevation-Introduction.

Water Resources and Environmental Engineering:Sources of water- Quality of water-Specifications and Tests- Introduction to Hydrology- Hydrograph –Rain water Harvesting-Rainwaterrunoff-WaterStorageStructures(SimpleintroductiontoDamsandReservoirs).

Textbooks:

1. G.ShanmugamandM.S.Palanisamy,BasicCivilandtheMechanicalEngineering,TataMcgraw Hillpublications (India)Pvt.Ltd.
2. BasicCivilEngineering,S.S.Bhavikatti, NewAgeInternationalPublishers.
3. EngineeringMaterials,Dr.S.C.Rangwala,CharotorPublishingHouse.
4. Highway Engineering,S.K.Khanna,C.E.G.JustoandVeeraraghavan,NemchandandBrothersPublications.
5. IrrigationEngineeringandHydraulicStructures-SantoshKumarGarg,KhannaPublishers,Delhi.
6. BuildingConstruction,Dr.B.C.Punmia,LakshmiPublications,Delhi.

ReferenceBooks:

1. Surveying, Vol- IandVol-II,S.K. Duggal,TataMcGrawHillPublishers.
2. HydrologyandWaterResourcesEngineering,SantoshKumarGarg,KhannaPublishers,Delhi.

PARTB:BASICMECHANICALENGINEERING

UNITI

IntroductiontoMechanicalEngineering: RoleofMechanicalEngineeringinIndustries andSociety-Technologiesindifferentsectorssuchas Energy,Manufacturing,Automotive,Aerospace,andMarinesectors.

Engineering Materials - Metals-Ferrous and Non-ferrous, Ceramics, Composites, Smartmaterials.

UNITII

Manufacturing Processes: Principles of Casting**,** Forming, joining processes, Machining,IntroductiontoCNCmachines,3D printing,andSmartmanufacturing.

Thermal Engineering – working principle of Boilers, Otto cycle, Diesel cycle, Refrigerationandair-conditioningcycles,ICengines,2-Strokeand4-Strokeengines,SI/CIEngines,ComponentsofElectricandHybridVehicles.

UNITIII

Powerplants–working principle ofSteam,Diesel,Hydro,Nuclearpowerplants.**MechanicalPowerTransmission-**BeltDrives,Chain,Ropedrives,GearDrivesandtheirapplications.

IntroductiontoRobotics-Joints&links, configurations,andapplicationsofrobotics.

(Note: Thesubjectcoversonlythebasicprinciples ofCivil andMechanical Engineering systems.Theevaluationshallbeintendedtotestonlythefundamentalsof thesubject)

Textbooks:

1. InternalCombustionEnginesbyV.Ganesan,ByTataMcGrawHillpublications(India)Pvt.Ltd.
2. ATearbookofTheoryofMachinesbyS.S.Rattan,TataMcGrawHillPublications,(India)Pvt.Ltd.
3. An introduction to Mechanical Engg by Jonathan Wicker and Kemper Lewis, cengagelearningIndiapvt.Ltd.

ReferenceBooks:

1. AppuuKuttanKK, Robotics, I.K.InternationalPublishingHousePvt. Ltd. Volume-I
2. 3Dprinting&AdditiveManufacturingTechnology-L.JyothishKumar,PulakMPandey,Springerpublications
3. ThermalEngineeringbyMaheshMRathoreTataMcgrawHillpublications(India)Pvt.Ltd.
4. G.ShanmugamandM.S.Palanisamy,BasicCivilandtheMechanicalEngineering,TataMcgraw Hillpublications (India)Pvt.Ltd.

SRI VENKATESWARA COLLEGE OF ENGINEERING AND TECHNOLOGY
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I B.Tech I SEM (Common to CSE, CSD & CSM)
II SEM (Common to EEE, ECE, EBM, CAI, CSO, CSC & IT)

23AHS02 CHEMISTRY L T PC 3
- - 3

CourseObjectives:

- Tofamiliarizeengineeringchemistryanditsapplications
- Totrainthestudentsontheprinciplesandapplicationsofelectrochemistryandpolymers
- Tointroduceinstrumentalmethods,molecularmachinesandswitches.

CourseOutcomes: Attheendofthecourse,thestudentswillbeableto:
CO1: Comparethematerialsofconstructionforbatteryandelectrochemicalsensors.
CO2:Explainthepreparation,properties,andapplicationsofthermoplastics&thermosetting&elastomersc onductingpolymers.
CO3: Explain the principles of spectrometry, slc in separation of solid and liquid mixtures.
CO4: ApplytheprincipleofBanddiagramsintheapplicationofconductorsandsemiconductors.
CO5: SummarizetheconceptsofInstrumentalmethods.

UNITI StructureandBondingModels:

Fundamentals of Quantum mechanics, Schrodinger Wave equation, significance of Ψ and Ψ^2,particleinonedimensionalbox, molecular orbitaltheory–bondinginhomo-andheteronucleardiatomic molecules – energy level diagrams of O2 andCO, etc. π-molecular orbitals ofbutadiene andbenzene,calculationofbondorder.

UNITII ModernEngineeringmaterials:

Semiconductors – Introduction, basic concept, application
Superconductors-Introduction,basicconcept,applications.
Supercapacitors:Introduction,BasicConcept - Classification–Applications.
Nanomaterials: Introduction, classification, properties and applications of Fullerenes, carbonnanotubes andGraphenesnanoparticles.

UNITIII ElectrochemistryandApplications

Electrochemical cell, Nernst equation, cell potential calculations and numerical problems,potentiometry-
potentiometrictitrations(redoxtitrations),conceptofconductivity,conductivitycell,conductometrictitrati ons(acid-basetitrations).
Electrochemical sensors – potentiometric sensors with examples, amperometric sensors withexamples.
Primarycells–Zinc-airbattery,Secondarycells–lithium-ionbatteries-workingofthebatteriesincluding cell reactions; Fuel cells, hydrogen-oxygenfuel cell– working of the cells. PolymerElectrolyte MembraneFuelcells(PEMFC).

UNITIV PolymerChemistry

Introductiontopolymers,functionalityofmonomers,chaingrowthandstepgrowthpolymerization,coordin ationpolymerization,withspecificexamplesandmechanismsofpolymerformation.
Plastics –Thermo and Thermosetting plastics, Preparation, properties and applications of – PVC,Teflon,Bakelite,Nylon-6,6,carbonfibres.
Elastomers–Buna-S,Buna-N–preparation,propertiesandapplications.

Conductingpolymers–polyacetylene,polyaniline,–mechanismofconductionandapplications.Bio-Degradablepolymers-PolyGlycolicAcid(PGA),PolylLacticAcid(PLA).

UNITV InstrumentalMethodsand Applications

Electromagneticspectrum.Absorptionofradiation:Beer-Lambert'slaw.UV-VisibleSpectroscopy,

electronic transition, Instrumentation, IR spectroscopies, fundamental modesand selection rules, Instrumentation. Chromatography-Basic Principle, Classification-HPLC:Principle,InstrumentationandApplications.

Textbooks:

1. JainandJain,EngineeringChemistry,16/e, DhanpatRai, 2013.
2. Peter Atkins,JuliodePaulaandJamesKeeler,Atkins' Physical Chemistry,10/e,OxfordUniversityPress,2010.

ReferenceBooks:

1. SkoogandWest,PrinciplesofInstrumentalAnalysis,6/e, Thomson,2007.
2. J.D.Lee,ConciseInorganicChemistry,5thEdition,WileyPublications,Feb.2008
3. TextbookofPolymerScience, FredW. BillmayerJr, 3rdEdition

SRI VENKATESWARA COLLEGE OF ENGINEERING AND TECHNOLOGY, (AUTONOMOUS)

I B.Tech II Semester (EEE)

L	T	P	C
3	0	0	3

23AEE03 ELECTRICAL CIRCUIT ANALYSIS –I

Course Objectives:
To develop an understanding of the fundamental laws, elements of electrical circuits and to apply circuit analysis to DC and AC circuits

UNIT-I UNIT I INTRODUCTION TO ELECTRICAL CIRCUITS
Basic Concepts of passive elements of R, L, C and their V-I relations, Sources (dependent and independent), Kirchoff's laws, Network reduction techniques (series, parallel, series - parallel, star-to-delta and delta-to-star transformation), source transformation technique, nodal analysis and mesh analysis to DC networks with dependent and independent voltage and current sources, node and mesh analysis

UNIT II MAGNETIC CIRCUITS
Basic definition of MMF, flux and reluctance, analogy between electrical and magnetic circuits, Faraday's laws of electromagnetic induction – concept of self and mutual inductance, Dot convention – coefficient of coupling and composite magnetic circuit, analysis of series and parallel magnetic circuits

UNIT-III SINGLE PHASE CIRCUITS
R.M.S and Average values and form factor for different periodic and non-periodic wave forms, Steady state analysis of R, L and C (in series, parallel and series parallel combinations) with sinusoidal excitation – Concept of Reactance, Impedance, Susceptance and Admittance – Phase and Phase difference – concept of power factor, Real and Reactive powers – J-notation, Complex and Polar forms of representation, Complex power.

UNIT-IV RESONANCE AND LOCUS DIAGRAMS
Series Resonance: Characteristics of a series resonant circuit, Q-factor, selectivity and bandwidth, expression for half power frequencies; Parallel resonance: Q-factor, selectivity and bandwidth; Locus diagram: RL, RC, RLC with R, L and C variables.

UNIT V NETWORK THEOREMS (DC & AC EXCITATIONS)
Linear Graphs in Superposition theorem, Thevenin's theorem, Norton's theorem, Maximum Power Transfer theorem, Reciprocity theorem, Millman's theorem and compensation theorem

COURSE OUTCOMES:
At the end of the course the student will be able to
CO1: Remembering the basic electrical elements and different fundamental laws.
CO2: Understand the network reduction techniques, transformations, concept of self-inductance and mutual inductance, phasor diagrams, resonance and network theorems.
CO3: Apply the concepts to obtain various mathematical and graphical representations.
CO4: Analyse nodal and mesh networks, series and parallel circuits, steady state response, different circuit topologies (with R, L and C components).
CO5: Evaluation of Network theorems, electrical, magnetic and single-phase circuits

TEXT BOOKS:

1. Network Theory: - A sudhakar and shyammohan s palli, TMH publication 2nd edition *2004*
2. Ravish R. Singh: network analysis and synthesis, tata mc graw hill company,1st edition 2013
3.

REFERENCE BOOKS:

1. Engineering circuit analysis – by William Hayt and Jack E. Kimmerly, Mc Graw Hill Company, 6th edition.
2. Circuit theory -A. Chakrapathi, Dhanpatrai and co, 2nd edition 2015.
3. Fundamentals of Electric circuits, Alexander and sadiku, Mc-Graw Hill

SRI VENKATESWARA COLLEGE OF ENGINEERING AND TECHNOLOGY
(AUTONOMOUS)
I B.Tech II Semester (Common to All Branches)

L	T	P	C
3	0	0	3

23AHS11 DIFFERENTIAL EQUATIONS AND VECTOR CALCULUS

CourseObjectives:

- Toenlightenthelearnersintheconceptofdifferentialequationsandmultivariablecalculus.
- Tofurnishthelearnerswithbasicconceptsandtechniquesatplustwoleveltoleadthemintoadvancedlevelbyhandling variousreal-worldapplications.

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

CO1:Solvethedifferentialequationsrelatedtovariousengineeringfields.

CO2:Identifysolutionmethodsforpartialdifferentialequationsthatmodelphysicalprocesses.

CO3:Interpretthephysicalmeaningofdifferentoperatorssuchasgradient,curlanddivergence.

CO4:Estimatetheworkdoneagainstafield,circulationandfluxusingvectorcalculus.

UNITI Differentialequationsoffirst orderandfirstdegree

Linear differential equations – Bernoulli's equations- Exact equations and equations reducibleto exact form.Applications:Newton's Law of cooling – Law of natural growth and decay-Electricalcircuits- Orthogonal trajectories.

UNITII Lineardifferentialequationsofhigherorder(ConstantCoefficients)

Definitions, homogenous and non-homogenous, complimentary function, general solution,particularintegral,Wronskian,Methodofvariationofparameters.Simultaneouslinearequations,Application stoL-C-RCircuitproblemsand SimpleHarmonicmotion.

UNITIIIPartialDifferentialEquations

IntroductionandformationofPartialDifferentialEquationsbyeliminationofarbitraryconstants and arbitrary functions, solutions of first order linear equations using Lagrange'smethod.HomogeneousLinearPartialdifferentialequationswithconstantcoefficients.

UNITIVVectordifferentiation

Scalar and vector point functions, vector operator Del, Del applies to scalar point functions-Gradient, Directional derivative, del applied to vector point functions-Divergence and Curl,vectoridentities.

UNITVVectorintegration

Line integral -Circulation-work done,surfaceintegral-flux,Green's theorem in the plane(withoutproof),Stoke'stheorem(withoutproof),volumeintegral,Divergencetheorem(withoutproof)andrelated problems.

Textbooks:

1. HigherEngineeringMathematics,B.S.Grewal,KhannaPublishers,2017,44thEdition
2. AdvancedEngineeringMathematics,ErwinKreyszig,JohnWiley&Sons,2018,10thEdition.

ReferenceBooks:

1. ThomasCalculus,GeorgeB.Thomas,MauriceD.WeirandJoelHass,PearsonPublishers,2018,14th Edition.
2. AdvancedEngineeringMathematics,DennisG.ZillandWarrenS.Wright,JonesandBartlett,2018.
3. Advanced Modern Engineering Mathematics,Glyn James,Pearson publishers,2018,5thEdition.
4. AdvancedEngineeringMathematics,R.K.JainandS.R.K.Iyengar,AlphaScienceInternationalLtd.,20215th Edition(9threprint).
5. HigherEngineeringMathematics, B. V.R Ramana, , McGraw Hill Education, 2017

SRI VENKATESWARA COLLEGE OF ENGINEERING AND TECHNOLOGY, CHITTOOR

(AUTONOMOUS)

I B.Tech II Semester (Common to All Branches)

		L	T	P	C
23AME02	**ENGINEERING WORKSHOP**	**0**	**0**	**3**	**1.5**

(Common to All branches of Engineering)

Course Outcomes:

After completion of this course, the student will be able to.

CO1: Identify workshop tools and their operational capabilities.

CO2: Practiceonmanufacturingofcomponentsusingworkshoptradesincludingfitting,carpentry,foundryand welding.

CO3: Applyfittingoperationsinvariousapplications.

CO4: Applybasicelectricalengineeringknowledgefor HouseWiringPractice.

SYLLABUS

1. **Demonstration**: Safety practices and precautions to be observed in workshop.

2. **Wood Working:** Familiarity with different types of woods and tools used in wood working and make following joints.

a) Half– Lap joint b) Mortise and Tenon joint c) Corner Dovetail joint or Bridle joint.

3. **Sheet Metal Working**: Familiarity with different types of tools used in sheet metal working, Developments of following sheet metal job from GI sheets.

a) Tapered tray b)Conical funnel c) Elbow pipe d)Brazing

4. **Fitting:** Familiarity with different types of tools used in fitting and do the following fitting exercises.

a) V-fit b)Dovetail fit c) Semi-circular fit d) Bicycle tire puncture and change of two-wheeler tyre

5. **Electrical Wiring**: Familiarity with different types of basic electrical circuits and make the following connections.

a) Parallel and series b)Two-way switch c)Go down lighting d)Tube light
e)Three phase motor f)Soldering of wires

6. **Foundry Trade:** Demonstration and practice on Moulding tools and processes, Preparation of Green Sand Moulds for given Patterns.

7. **Welding Shop**: Demonstration and practice on Arc Welding and Gas welding. Preparation of Lap joint and Butt joint.

8. **Plumbing:** Demonstration and practice of Plumbing tools, Preparation of Pipe joints with coupling for same diameter and with reducer for different diameters.

Textbooks:

1. Basic Workshop Technology: Manufacturing Process, Felix W.; Independently Published, 2019.

Workshop Processes, Practices and Materials; Bruce J. Black, Routledge publishers, 5th Edn. 2015.

2. A Course in Workshop Technology Vol I. & II, B.S. Raghuwanshi, DhanpathRai& Co.,2015&2017.

Reference Books:

1. Elements of Workshop Technology, Vol. I by S. K. Hajra Choudhury & Others, Media Promoters and Publishers, Mumbai. 2007,14th edition

2. Workshop Practice by H. S. Bawa, Tata-McGraw Hill, 2004.

3. Wiring Estimating, Costing and Contracting; Soni P.M. & Upadhyay P. A.; Atul Prakashan,2021-22.

SRI VENKATESWARA COLLEGE OF ENGINEERING AND TECHNOLOGY, (AUTONOMOUS)

I B.Tech II Semester (EEE)

L	T	P	C
0	0	3	1.5

23AEE04 ELECTRICAL CIRCUITS LAB

COURSE OBJECTIVES:

To impart hands on experience in verification of circuit laws and theorems, measurement of circuit parameters, study of circuit characteristics. It also gives practical exposure to the usage of different circuits with different conditions.

LIST OF EXPERIMENTS:

1. Verification of Kirchhoff's circuit laws.
2. Verification of node and mesh analysis.
3. Verification of network reduction techniques.
4. Determination of cold and hot resistance of an electric lamp
5. Determination of Parameters of a choke coil.
6. Determination of self, mutual inductances, and coefficient of coupling
7. Series and parallel resonance
8. Locus diagrams of R-L (L Variable) and R-C (C Variable) series circuits
9. Verification of Superposition theorem
10. Verification of Thevenin's and Norton's Theorems
11. Verification of Maximum power transfer theorem
12. Verification of Compensation theorem
13. Verification of Reciprocity and Millman's Theorems

REFERENCE BOOKS:

1. Engineering Circuits Analysis, Jack Kemmerly, William Hayt and Steven Durbin, Tata Mc Graw Hill Education, 2005, sixth edition.
2. Network Analysis, M. E. Van Valkenburg, Pearson Education, 2019, Revised Third Edition

COURSE OUTCOMES:

CO1: Understand the concepts of network theorems, node and mesh networks, series and Parallel resonance and Locus diagrams.
CO2: Apply various theorems to compare practical results obtained with theoretical Calculations.
CO3: Determine self, mutual inductances and coefficient of coupling values, parameters of choke coil.
CO4: Analyse different circuit characteristics with the help of fundamental laws and various configurations.
CO5: Create locus diagrams of RL, RC series circuits and examine series and parallel resonance.

SRI VENKATESWARA COLLEGE OF ENGINEERING & TECHNOLOGY

(AUTONOMOUS)

L	T	P	C
0	0	2	1

20AHS06 - CommunicativeEnglishLab

I B.Tech I Semester (Common to CSE, CSD, CSM, CE & ME)
I B.Tech II Semester (Common to ECE, EEE, CSC, IT, CAI, CSO, CSBS & EBM)

CourseObjectives:

Themainobjectiveofintroducingthiscourse,CommunicativeEnglishLaboratory,istoexposethe students to a variety of self-instructional, learner friendly modes of language learning. Thestudents will get trained in basic communication skills and also make them ready to face jobinterviews.

CourseOutcomes:

CO1:Understandthedifferentaspects of theEnglishlanguageproficiency with emphasisonLSRWskills.
CO2:Applycommunicationskillsthroughvariouslanguagelearningactivities.
CO3:AnalyzetheEnglishspeechsounds,stress,rhythm,intonationandsyllabledivisionforbetterlisteningandspeaking comprehension.
CO4:Evaluateandexhibitprofessionalisminparticipatingindebatesandgroupdiscussions.CO5:CreateeffectiveCourse Objectives:

List ofTopics:

1. Vowels&Consonants
2. Neutralization/AccentRules
3. CommunicationSkills&JAM
4. RolePlayor ConversationalPractice
5. E-mailWriting
6. Resume Writing,Coverletter,SOP
7. GroupDiscussions-methods&practice
8. Debates-Methods&Practice
9. PPTPresentations/PosterPresentation
10. InterviewsSkills

SuggestedSoftware:

- YoungIndiaFilms
- WaldenInfotech

ReferenceBooks:

1. RamanMeenakshi,Sangeeta-Sharma.*TechnicalCommunication*.OxfordPress.2018.
2. TaylorGrant:*EnglishConversationPractice*,TataMcGraw-HillEducationIndia,2016
3. Hewing's,Martin.Cambridge*AcademicEnglish*(B2).CUP,2012.
4. J.Sethi&P.V.Dhamija.*ACourse inPhoneticsandSpoken English*,(2nd Ed),Kindle,2013

WebResources:

SpokenEnglish:

1. www.esl-lab.com
2. www.englishmedialab.com
3. www.englishinteractive.net
4. https://www.britishcouncil.in/english/online
5. http://www.letstalkpodcast.com/
6. https://www.youtube.com/c/mmmEnglish_Emma/featured
7. https://www.youtube.com/c/ArnelsEverydayEnglish/featured
8. https://www.youtube.com/c/engvidAdam/featured
9. https://www.youtube.com/c/EnglishClass101/featured
10. https://www.youtube.com/c/SpeakEnglishWithTiffani/playlists
11. https://www.youtube.com/channel/UCV1h_cBE0Drdx19qkTM0WNw

Voice&Accent:

1. https://www.youtube.com/user/letstalkaccent/videos
2. https://www.youtube.com/c/EngLanguageClub/featured
3. https://www.youtube.com/channel/UC_OskgZBoS4dAnVUgJVexc
   https://www.youtube.com/channel/UCNfm92h83W2i2ijc5Xwp_IA

SRI VENKATESWARA COLLEGE OF ENGINEERING AND TECHNOLOGY
(AUTONOMOUS)
I B.Tech I SEM (Common to CSE, CSD, CSM
II SEM (Common to EEE, ECE, EBM, CAI, CSO, CSC, IT)

23AHS07	**CHEMISTRY LAB**	**L T P C**
		0 0 2 1

Course Outcomes: At the end of the course, the students will be able to
CO1: Determine the cell constant and conductance of solutions.
CO2: Prepare advanced polymer Bakelite materials.
CO3: Measure the strength of an acid present.
CO4: Analyse the IR spectra of some organic compounds.
CO5: Calculate strength of acid in Pb-Acid battery.

Reference: "Vogel's Quantitative Chemical Analysis 6th Edition 6th Edition" Pearson Publications by J. Mendham, R.C.Denney, J.D.Barnes and B. Sivasankar

SRI VENKATESWARA COLLEGE OF ENGINEERING AND TECHNOLOGY
(AUTONOMOUS)
I B.Tech I SEM (Common to CSE, CSD, CSM
II SEM (Common to EEE, ECE, EBM, CAI, CSO, CSC, IT)

23AHS10 HEALTH AND WELLNESS, YOGA AND SPORTSL (Mandatory Course)	**T**	**P**	**C**
	0	**1**	**0.5**

Course Objectives:

The main objective of introducing this course is to make the students maintain their mental andphysical wellness by balancing emotions in their life. It mainly enhances the essential traitsrequired for the development of the personality.

Course Outcomes:

After completion of the course the student will be able to

CO1: Understand the importance of yoga and sports for Physical fitness and sound health.

CO2: Demonstrate an understanding of health-related fitness components.

CO3: Compare and contrast various activities that help enhance their health.

CO4: Assess current personal fitness levels.

CO5: Develop Positive Personality

UNIT I

Concept of health and fitness, Nutrition and Balanced diet, basic concept of immunity Relationship between diet and fitness, Globalization and its impact on health, Body Mass Index (BMI) of all age groups.

Activities:

i) Organizing health awareness programmes in community

ii) Preparation of health profile

iii) Preparation of chart for balance diet for all age groups

UNIT II

Concept of yoga, need for and importance of yoga, origin and history of yoga in Indian context, classification of yoga, Physiological effects of Asanas- Pranayama and meditation, stress management and yoga, Mental health and yoga practice.

Activities:

Yoga practices – Asana, Kriya, Mudra, Bandha, Dhyana, Surya Namaskar

UNIT III

Concept of Sports and fitness, importance, fitness components, history of sports, Ancient and Modern Olympics, Asian games and Commonwealth games.

Activities:

i) Participation in one major game and one individual sport viz., Athletics, Volleyball, Basketball, Handball, Football, Badminton, Kabaddi, Kho-kho, Table tennis, Cricket etc.

Practicing general and specific warm up, aerobics

ii) Practicing cardiorespiratory fitness, treadmill, run test, 9 min walk, skipping and running.

Reference Books:

1. Gordon Edlin, Eric Golanty. Health and Wellness, 14th Edn. Jones & Bartlett Learning, 2022
2. T.K.V.Desikachar. The Heart of Yoga: Developing a Personal Practice
3. Archie J.Bahm. Yoga Sutras of Patanjali, Jain Publishing Company, 1993
4. Wiseman, John Lofty, SAS Survival Handbook: The Ultimate Guide to Surviving Anywhere Third Edition, William Morrow Paperbacks, 2014
5. The Sports Rules Book/ Human Kinetics with Thomas Hanlon. -- 3rd ed. Human Kinetics, Inc.2014

General Guidelines:

1. Institutes must assign slots in the Timetable for the activities of Health/Sports/Yoga.
2. Institutes must provide field/facility and offer the minimum of five choices of as many as Games/Sports.
3. Institutes are required to provide sports instructor / yoga teacher to mentor the students.

Evaluation Guidelines:

1. Evaluated for a total of 100 marks.
2. A student can select 6 activities of his/her choice with a minimum of 01 activity per unit. Each activity shall be evaluated by the concerned teacher for 15 marks, totalling to 90 marks.
3. A student shall be evaluated by the concerned teacher for 10 marks by conducting viva Voce on the subject.

SRI VENKATESWARA COLLEGE OF ENGINEERING AND TECHNOLOGY
(AUTONOMOUS)
I B.Tech I SEM (Common to CSE, CSD, CSM
II SEM (Common to EEE, ECE, EBM, CAI, CSO, CSC, IT)

23AHS12	**NSS/NCC/Scouts and Guides / Community ServiceL**	**T P C**
	(Mandatory Course)	**0 1 0.5**

Course Objectives:

The objective of introducing this course is to impart discipline, character, fraternity, teamwork, Social consciousness among the students and engaging them in selfless service.

Course Outcomes:

After completion of the course the students will be able to

CO1: Understand the importance of discipline, character and service motto.

CO2: Solve some societal issues by applying acquired knowledge, facts, and techniques.

CO3: Explore human relationships by analyzing social problems.

CO4: Determine to extend their help for the fellow beings and downtrodden people.

CO5: Develop leadership skills and civic responsibilities.

UNIT I Orientation

General Orientation on NSS/NCC/ Scouts & Guides/Community Service activities, career guidance.

Activities:

i) Conducting –ice breaking sessions-expectations from the course-knowing personal talents and skills

ii) Conducting orientations programs for the students –future plans-activities-releasing road map etc.

iii) Displaying success stories-motivational biopics- award winning movies on societal issues etc.

iv) Conducting talent show in singing patriotic songs-paintings- any other contribution.

UNIT II Nature & Care

Activities:

i) Best out of waste competition.

ii) Poster and signs making competition to spread environmental awareness.

iii) Recycling and environmental pollution article writing competition.

iv) Organising Zero-waste day.

v) Digital Environmental awareness activity via various social media platforms.

vi) Virtual demonstration of different eco-friendly approaches for sustainable living.

vii)Write a summary on any book related to environmental issues.

UNIT III Community Service

Activities:

i) Conducting One Day Special Camp in a village contacting village-area leaders- Survey in the village, identification of problems- helping them to solve via media- authoritiesexperts-etc.

ii) Conducting awareness programs on Health-related issues such as General Health,

Mental health, Spiritual Health, HIV/AIDS,
iii) Conducting consumer Awareness. Explaining various legal provisions etc.
iv) Women Empowerment Programmes- Sexual Abuse, Adolescent Health and Population Education.
v) Any other programmes in collaboration with local charities, NGOs etc.

Reference Books:

1. Nirmalya Kumar Sinha&SurajitMajumder, A Text Book of National Service Scheme Vol;.I, VidyaKutir Publication, 2021 (ISBN 978-81-952368-8-6)
2. Red Book - National Cadet Corps – Standing Instructions Vol I & II, Directorate General of NCC, Ministry of Defence, New Delhi
3. Davis M. L. and Cornwell D. A., "Introduction to Environmental Engineering", McGraw Hill, New York 4/e 2008
4. Masters G. M., Joseph K. and Nagendran R. "Introduction to Environmental Engineering and Science", Pearson Education, New Delhi. 2/e 2007
5. Ram Ahuja. Social Problems in India, Rawat Publications, New Delhi.

General Guidelines:

1. Institutes must assign slots in the Timetable for the activities.
2. Institutes are required to provide instructor to mentor the students.

Evaluation Guidelines:

1. Evaluated for a total of 100 marks.
2. A student can select 6 activities of his/her choice with a minimum of 01 activity per unit. Each activity shall be evaluated by the concerned teacher for 15 marks, totalling to 90 marks.
3. A student shall be evaluated by the concerned teacher for 10 marks by conducting viva voce on the subject.

SRI VENKATESWARA COLLEGE OF ENGINEERING AND TECHNOLOGY, (AUTONOMOUS)

II B.Tech I Semester

L	T	P	C
3	0	0	3

(23AHS14) COMPLEXVARIABLESANDNUMERICALMETHODS (EEE)

CourseOutcomes:

COs	Statements	Blooms level
CO1	Analyzelimit,continuityanddifferentiationoffunctionsofcomplexvariablesand UnderstandCauchy-Riemannequations,analyticfunctionsandvariouspropertiesofanalytic functions.	L2,L3
CO2	UnderstandCauchytheorem,Cauchyintegralformulasandapplythese toevaluate Complexcontourintegrals.Classifysingularitiesandpoles;findresiduesandevaluatecomplexintegralsusingtheresiduetheorem.	L3,L5
CO3	Applynumericalmethodstosolvealgebraicandtranscendental equations	L3
CO4	Deriveinterpolatingpolynomialsusinginterpolationformulae	L2,L3
CO5	Solvedifferentialandintegralequationsnumerically	L3,L5

UNITI ComplexVariable–Differentiation

Introduction to functions of complex variable-concept of Limit & continuity-Differentiation,Cauchy-Riemannequations,analyticfunctionsharmonicfunctions,findingharmonicconjugate-constructionofanalyticfunctionbyMilne Thomsonmethod.

UNITII ComplexVariable–Integration

Line integral-Contour integration, Cauchy's integral theorem(Simple Case), Cauchy Integralformula, Power series expansions: Taylor's series, zeros of analytic functions, singularities,Laurent's series, Residues, Cauchy Residue theorem (without proof),Evaluation of definiteintegralinvolvingsineandcosine.

UNITIII: SolutionofAlgebraic&TranscendentalEquations

Introduction-Bisection Method-Iterative method, Regula-falsi method and Newton Raphsonmethod SystemofAlgebraicequations: GaussElimination,Jacobyand GaussSiedalmethod.

UNITIV Interpolation

Finitedifferences-Newton'sforwardandbackwardinterpolationformulae–Lagrange'sformulae. Curve fitting: Fitting of straightline, second-degree and Exponential curve bymethodofleastsquares.

UNITV SolutionofInitialvalueproblemstoOrdinarydifferentialequations

Numerical solution of Ordinary Differential equations: Solution by Taylor's series-Picard'sMethod of successive Approximations-Euler's and modified Euler's methods-Runge-Kuttamethods(secondandfourthorder).

Textbooks:

1. B.S.Grewal,HigherEngineeringMathematics,KhannaPublishers,2017,44th Edition
2. SSSastry,IntroductoryMethodsofNumericalAnalysis,PHILearningPrivateLimited.

Reference Books:

1. ErwinKreyszig,AdvancedEngineeringMathematics,JohnWiley&Sons,2018,10th Edition.
2. B.V.Ramana, HigherEngineeringMathematics,byMcGrawHillpublishers
3. R.K.JainandS.R.K.Iyengar,AdvancedEngineering Mathematics, Alpha Science InternationalLtd., 20215th Edition(9threprint).

OnlineLearningResources:

1. https://onlinecourses.nptel.ac.in/noc17_ma14/preview
2. https://onlinecourses.nptel.ac.in/noc20_ma50/preview
3. http://nptel.ac.in/courses/111105090

SRI VENKATESWARA COLLEGE OF ENGINEERING AND TECHNOLOGY,

(AUTONOMOUS)

II B.Tech I Semester

L	T	P	C
2	1	0	3

(23AMB01) UNIVERSAL HUMAN VALUES – UNDERSTANDING HARMONY ANDETHICALHUMANCONDUCT
(EEE)

CourseOutcomes:

- DefinethetermslikeNaturalAcceptance,HappinessandProsperity(L1,L2)
- Identifyone'sself,and one'ssurroundings(family,societynature)(L1,L2)
- Applywhattheyhavelearnttotheirownselfindifferentday-to-daysettingsinreallife(L3)
- Relatehumanvalueswithhumanrelationshipandhumansociety.(L4)
- Justifytheneedfor universalhumanvaluesandharmoniousexistence(L5)
- Developassociallyandecologicallyresponsibleengineers(L3,L6)

CourseTopics

The course has 28 lectures and 14 tutorials in 5 modules. The lectures and tutorials are of 1-hourduration.Tutorialsessionsaretobeusedtoexploreandpracticewhathasbeenproposedduringth electure sessions.

The Teacher's Manual provides the outline for lectures as well as practice sessions. Theteacher is expected to present the issues to be discussed as propositions and encourage thestudentstohaveadialogue.

UNITI IntroductiontoValueEducation(6lecturesand3tutorialsforpracticesession)
Lecture1:RightUnderstanding,RelationshipandPhysicalFacility(HolisticDevelopmentandthe RoleofEducation)
Lecture2:UnderstandingValueEducation
Tutorial 1: Practice Session PS1 Sharing about OneselfLecture3:self-explorationastheProcessforValueEducation
Lecture4:ContinuousHappinessandProsperity–theBasicHumanAspirations
Tutorial2:PracticeSessionPS2ExploringHumanConsciousnessLecture5: Happinessand Prosperity–CurrentScenario
Lecture6: Methodto FulfilltheBasicHumanAspirations
Tutorial3:PracticeSessionPS3ExploringNaturalAcceptance

UNITII Harmony in the Human Being (6 lectures and 3 tutorials for practice session)Lecture7:UnderstandingHumanbeingastheCo-existenceoftheselfandthebody.
Lecture8:Distinguishingbetweenthe Needsofthe selfandthe body
Tutorial4:PracticeSessionPS4ExploringthedifferenceofNeedsofselfandbody.
Lecture 9: The body as an Instrument of the selfLecture10:UnderstandingHarmony intheself
Tutorial5:PracticeSessionPS5ExploringSourcesofImaginationintheselfLecture 11:Harmonyoftheselfwiththebody
Lecture12:Programmetoensureself-regulationandHealth
Tutorial6:PracticeSessionPS6ExploringHarmonyofselfwiththe body

UNITIII HarmonyintheFamilyandSociety(6lecturesand3tutorialsforpracticesession)
Lecture 13: Harmony in the Family – the Basic Unit of Human InteractionLecture 14:'Trust'–the FoundationalValueinRelationship
Tutorial 7: Practice Session PS7 Exploring the Feeling of TrustLecture 15:'Respect'–as the RightEvaluation
Tutorial 8: Practice Session PS8 Exploring the Feeling of RespectLecture16:OtherFeelings,Justice inHuman-to-HumanRelationshipLecture 17:UnderstandingHarmonyinthe Society
Lecture18: Vision fortheUniversalHumanOrder
Tutorial9: PracticeSessionPS9 ExploringSystemsto fulfilHumanGoal

UNITIV HarmonyintheNature/Existence(4lecturesand2tutorialsforpracticesession)
Lecture19: UnderstandingHarmony intheNature
Lecture20:Interconnectedness,self-regulationandMutualFulfilmentamongtheFourOrdersofNature
Tutorial 10: Practice Session PS10 Exploring the Four Orders of NatureLecture21:Realizing Existence asCo-existence at AllLevels
Lecture22:TheHolisticPerceptionofHarmonyinExistence
Tutorial11:PracticeSessionPS11ExploringCo-existenceinExistence.

UNITV ImplicationsoftheHolisticUnderstanding–aLookatProfessionalEthics(6lecturesand3tutorialsforpractice session)
Lecture 23: Natural Acceptance of Human ValuesLecture24:Definitivenessof(Ethical) HumanConduct
Tutorial12: PracticeSessionPS12 Exploring EthicalHumanConduct
Lecture25:ABasisforHumanisticEducation,HumanisticConstitutionandUniversalHumanOrder
Lecture26:CompetenceinProfessionalEthics
Tutorial 13: Practice Session PS13 Exploring Humanistic Models in EducationLecture27:HolisticTechnologies,ProductionSystemsandManagement Models-TypicalCaseStudies
Lecture 28: Strategies for Transition towards Value-based Life and ProfessionTutorial14:PracticeSessionPS14Exploring StepsofTransitiontowards UniversalHumanOrder

Practice Sessions for UNIT I – Introduction to Value EducationPS1SharingaboutOneself
PS2 Exploring Human ConsciousnessPS3Exploring NaturalAcceptance

PracticeSessionsfor UNITII–HarmonyintheHumanBeingPS4Exploringthedifference ofNeeds ofselfandbody
PS5 Exploring Sources of Imagination in the selfPS6ExploringHarmonyofselfwiththebody

Practice Sessions for UNIT III – Harmony in the Family and SocietyPS7ExploringtheFeelingofTrust
PS8ExploringtheFeelingofRespect
PS9Exploring Systemsto fulfilHumanGoal

PracticeSessionsfor UNITIV–
HarmonyintheNature(Existence)PS10ExploringtheFourOrdersofNature
PS11ExploringCo-existenceinExistence

PracticeSessionsforUNITV –Implications of theHolisticUnderstanding–
aLookatProfessionalEthics
PS12ExploringEthicalHumanConduct
PS13ExploringHumanisticModelsinEducation
PS14 ExploringStepsofTransitiontowardsUniversalHumanOrder

READINGS:
TextbookandTeachersManual
a. TheTextbook
RRGaur,RAsthana,GPBagaria,AFoundationCourseinHuman ValuesandProfessionalEthics,2nd Revised Edition,ExcelBooks,New Delhi,2019.ISBN 978-93-87034-47-1
b. TheTeacher'sManual
R R Gaur, R Asthana, G P Bagaria,Teachers' Manual for A Foundation Course in HumanValues and Professional Ethics,2nd Revised Edition, Excel Books, New Delhi, 2019. ISBN978-93-87034-53-2

ReferenceBooks
1. JeevanVidya:EkParichaya,ANagaraj,JeevanVidyaPrakashan,Amarkantak,1999.
2. HumanValues,A.N.Tripathi,NewAgeIntl.Publishers,NewDelhi,2004.
3. TheStoryofStuff(Book).
4. The StoryofMyExperimentswithTruth-byMohandasKaramchand Gandhi
5. SmallisBeautiful-E.FSchumacher.
6. SlowisBeautiful-Cecile Andrews
7. EconomyofPermanence-JCKumarappa
8. BharatMeinAngrejiRaj–PanditSunderlal
9. RediscoveringIndia- byDharampal
10. HindSwarajorIndianHomeRule-byMohandasK.Gandhi
11. IndiaWins Freedom- MaulanaAbdulKalamAzad
12. Vivekananda-RomainRolland(English)
13. Gandhi-RomainRolland(English)

Mode ofConduct:
Lecture hours are to be used for interactive discussion, placing the proposals about the topicsathandandmotivatingstudentstoreflect,explore andverifythem.
Tutorialhoursaretobeusedforpracticesessions.
While analyzing and discussing the topic, the faculty mentor's role is in pointing to essentialelements to help in sorting them out from the surface elements. In other words, help thestudentsexploretheimportantorcriticalelements.
In the discussions, particularly during practice sessions (tutorials), the mentor encourages thestudent to connectwith one's own self and do self-observation, self-reflection and self-exploration.

Scenarios may be used to initiate discussion. The student is encouraged to take up "ordinary"situations rather than" extra-ordinary" situations. Such observations and their analyses aresharedanddiscussedwithotherstudentsandfacultymentor,ina groupsitting.

Tutorials (experiments or practical) are important for the course. The difference is that thelaboratoryiseverydaylife,andpracticalarehowyoubehaveandworkinreallife.Depending on

the nature of topics, worksheets, home assignment and/or activity are included.The practice sessions (tutorials) would also provide support to a student in performing actionscommensurate tohis/herbeliefs.Itisintendedthatthiswouldleadtodevelopmentofcommitment,namelybehavingandworkingbased onbasichumanvalues.

It is recommended that this content be placed before the student as it is, in the form of a basicfoundation course, without including anything else or excluding any part of this content.Additional content may be offered in separate, higher courses. This course is to be taught byfacultyfromeveryteachingdepartment,notexclusivelybyanyone department.

Teacher preparation with a minimum exposure to at least one 8-day Faculty DevelopmentProgramonUniversalHumanValuesis deemedessential.

OnlineResources:

1. https://fdp-si.aicte-india.org/UHV-II%20Class%20Notes%20&%20Handouts/UHV%20Handout%201-Introduction%20to%20Value%20Education.pdf
2. https://fdp-si.aicte-india.org/UHV-II%20Class%20Notes%20&%20Handouts/UHV%20Handout%202-Harmony%20in%20the%20Human%20Being.pdf
3. https://fdp-si.aicte-india.org/UHV-II%20Class%20Notes%20&%20Handouts/UHV%20Handout%203-Harmony%20in%20the%20Family.pdf
4. https://fdp-si.aicte-india.org/UHV%201%20Teaching%20Material/D3-S2%20Respect%20July%2023.pdf
5. https://fdp-si.aicte-india.org/UHV-II%20Class%20Notes%20&%20Handouts/UHV%20Handout%205-Harmony%20in%20the%20Nature%20and%20Existence.pdf
6. https://fdp-si.aicte-india.org/download/FDPTeachingMaterial/3-days%20FDP-SI%20UHV%20Teaching%20Material/Day%203%20Handouts/UHV%203D%20D3-S2A%20Und%20Nature-Existence.pdf
7. https://fdp-si.aicte-india.org/UHV%20II%20Teaching%20Material/UHV%20II%20Lecture%2023-25%20Ethics%20v1.pdf
8. https://www.studocu.com/in/document/kiet-group-of-institutions/universal-human-values/chapter-5-holistic-understanding-of-harmony-on-professional-ethics/62490385
9. https://onlinecourses.swayam2.ac.in/aic22_ge23/preview

SRI VENKATESWARA COLLEGE OF ENGINEERING AND TECHNOLOGY,

(AUTONOMOUS)

II B.Tech I Semester

L	T	P	C
3	0	0	3

(23AEE07) ELECTRO MAGNETIC FIELD THEORY
(EEE)

CourseOutcomes:

CO	Statements	Blooms Level
CO1	Rememberthe conceptsofvectoralgebra,vectorcalculus,variousfundamentallaws,selfandmutualinductance	**L1**
CO2	Understandtheconceptsofelectrostatics,conductors,dielectrics,capacitance, magnetostatics,magneticfields,timevaryingfields,selfandmutualinductances	**L2**
CO3	Apply vector calculus, Coulomb's law, Gauss's law, Ohm's law in point form, Biot-Savart's law, Ampere's circuital law, Maxwell's third equation, self and mutualinductances,Faraday'slaws,Maxwell'sfourthequation,Poyntingtheoremtosolve variousnumericalproblems	**L3**
CO4	Analyzevectorcalculus,electrostaticfields,behaviorofconductorinelectricfiled, Biot-Savart'slawanditsapplications	**L4**
CO5	Analyzemagneticforce,movingchargesinamagneticfield,self-inductanceof differentcables, mutualinductancebetweendifferentwiresandtimevaryingfields	**L4**

UNITI

VectorAnalysis:

Vector Algebra: Scalars and Vectors, Unit vector, Vector addition and subtraction, Positionand distancevectors,Vectormultiplication,Componentsofavector.

CoordinateSystems: Rectangular,CylindricalandSphericalcoordinatesystems.

Vector Calculus: Differential length, Area and Volume.Del operator, Gradient of a scalar,Divergenceof avector andDivergencetheorem (definition only).Curl of avector andStoke'stheorem(definitiononly),Laplacianofascalar

Electrostatics:

Coulomb'slawandElectricfieldintensity(EFI)–EFIduetoContinuouschargedistributions (line and surface charge), Electric flux density, Gauss's law (Maxwell's firstequation, $\nabla.\vec{D} = \rho_v$), Applications of Gauss'slaw,Electric Potential, Work donein moving a point charge in an electrostatic field (second Maxwell's equation for static electricfields,$\nabla \times \vec{E} = 0$),Potentialgradient,Laplace'sandPoison'sequations.

UNITII

Conductors–DielectricsandCapacitance:

Behaviour of conductor in Electric field, Electric dipole and dipole moment – Potential andEFI due to an electric dipole, Torque on an Electric dipole placed in an electric field, Currentdensity-conduction and convection current densities, Ohm's law in point form, Behaviour ofconductorsinanelectricfield,Polarization,dielectricconstantandstrength,Continuityequation and relaxation time, Boundary conditions between conductor to dielectric, dielectricto dielectric and conductor to free space, Capacitance of parallel plate, coaxial and sphericalcapacitors,Energystoredanddensityinastaticelectricfield,Coupledanddecoupledcapacitors.

UNITIII

Magnetostatics,Ampere'sLawandForceinmagneticfields:

Biot-Savart's law and its applications viz. Straight current carrying filament, circular, square,rectangle and solenoid current carrying wire – Magnetic flux density and Maxwell's secondEquation ($\nabla . \vec{B} = 0$), Ampere's circuital law and its applications viz. MFI due to an infinitesheet, long filament, solenoid, toroidal current carrying conductor, point form of Ampere'scircuitallaw,Maxwell'sthirdequation($\nabla \times \vec{H} = \vec{J}$).

Magnetic force, moving charges in a magnetic field – Lorentz force equation, force on acurrent element in a magnetic field, force on a straight and a long current carrying conductorin a magnetic field, force between two straight long and parallel current carrying conductors,Magnetic dipole,Magnetictorque,andmoment.

UNITIV

Selfand mutualinductance:

Self and mutual inductance – determination of self-inductance of a solenoid, toroid, coaxialcable and mutual inductance between a straight long wire and a square loop wire in the sameplane –Energystoredandenergydensityinamagneticfield.

UNITV

TimeVaryingFields:

Faraday'slawsofelectromagneticinduction,Maxwell'sfourthequation($\nabla \times \vec{E} = -\frac{\vec{6B}}{6t}$), integral and point forms of Maxwell's equations, statically and dynamically induced EMF,Displacement current, Modification of Maxwell's equations for time varying fields, PoyntingtheoremandPoyntingvector.

Textbooks:

1. "ElementsofElectromagnetics"byMatthewNOSadiku,OxfordPublications,7th edition,2018.
2. "EngineeringElectromagnetics"byWilliamH.Hayt&John.A.BuckMc.Graw-Hill,7th Editon.2006.

ReferenceBooks:

1. "IntroductiontoElectroDynamics"byDJGriffiths,Prentice-HallofIndiaPvt.Ltd,2nd edition.
2. "ElectromagneticFieldTheory"byYaduvirSingh,PearsonIndia,1st edition,2011.
3. "FundamentalsofEngineeringElectromagnetics"bySunilBhooshan,OxfordUniversityPress,2012.
4. Schaum'sOutlineofElectromagneticsbyJosephA.Edminister,MahamoodNavi,4th Edition,2014.

WebResources:

1. https://archive.nptel.ac.in/courses/108/106/108106073/
2. https://nptel.ac.in/courses/117103065

SRI VENKATESWARA COLLEGE OF ENGINEERING AND TECHNOLOGY,

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II B.Tech I Semester

L	T	P	C
3	0	0	3

(23AEE08) ELECTRICAL CIRCUIT ANALYSIS-II

CourseOutcomes:

CO	Statements	Blooms Level
CO1	RemembertheconceptsofLaplacetransforms,formulationofvariouscircuittopologies(R,LandCcomponents)andbasicfilters	**L1**
CO2	Understand three phase balanced and unbalanced circuits, different circuit configurationsandit'smathematicalmodeling,networkparametersandvariousfilters	**L2**
CO3	ApplyLaplacetransformstosolvevariouselectricalnetworktopologiesandfilter designconcepts	**L3**
CO4	Analyzethreephasecircuits,transientresponseofvariousnetworktopologies, electriccircuitswithperiodicexcitationsandfilter characteristics	**L4**
CO5	Designsuitableelectricalcircuitsandvariousfiltersfordifferentapplications	**L5**

UNITI

Analysisofthreephasebalancedcircuits:

Phasesequence,staranddeltaconnectionofsourcesandloads,relationbetweenlineand phase quantities, analysis of balanced three phase circuits, measurement of active andreactive power.

Analysisofthreephaseunbalancedcircuits:

Loop method, Star-Delta transformation technique, two-wattmeter method for measurementofthreephasepower.

UNITII

Laplace transforms – Definition and Laplace transforms of standard functions– Shiftingtheorem–

Transformsofderivativesandintegrals,InverseLaplacetransformsandapplications.

Transient Analysis: Transient response of R-L, R-C and R-L-C circuits (Series and parallelcombinations)forD.C.andsinusoidalexcitations–Initialconditions-Solutionusingdifferentialequationapproachand Laplacetransformapproach.

UNITIII

Network Parameters: Impedance parameters, Admittance parameters, Hybrid parameters,Transmission(ABCD)parameters,conversionofParametersfromoneformtoother,Conditions for Reciprocity and Symmetry, Interconnection of Two Port networks in Series,ParallelandCascadedconfigurations-problems.

UNITIV

Analysis of Electric Circuits with Periodic Excitation: Fourier series and evaluation ofFouriercoefficients,TrigonometricandcomplexFourierseriesforperiodicwaveforms,Application to Electrical Systems – Effective value and average value of non-sinusoidalperiodic waveforms,powerfactor, effectofharmonics

UNITV

Filters: Classification of filters-Low pass, High pass, Band pass and Band Elimination filters,Constant-kfilters-Lowpass andHighPass,DesignofFilters.

Textbooks:

1. EngineeringCircuitAnalysis,WilliamHaytandJackE.Kemmerly,8thEditionMcGraw-Hill,2013
2. FundamentalsofElectricCircuits,CharlesK.Alexander,MathewN.O.Sadiku,3rdEdition,TataMcGraw-Hill,2019

ReferenceBooks:

1. NetworkAnalysis, M.E.VanValkenburg,3rdEdition, PHI,2019.
2. Network Theory, N. C. Jagan and C. Lakshminarayana, 1st Edition, B. S. Publications,2012.
3. Circuits and Networks Analysis and Synthesis, A. Sudhakar, Shyam Mohan S. Palli,5thEdition,TataMcGraw-Hill,2017.
4. Engineering Network Analysis and Filter Design (Including Synthesis of One PortNetworks)-DurgeshC.KulshreshthaGopalG.Bhise,PremR.Chadha ,UmeshPublications2012.
5. Circuit Theory: Analysis and Synthesis, A. Chakrabarti, DhanpatRai& Co., 2018, 7thRevisedEdition.

WebResources:

1. https://archive.nptel.ac.in/courses/117/106/117106108/
2. https://archive.nptel.ac.in/courses/108/105/108105159/

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II B.Tech I Semester

L	T	P	C
3	0	0	3

(23AEE09) DC MACHINES &TRANSFORMERS
(EEE)

CourseOutcomes:

CO	Statements	Blooms Level
CO1	Understandtheprocess ofvoltagebuild-upinDC generatorsandcharacteristics.	**L2**
CO2	Understandtheprocessoftorqueproduction,startingandspeedcontrolofDC motorsandillustratetheircharacteristics.	**L2**
CO3	Obtaintheequivalentcircuitofsingle-phasetransformer,autotransformerand determineitsefficiency&regulation.	**L3**
CO4	Applyvarioustestingmethodsfortransformersandspeedcontrolof DC motors	**L3**
CO5	Analyzevariousconfigurations ofthree-phasetransformers.	**L4**

UNITI

DCGenerators:

Construction and principle of operation of DC machines – EMF equation for generator – Excitationtechniques–characteristicsofDCgenerators–applicationsofDCGenerators,Back-emfandtorqueequationsofDCmotor–Armaturereactionandcommutation,Applications.

UNITII

Starting,SpeedControlandTesting ofDCMachines:

Characteristicsof DC motors – losses andefficiency – applications of DC motors. Necessity ofa starter – starting by 3-point and 4-point starters – speed control by armature voltage andfield current control – testing of DC machines – brake test, Swinburne's test – Hopkinson'stest–FieldTest.

UNITIII

Single-phaseTransformers:

Introductiontosingle-phaseTransformers(Constructionandprincipleofoperation)–emfequation–operationonno-loadandonload–lagging,leadingandunitypowerfactorsloads –phasordiagrams–equivalentcircuit–regulation–lossesandefficiency– effectofvariationoffrequencyandsupplyvoltage onlosses–alldayefficiency,Applications.

UNITIV

TestingofTransformers:

Open Circuitand ShortCircuittests –Sumpner's test –separation of losses—Paralleloperation with equal and unequal voltage ratios– auto transformer – equivalent circuit – comparisonwithtwowindingtransformers.

UNITV

Three-PhaseTransformers:

Polyphase connections- Y/Y, Y/Δ, Δ/Y, Δ/Δ, open Δ and Vector groups – third harmonics inphase voltages– Parallel operation–three winding transformers- transients in switching offloadandonloadtapchangers–Scottconnection.

Textbooks:

1. ElectricalMachinerybyDr.PSBimbhra,7thedition,KhannaPublishers,NewDelhi,1995.
2. PerformanceandanalysisofACmachinesbyM.G.Say,CBS,2002.

ReferenceBooks:

1. ElectricalMachinesbyD.P.Kothari,I.J.Nagarth,McGrawHillPublications,5thedition
2. ElectricalMachineryFundamentalsbyStephenJChapmanMcGrawHilleducation2011.
3. GeneralizedTheoryofElectricalMachinesbyDr.PSBimbhra,7thEdition,KhannaPublishers,2021.
4. Theory&PerformanceofElectricalMachinesbyJ.B.Gupta,S.K.Kataria&Sons,2007.
5. ElectricMachinerybyFitzgerald,A.E.,Kingsley,Jr.,C.,&Umans,S.D,7thedition,McGraw-HillEducation,2014.

WebResources:

1.nptel.ac.in/courses/108/105/108105112
2.nptel.ac.in/courses/108/105/108105155

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II B.Tech I Semester

L	T	P	C
0	0	3	1.5

(23AEE10) ELECTRICAL CIRCUIT ANALYSIS –II AND SIMULATION LAB

CourseOutcomes:

CO	Statements	Blooms Level
CO1	Understandthepowercalculationsinthreephasecircuits.	**L2**
CO2	Analyzethetimeresponseofgivennetwork.	**L4**
CO3	Determinationoftwoport networkparameters.	**L4**
CO4	SimulateandanalyzeelectricalcircuitsusingsoftwareTools	**L4**
CO5	ApplyvarioustheoremstosolvedifferentelectricalnetworksusingsimulationTools	**L3**

ListofExperiments:

Any10ofthefollowingexperimentsareto beconducted:

1. MeasurementofActivePowerandReactivePower forbalancedloads.
2. MeasurementofActivePower andReactivePowerforunbalancedloads.
3. DeterminationofZandYparameters.
4. DeterminationofABCD andhybrid parameters
5. VerificationofKirchhoff'scurrentlawandvoltagelawusingsimulationtools.
6. Verificationofmeshandnodalanalysisusingsimulationtools.
7. Verificationofsuperpositionandmaximumpowertransfertheoremsusingsimulationtools.
8. VerificationofReciprocityandCompensationtheoremsusing simulationtools.
9. VerificationofThevenin'sandNorton'stheoremsusingsimulationtools.
10. Verificationofseriesandparallelresonanceusingsimulationtools.
11. SimulationandanalysisoftransientresponseofRL,RCandRLCcircuits.
12. Verificationofself-inductanceandmutualinductancebyusingsimulationtools.

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	L	T	P	C
II B.Tech I Semester	**0**	**0**	**3**	**1.5**

(23AEE11) DC MACHINES & TRANSFORMERS LAB

CourseOutcomes:

CO	Statements	Blooms Level
CO1	DemonstratestartingandspeedcontrolmethodsofDC Machines.	**L2**
CO2	ApplytheoreticalconceptstodeterminetheperformancecharacteristicsofDC Machines.	**L3**
CO3	Analyzetheparalleloperation of singlephasetransformers	**L4**
CO4	Determinetheperformanceparametersofsingle-phasetransformer.	**L3**
CO5	Analyzetheperformanceanalysisoftransformersusingvarioustests	**L4**

ListofExperiments:

Any10ofthefollowingexperimentsareto beconducted:

1. SpeedcontrolofDCshuntmotor byFieldCurrentandArmatureVoltageControl.
2. Braketest onDCshuntmotor-Determinationofperformancecurves.
3. Swinburne'stest-PredeterminationofefficienciesasDCGeneratorand Motor.
4. Hopkinson'stestonDCshuntMachines.
5. LoadtestonDCcompoundgenerator-Determinationofcharacteristics.
6. LoadtestonDCshuntgenerator-Determinationofcharacteristics.
7. FieldstestonDCseries machines-Determinationofefficiency.
8. Braketest onDCcompoundmotor-Determinationofperformancecurves.
9. OC&SCtestsonsinglephasetransformer.
10. Sumpner'stestonsinglephasetransformer.
11. Scottconnectionoftransformers.
12. ParalleloperationofSingle-phaseTransformers.
13. Separationofcorelossesofasingle-phasetransformer.

Reference:

1.https://ems-iitr.vlabs.ac.in/List%20of%20experiments.html

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II B.Tech I Semester

L	T	P	C
0	1	2	2

(23ACS10) Data Structures

CourseOutcomes:

	Statements	Blooms Level
CO1	Understandtheroleofdatastructures inorganizingand accessingdata	**L2**
CO2	Design,implementandapplylinkedlistsfordynamicdata storage	**L3**
CO3	Developapplicationsusingstacksandqueues	**L5**
CO4	Designandimplementalgorithmsforoperationsonbinarytreesandbinarysearch trees	**L5**
CO5	Designnovelsolutions tosmallscaleprogrammingchallengesinvolvingdatastructuressuchasstacks,queues,Trees	**L5**

UNITI

Introduction to Data Structures: Definition and importance of Data structures,Abstractdata types (ADTs) and its specifications,**Arrays**: Introduction, 1-D, 2-D Arrays, accessingelements of array, Row Major and Column Major storage of Arrays, **Searching Techniques**:Linear&BinarySearch,**SortingTechniques**:Bubblesort,Selectionsort,Quick sort.

Sampleexperiments:

1. Programtofindmin& maxelementinanarray.
2. Programtoimplementmatrixmultiplication.
3. Findanelementingivenlistofsorted elementsinanarrayusingBinarysearch.
4. ImplementSelectionandQuicksorttechniques.

UNITII

Linked Lists: Singly linkedlists: representation and operations, doubly linkedlists andcircularlinkedlists,Comparingarraysandlinkedlists,Applicationsoflinkedlists.

Sampleexperiments:

1. Writeaprogramtoimplementthefollowingoperations.
   a.Insert b.Deletion c. Traversal
2. Writeaprogramtostorename,rollno,andmarksofstudentsin aclassusingcirculardoublelinkedlist.
3. Writeaprogramtoperformadditionofgiventwopolynomialexpressionsusinglinkedlist.

UNITIII

Stacks: Introduction to stacks: properties and operations, implementing stacks using arraysand linked lists, Applications of stacks in expression evaluation, backtracking, reversing listetc.

Sampleexperiments:

1. Implementstackoperationsusing
   a. Arrays b.Linked list

2. Convertgiveninfixexpressionintopostfixexpressionusingstacks.
3. Evaluategivenpostfixexpressionusingstack.
4. Writeaprogramtoreversegivenlinkedlistusingstack.

UNITIV

Queues: Introductiontoqueues:propertiesandoperations,Circularqueues,implementingqueuesu sing arraysandlinkedlists,Applicationsofqueues scheduling,etc.
Deques: Introductiontodeques(double-endedqueues),Operationsondequesandtheirapplications.

Sampleexperiments:

1. ImplementQueueoperationsusing
   a. Arrays b.Linked list
2. Implement CircularQueueusing
   a. Arrays b.Linked list
3. ImplementDequeueusinglinkedlist.

UNITV

Trees:IntroductiontoTrees,Binarytreesandtraversals,BinarySearchTree–Insertion,Deletion&Traversal

Sampleexperiments:

1. Implementbinarytreetraversalsusinglinkedlist.
2. Writeprogramtocreatebinarysearchtreeforgivenlistofintegers.Performin-ordertraversalofthe tree. Implementinsertionanddeletionoperations.

Textbooks:

1. DataStructuresandalgorithmanalysis inC,MarkAllenWeiss,Pearson,2nd Edition.
2. FundamentalsofdatastructuresinC,EllisHorowitz,SartajSahni,SusanAnderson-Freed,SiliconPress,2008

ReferenceBooks:

1. AlgorithmsandDataStructures:TheBasicToolboxbyKurtMehlhornandPeterSanders
2. CDataStructuresandAlgorithmsbyAlfredV.Aho,JeffreyD.Ullman,andJohnE.Hopcroft
3. ProblemSolvingwithAlgorithmsandDataStructuresbyBradMillerandDavidRanum
4. IntroductiontoAlgorithmsbyThomasH.Cormen,CharlesE.Leiserson,RonaldL.Rivest,and CliffordStein
5. AlgorithmsinC,Parts1-5(Bundle):Fundamentals,DataStructures,Sorting,Searching,andGraphAlgorithms"byRobertSedgewick

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II B.Tech I Semester

L	T	P	C
2	0	0	-

(23AHS18) ENVIRONMENTAL SCIENCE

CourseObjectives:

- Tomakethestudents togetawarenesson environment.
- Tounderstandtheimportanceofprotectingnaturalresources,ecosystemsforfuturegenerationsandpollutioncausesduetothedaytodayactivitiesofhumanlife
- Tosaveearthfromtheinventionsbytheengineers.

UNITI

Multidisciplinary Nature of Environmental Studies: – Definition,Scope and Importance – NeedforPublicAwareness.

Natural Resources : Renewable and non-renewable resources – Natural resources and associatedproblems – Forest resources – Use and over – exploitation, deforestation, case studies – Timberextraction – Mining, dams and other effects on forest and tribal people – Water resources – Use andover utilization of surface and ground water – Floods, drought, conflicts over water, dams – benefitsand problems – Mineral resources: Use and exploitation, environmental effects of extracting and usingmineralresources,casestudies– Foodresources:Worldfoodproblems,changescausedbyagricultureandovergrazing,effectsofmodernagriculture,fertilizer-pesticideproblems,waterlogging,salinity,casestudies.–Energyresources:

UNITII

Ecosystems: Conceptofanecosystem.–Structureand functionofanecosystem–Producers,consumers and decomposers – Energy flow in the ecosystem – Ecological succession – Food chains,foodwebsandecologicalpyramids–
Introduction,types,characteristicfeatures,structureandfunctionofthe followingecosystem:

a. Forestecosystem.
b. Grasslandecosystem
c. Desertecosystem.
d. Aquaticecosystems(ponds,streams,lakes,rivers,oceans,estuaries)

BiodiversityanditsConservation: Introduction0Definition:genetic,speciesandecosystemdiversity– Bio-geographicalclassificationofIndia–Valueofbiodiversity:consumptiveuse,Productive use, social, ethical, aesthetic and option values – Biodiversity at global, National and locallevels – India as a mega-diversity nation – Hot-sports of biodiversity – Threats to biodiversity: habitatloss,poaching ofwildlife,man-wildlife conflicts– Endangered and endemic speciesof India–Conservationof biodiversity:In-situandEx-situconservationof biodiversity.

UNITIII

EnvironmentalPollution: Definition,Cause,effectsandcontrolmeasuresof:

a. AirPollution.
b. Waterpollution
c. Soilpollution
d. Marinepollution
e. Noisepollution
f. Thermalpollution
g. Nuclearhazards

Solid Waste Management: Causes**,** effects and control measures of urban and industrial wastes – Roleofanindividualinpreventionofpollution–Pollutioncasestudies–Disastermanagement: floods,earthquake,cycloneandlandslides.

UNITIV

Social Issues and the Environment: From Unsustainable to Sustainable development– Urbanproblems related to energy – Water conservation, rain water harvesting, watershed management –Resettlement and rehabilitation of people; its problems and concerns.Case studies – Environmentalethics:Issues and possible solutions – Climate change,global warming, acid rain,ozone layerdepletion, nuclear accidents and holocaust.Case Studies – Wasteland reclamation. – Consumerismand waste products. – Environment Protection Act. – Air (Prevention and Control of Pollution)Act. –Water(PreventionandcontrolofPollution)Act–WildlifeProtectionAct– ForestConservationAct
– Issuesinvolvedinenforcementofenvironmentallegislation–Publicawareness.

UNITV

Human Population and the Environment: Population growth, variation among nations.Populationexplosion – Family Welfare Programmes. – Environment and human health – Human Rights – ValueEducation–HIV/AIDS–WomenandChildWelfare– RoleofinformationTechnologyinEnvironmentandhumanhealth–Casestudies.

FieldWork: Visittoalocalareatodocumentenvironmentalassets River/forestgrassland/hill/mountain – Visit to a local polluted site-Urban/Rural/Industrial/Agricultural Study ofcommonplants,insects,andbirds–river,hillslopes,etc..

Textbooks:

1. TextbookofEnvironmentalStudiesforUndergraduateCoursesErachBharuchaforUniversityGrantsCommission,UniversitiesPress.
2. Palaniswamy,"EnvironmentalStudies",Pearsoneducation
3. S.AzeemUnnisa,"EnvironmentalStudies"AcademicPublishingCompany
4. K.RaghavanNambiar,"TextbookofEnvironmentalStudiesforUndergraduateCoursesasperUGC modelsyllabus",ScitechPublications(India),Pvt.Ltd.

References:

1. DeekshaDaveandE.SaiBabaReddy,"TextbookofEnvironmentalScience",CengagePublications.
2. M.AnjiReddy, "TextbookofEnvironmentalSciencesandTechnology", BS Publication.
3. J.P.Sharma,ComprehensiveEnvironmentalstudies,Laxmipublications.
4. J.GlynnHenryandGaryW.Heinke,"EnvironmentalSciencesandEngineering",PrenticehallofIndiaPrivatelimited
5. G.R.Chatwal, "AText BookofEnvironmentalStudies"HimalayaPublishingHouse
6. GilbertM.MastersandWendellP.Ela,"IntroductiontoEnvironmentalEngineeringandScience,Prentice hallofIndiaPrivatelimited.

SRI VENKATESWARA COLLEGE OF ENGINEERING AND TECHNOLOGY,

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II B.Tech I Semester

L	T	P	C
2	0	0	0

23AHS24 QUANTITATIVE APTITUDE AND REASONING - I

Course Outcomes:

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

1. Develop the thinking ability to meet the challenges in solving Logical Reasoningproblems.
2. Solve campus placements aptitude papers covering Quantitative Ability and VerbalAbility.
3. Apply different placement practice techniques.

UNIT- I **6 Hours**

QUANTITATIVE ABILITY – I: Vedic Maths – Square - Square root – Cube - Cube root –Higher Roots - Fractions (+, -, ×, ÷)– Decimal Fractions(+, -, ×, ÷) –LCM and HCF – VBODMAS Rule - Simplifications - Number System [Introduction –p/q forms –Factors – Multiples – Prime Numbers – Composite Numbers – Twin Primes – Co-Primes,Different Types of Numbers, Number of factors – Sum of factors – Unit's place value – Remainder theorem – Number of Zeros at the end of the product - Divisibility Rules –Prime Number Checking –Relation among Quotient, Divident, Divisor & Remainder - Formulae, Application type of problems]

UNIT-II **6 Hours**

QUANTITATIVE ABILITY – II: Ratio, Proportion & Variation [Definition of ratio, Types of Ratios, Principles of Ratios, Comparison of Ratios, Definition of Proportion, Types of Proportion, Principle of Proportion, Properties of Proportion, Variation & Types of variations]– Partnership & Share[Definition of partnership, Types of partnership, Simple Partnership & Compound Partnership, profits ratio, Application type of problems] – Average & Ages[Definition of Average, Average of Natural Numbers, Even Numbers, Odd Numbers, Prime Numbers, Application type of problems] – Mixture & Alligation [Definition of Mixture & Alligation, Mixture Formula, Alligation Rule, Application type of Problems]

UNIT-III **6 Hours**

REASONING ABILITY I: Number Series – Number Analogy – Number Odd Man Out – Wrong Number – Letter Series – Letter Analogy – Letter Odd Man

UNIT-IV **6 Hours**

VERBAL I: Verbal analogy - Types - Parts of Speech – Noun, Pronoun, Adjective, Verb, Adverb, Preposition, Conjunction and Interjection - Prepositions –Preposition of Place, Preposition of Placement, Preposition of Time and Preposition of Duration - Articles – Usage of a, an, the, Omission of articles - Sentences - Pattern and Types.

UNIT-V

6Hours

SOFT SKILL I: Communication Skills - Self-Confidence - Introductions & Greetings - Presentation Skills - Self- Motivation

Text Books:

1. Quantitative Aptitude, Logic Reasoning & Verbal Reasoning, R S Agarwal, S.Chand Publications-2022
2. Quantitative Aptitude for Competitive Examinations, R S Agarwal, S.Chand Publications-2022

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	-	-	-	-	-	-	-	-	-	-
CO2	2	2	-	-	-	-	-	-	-	-	-	-
CO3	2	-	-	-	-	-	-	-	-	-	-	-

3-High Mapping **2- Medium Mapping** **1-Low Mapping**

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	L	T	P	C
II B.Tech II Semester	**2**	**0**	**0**	**2**

(23AMB02) MANAGERIAL ECONOMICS AND FINANCIAL ANALYSIS

CourseOutcomes:

- DefinetheconceptsrelatedtoManagerialEconomics,financialaccountingandmanagement (L2)
- Understandthe fundamentalsofEconomicsviz.,Demand,Production,cost,revenue andmarkets (L2)
- ApplytheConceptofProductioncostandrevenuesforeffectiveBusinessdecision(L3)
- Analyzehowtoinvesttheircapitalandmaximizereturns(L4)
- Evaluatethecapitalbudgetingtechniques.(L5)
- Developtheaccountingstatementsandevaluatethefinancialperformanceofbusinessentity(L5)

UNIT-I ManagerialEconomics

Introduction – Nature, meaning, significance, functions, and advantages. Demand-Concept,Function, Law of Demand - Demand Elasticity- Types – Measurement. Demand Forecasting-Factors governing Forecasting, Methods. Managerial Economics and Financial AccountingandManagement.

UNIT-II ProductionandCostAnalysis

Introduction–Nature,meaning,significance,functionsandadvantages.ProductionFunction– Least- cost combination– Short run and long run Production Function- Isoquantsand Is costs, Cost & Break-Even Analysis - Cost concepts and Cost behaviour- Break-EvenAnalysis(BEA)-DeterminationofBreak-EvenPoint(Simple Problems).

UNIT-III BusinessOrganizationsandMarkets

Introduction – Forms of Business Organizations- Sole Proprietary - Partnership - Joint StockCompanies-PublicSectorEnterprises.TypesofMarkets-PerfectandImperfectCompetition-FeaturesofPerfectCompetitionMonopoly-MonopolisticCompetition–Oligopoly-Price-OutputDetermination-PricingMethodsandStrategies

UNIT-IV CapitalBudgeting

Introduction–
Nature,meaning,significance.TypesofWorkingCapital,Components,SourcesofShort-termandLong-termCapital,EstimatingWorkingcapitalrequirements.

CapitalBudgeting–Features,Proposals,MethodsandEvaluation.Projects–PayBackMethod, Accounting Rate of Return (ARR) Net Present Value (NPV) Internal Rate Return(IRR)Method(sampleproblems)

UNIT-V FinancialAccountingandAnalysis

Introduction – Concepts and Conventions- Double-Entry Bookkeeping, Journal, Ledger, TrialBalance- Final Accounts (Trading Account, Profit and Loss Account and Balance Sheet withsimpleadjustments).IntroductiontoFinancialAnalysis - AnalysisandInterpretationofLiquidityRatios,ActivityRatios,andCapitalstructureRatiosandProfitability.

Textbooks:

1. Varshney&Maheswari: ManagerialEconomics,SultanChand.
2. Aryasri:BusinessEconomicsandFinancialAnalysis, 4/e,MGH.

ReferenceBooks:

1. AhujaHlManagerialeconomicsSchand.
2. S.A.SiddiquiandA.S.Siddiqui:ManagerialEconomicsandFinancialAnalysis,NewAge International.
3. JosephG.NellisandDavidParker:PrinciplesofBusinessEconomics,Pearson,2/e,NewDelhi.
4. DomnickSalvatore:ManagerialEconomicsinaGlobalEconomy, Cengage.

Online LearningResources:https://www.slideshare.net/123ps/managerial-economics-ppthttps://www.slideshare.net/rossanz/production-and-cost-45827016https://www.slideshare.net/darkyla/business-organizations-19917607https://www.slideshare.net/balarajbl/market-and-classification-of-market https://www.slideshare.net/ruchi101/capital-budgeting-ppt-59565396https://www.slideshare.net/ashu1983/financial-accounting

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II B.Tech II Semester

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2	0	0	2

(23AMB03) ORGANISATIONAL BEHAVIOUR
(EEE)

CourseOutcomes:

- DefinetheOrganizationalBehaviour,itsnatureandscope.(L2)
- Understandthenatureandconcept ofOrganizationalbehaviour(L2)
- Applytheoriesofmotivationtoanalysetheperformanceproblems(L3)
- Analysethedifferenttheoriesofleadership(L4)
- Evaluategroupdynamics(L5)
- Developaspowerfulleader (L5)

UNIT-I IntroductiontoOrganizationalBehavior

Meaning, definition, nature, scope and functions - Organizing Process – Making organizingeffective-UnderstandingIndividualBehaviour–Attitude-Perception-Learning– Personality.

UNIT-II MotivationandLeading

Theories of Motivation- Maslow's Hierarchy of Needs - Hertzberg's Two Factor Theory - Vroom's theory of expectancy – Mc Cleland's theory of needs–Mc Gregor's theory X andtheoryY–Adam's equitytheory.

UNIT-III OrganizationalCulture

Introduction – Meaning, scope, definition, Nature - Organizational Climate - Leadership - Traits Theory–Managerial Grid - Transactional Vs Transformational Leadership-QualitiesofgoodLeader-ConflictManagement-EvaluatingLeader.

UNIT-IV GroupDynamics

Introduction – Meaning, scope, definition, Nature- Types of groups - Determinants of groupbehaviour - Group process – Group Development - Group norms - Group cohesiveness -Small Groups - Group decision making - Team building - Conflictin the organization– Conflictresolution

UNIT-V OrganizationalChange andDevelopment

Introduction –Nature, Meaning, scope, definition and functions- Organizational Culture - Changing the Culture – Change Management – Work Stress Management - Organizationalmanagement– Managerialimplicationsoforganization'schangeanddevelopment

Textbooks:

1. Luthans,Fred,OrganisationalBehaviour,McGraw-Hill,12Thedition.

2. PSubbaRan,Organizational Behaviour,HimalyaPublishingHouse.

ReferenceBooks:

1. McShane,OrganizationalBehaviour, TMH
2. Nelson,OrganisationalBehaviour,Thomson.
3. Robbins,P.Stephen,TimothyA.Judge,OrganisationalBehaviour,Pearson.
4. Aswathappa,OrganisationalBehaviour,Himalaya.

O**nline**
LearningResources:https://www.slideshare.net/Knight1040/organizati
onal-
culture9608857s://www.slideshare.net/AbhayRajpoot3/motivation-
165556714 https://www.slideshare.net/harshrastogi1/group-dynamics-
159412405
https://www.slideshare.net/vanyasingla1/organizational-change-development-26565951

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L	T	P	C
2	0	0	2

(23AMB04) BUSINESS ENVIRONMENT
(EEE)

CourseOutcomes:

- DefineBusinessEnvironmentanditsImportance.(L2)
- Understandvarioustypesofbusinessenvironment.(L2)
- Applytheknowledge ofMoneymarketsin futureinvestment(L3)
- AnalyseIndia'sTradePolicy(L4)
- Evaluatefiscalandmonitorypolicy(L5)
- Developapersonalsynthesisandapproachforidentifyingbusinessopportunities(L5)

UNIT–I OverviewofBusinessEnvironment

Introduction –meaning Nature, Scope,significance,functions and advantages.Types-Internal &External, Micro and Macro. Competitive structure of industries -Environmentalanalysis-advantages &limitations ofenvironmentalanalysis.

UNIT-II Fiscal&MonetaryPolicy

Introduction – Nature, meaning, significance, functions and advantages. Public Revenues - Public Expenditure - Evaluation of recentfiscal policy of GOI. Highlights of Budget-Monetary Policy - Demand and Supply of Money –RBI -Objectives of monetary and creditpolicy-Recenttrends-RoleofFinance Commission.

UNIT-III India'sTradePolicy

Introduction – Nature, meaning, significance, functions and advantages. Magnitude anddirection of Indian International Trade - Bilateral and Multilateral Trade Agreements - EXIMpolicyandroleofEXIMbank-BalanceofPayments–Structure&Majorcomponents-CausesforDisequilibriuminBalanceofPayments-Correctionmeasures.

UNIT-IV WorldTradeOrganization

Introduction – Nature, significance, functions and advantages. Organization and Structure - Role and functions of WTO in promoting world trade - GATT -Agreements in the UruguayRound –TRIPS, TRIMS - Disputes Settlement Mechanism - Dumping and Anti-dumpingMeasures.

UNIT-V MoneyMarketsand CapitalMarkets

Introduction–Nature,meaning,significance,functionsandadvantages.Featuresandcomponents of Indian financial systems - Objectives,features and structure of moneymarketsandcapitalmarkets -Reformsandrecentdevelopment–SEBI–Stock Exchanges - InvestorprotectionandroleofSEBI,Introductiontointernationalfinance.

Textbooks:

1. FrancisCherunilam, InternationalBusiness:TextandCases, PrenticeHallofIndia.
2. K. Aswathappa, Essentials of Business Environment: Texts and Cases & Exercises 13thRevisedEdition.HPH

ReferenceBooks:

1.K. V.Sivayya, V. B.MDas, IndianIndustrialEconomy, SultanChandPublishers,NewDelhi,India.
2. Sundaram, Black, International Business Environment Text and Cases, Prentice Hall ofIndia,NewDelhi,India.
3. Chari.S.N,InternationalBusiness,WileyIndia.
Bhattacharya,InternationalBusiness,ExcelPublications,NewDelhi.

Online LearningResources:https://www.slideshare.net/ShompaDhali/business-environment-53111245https://www.slideshare.net/rbalsells/fiscal-policy-ppthttps://www.slideshare.net/aguness/monetary-policy-presentationppthttps://www.slideshare.net/DaudRizwan/monetary-policy-of-india-69561982https://www.slideshare.net/ShikhaGupta31/indias-trade-policyppthttps://www.slideshare.net/viking2690/wto-ppt-60260883https://www.slideshare.net/prateeknepal3/ppt-mo

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L	T	P	C
3	0	0	3

(23AEC13)ANALOG CIRCUITS
(EEE)

CourseOutcomes:

CO	Statements	Blooms Level
CO1	Understandtheconceptsofdiodeclippingandclampingcircuits,different amplifierconfigurations,operationofoscillatorcircuits,operationalamplifiers,timers,ADCandDAC	**L2**
CO2	Applytheaboveconcepts fordifferent circuit design	**L3**
CO3	Analyze various circuit characteristics by using Amplifiers, Transistors, Comparators, Waveformgenerators,ADC andDAC	**L4**
CO4	Analyzevariouscircuitcharacteristicsbyusingtimers,Phaselockedloopsand operationalamplifiers	**L4**
CO5	Evaluatedifferentsystemconfigurationsbyusingvariousamplifier,transistor and waveformgenerators	**L5**

UNITI

Diode clipping and clamping circuits: Diode clippers, clipping at two independent levels,Transfercharacteristicsofclippers,clampingcircuitoperation.

DC biasing of BJTs: Load lines, Operating Point, Bias Stability, Collector-to-Base Bias,Self-Bias,StabilizationagainstVariationsinV_{BE}andβfortheSelf-BiasCircuit,BiasCompensation,ThermalRunaway,ThermalStability.

UNITII

SmallSignalsModelingofBJT: AnalysisofaTransistorAmplifierCircuitusingh-parameters, Simplified CE Hybrid Model,Analysis of CE, CC, CB Configuration usingApproximate Model,FrequencyResponse ofCEandCCamplifiers.

FeedbackAmplifiers: ClassificationofAmplifiers,theFeedbackConcept,GeneralCharacteristics of Negative-Feedback Amplifiers, Effect of Negative Feedback upon Outputand InputResistances, Voltage-Series Feedback, Current-Series Feedback, Current-ShuntFeedback,Voltage-ShuntFeedback.

UNITIII

Oscillator Circuits: Barkhausen Criterion of oscillation,Oscillator operation,R-C phaseshiftoscillator, WienbridgeOscillator,CrystalOscillator.

OperationalAmplifiers: Introduction,Basicinformationof Op-Amp,IdealOperationalAmplifier, Block Diagram Representation of Typical Op-Amp, OP-Amps Characteristics:Introduction,DCandACcharacteristics,741op-amp&itsfeatures.

UNITIV

OP-AMPSApplications: Introduction,BasicOp-AmpApplications,InstrumentationAmplifier, AC Amplifier, V to I andI to V Converter, Sample and Hold Circuit, Log andAntilogAmplifier,MultiplierandDivider,Differentiator,integrator.

ComparatorsandWaveformGenerators: Introduction,Comparator,SquareWaveGenerator, MonostableMultivibrator,TriangularWaveGenerator,SineWaveGenerators.

UNITV

Timers and Phase Locked Loop: Introduction to 555 timer, functional diagram, Monostableand Astable operations and applications, Schmitt Trigger, PLL block schematic, principlesanddescriptionofindividualblocks,565PLL,ApplicationsofVCO(566).

DigitalToAnalogAndAnalogToDigitalConverters: Introduction,basicDACtechniques,weighedresistorDAC,R-2RladderDAC,invertedR-2RDAC,A-DConverters – parallel Comparator type ADC, counter type ADC, successive approximation ADC anddualslopeADC,DAC andADC Specifications.

Textbooks:

1. ElectronicDevicesandCircuits-J.Millman,C.Halkias,TataMc-GrawHill,2nd Edition,2010.
2. Linear IntegratedCircuits–D. RoyChoudhury, NewAgeInternational(p)Ltd, 2nd Edition,2003.

ReferenceBooks:

1. ElectronicDevicesandCircuitTheory–RobertL.BoylestadandLowisNashelsky,PearsonEdition,2021.
2. ElectronicDevicesandCircuits–G.K.Mithal,KhannaPublisher,23rd Edition,2017.
3. ElectronicDevicesandCircuits–DavidBell, Oxford,5th Edition,2008.
4. ElectronicPrinciples–Malvino,AlbertPaul,andDavidJ.Bates,McGraw-Hill/HigherEducation,2007.
5. OperationalAmplifiersandLinearIntegratedCircuits–GayakwadR.A,PrenticeHallIndia,2002.
6. OperationalAmplifiersandLinear IntegratedCircuits–SanjaySharma,Kataria&Sons,2nd Edition,2010.
7. DesignofAnalog CMOSIntegratedCircuits-Behzad Razavi

WebResources:

1. https://nptel.ac.in/courses/122106025.
2. https://nptel.ac.in/courses/108102112.

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L	T	P	C
3	0	0	3

(23AEE12) POWER SYSTEMS- I
(EEE)

CourseOutcomes:

CO	Statements	Blooms Level
CO1	Understandthedifferenttypesofpowerplants, operationofpowerplants	**L2**
CO2	Understandtheconceptsofdistributionsystems,undergroundcables,economic aspects andtariff	**L2**
CO3	Understandvarioussubstationsthatarelocatedindistributionsystems	**L2**
CO4	Applytheaboveconceptstoillustratedifferent powergeneration layouts	**L3**
CO5	Analyzevariouseconomicaspectsrelatedtopowergenerationanddistribution	**L4**

UNITI

HydroelectricPowerStations:

Selection of site, general layout of a hydroelectric power plant with brief description of majorcomponentsandprincipleofoperation

ThermalPowerStations:

Selection of site, general layout of a thermal power plant. Brief description of components:boilers, superheaters, economizers and electrostatic precipitators, steam turbines: impulseandreactionturbines,condensers,feed watercircuit,cooling towersandchimney.

UNITII

NuclearPowerStations:

Location of nuclear power plant, working principle, nuclear fission, nuclear fuels, nuclearchain reaction, nuclear reactor components: moderators, control rods, reflectors and coolants,types of nuclear reactorsand brief description of PWR, BWR and FBR. Radiation: radiationhazardsandshielding,nuclearwastedisposal.

UNITIII

Substations:

Air Insulated Substations – indoor & outdoor substations, substations layouts of 33/11 kVshowingthelocationof allthesubstationequipment.Busbararrangementsinthesub-stations: simple arrangements like single bus bar, sectionalized single bus bar, double bus barwithoneandtwocircuitbreakers,mainandtransferbusbarsystemwithrelevantdiagrams.

Gas Insulated Substations (GIS) – advantages of gas insulated substations, constructionalaspectsofGIS,comparisonofairinsulatedsubstationsand gasinsulated substations.

UNITIV

DistributionSystems:

ClassificationofDistributionsystems,A.CDistribution,OverheadversusUndergroundsystem,Con nectionschemesofDistributionsystem,RequirementsofDistributionsystem,Designconsiderationsin Distributionsystem.

UndergroundCables:

Typesofcables,construction,typesofinsulatingmaterials,calculationofinsulationresistance,stress ininsulation andpowerfactorofcable.Capacitance ofsingleand3-CorebeltedCables.

Gradingofcables:capacitancegrading andintersheathgrading.

UNITV

EconomicAspects& Tariff:

EconomicAspects–loadcurve,loaddurationandintegratedloaddurationcurves,discussion on economic aspects: connected load, maximum demand, demand factor, loadfactor,diversityfactor,plantcapacityfactorandplantusefactor,baseandpeakloadplants.

Tariff Methods– Costs of generation and their division into fixed, semi-fixed and runningcosts, desirable characteristics of a tariff method, tariff methods: simple rate, flat rate, block-rate, two-part, three–part,andpowerfactor tariffmethods,Timeof Day (ToD) tariff andTime ofUse(ToU)tariff.

Textbooks:

1. S.N. Singh,ElectricPowerGeneration,TransmissionandDistribution,PHILearningPvtLtd,NewDelhi,2ndEdition,2010
2. J.B.Gupta,TransmissionandDistributionofElectricalPower,S.K.Katariaandsons,10th Edition,2012

ReferenceBooks:

1. I.J.Nagarath&D.P.Kothari,PowerSystemEngineering,McGraw-HillEducation,3rdEdition,2019.
2. C.L.Wadhwa,Generation,DistributionandUtilizationofElectricalEnergy,NewAgeInternationalPublishers,6th Edition,2018.
3. V.K.MehtaandRohitMehta,PrinciplesofPowerSystem,S.Chand,4thEdition,2005.
4. TuranGonen, ElectricPowerDistributionSystemEngineering, McGraw-Hill, 1985.
5. Handbookofswitchgear, BHEL,McGraw-HillEducation,2007.

WebResources:

1.https://nptel.ac.in/courses/108102047

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II B.Tech II Semester

L	T	P	C
3	0	0	3

(23AEE13) INDUCTION AND SYNCHRONOUS MACHINES
(EEE)

CourseOutcomes:

COs	Statements	Blooms Level
CO1	Understandtheconstruction,principleandoperationofsinglephaseandthreephaseinduction motors	**L2**
CO2	Understandtheconstruction,principleandoperationofsynchronousgeneratorand synchronousmotor	**L2**
CO3	Understandvariousapplicationsofvariousalternatingmachines	**L2**
CO4	Applytheaboveconceptstosolvevarious mathematicalandcomplexproblems	**L3**
CO5	Analyze the characteristics of induction motor, synchronous motor and synchronousgenerators	**L4**

UNITI

3-phaseinductionmotors:

Construction of Squirrel cage and Slipring induction motors– production of rotating magneticfield – principle of operation – rotor emf and rotor frequency – rotor current and power factoratstandstillandduringrunningconditions– rotorpowerinput,rotorcopperlossandmechanicalpowerdevelopedandtheirinter-relationship– equivalentcircuit–phasordiagram,Applications.

UNITII

Performanceof3-Phaseinductionmotors:

Torqueequation–expressionsformaximumtorqueandstartingtorque–torque-slipcharacteristics– doublecage anddeepbarrotors–Noload,Brake testandBlockedrotortests
– circle diagram for predetermination of performance- methods of starting –starting currentand torque calculations -speed control of induction motor with V/f control method, rotorresistancecontrol androtoremfinjection technique –crawlingandcogging– inductiongeneratoroperation.

UNITIII

SinglePhaseMotors:

Single phaseinduction motors – constructional features – double revolvingfield theory,Crossfieldtheory–equivalentcircuit-
startingmethods:capacitorstartcapacitorrun,capacitor
startinductionrun,splitphase&shadedpole, ACseriesmotor,Applications.

UNITIV

SynchronousGenerator:

Constructional features of non-salient and salient pole type alternators- armature windings – distributedandconcentratedwindings –distribution& pitchfactors –E.M.F equation –armature reaction – voltage regulation by synchronous impedance method – MMF methodand Potier trianglemethod –tworeaction analysis of salientpolemachines -methods ofsynchronization- Sliptest–Paralleloperationofalternators.

UNITV

SynchronousMotor:

Synchronous motor principle and theory of operation – Effect of excitation on current andpower factor– synchronous condenser –expression for power developed –hunting and itssuppression–methods ofstarting,Applications.

Textbooks:

1. ElectricalMachinery,Dr.P.S.Bhimbra,KhannaPublishing,2021,FirstEdition.
2. PerformanceandanalysisofACmachinesbyM.G.Say,CBS,2002.

ReferenceBooks:

1. Electricalmachines,D.P.KothariandI.J.Nagrath,McGrawHillEducation,2017,FifthEditio n.
2. Theory&PerformanceofElectricalMachinesbyJ.B.Gupta,S.K.Kataria&Sons,2007.
3. ElectricMachinery,A.E.Fitzgerald,Charleskingsley,StephenD.Umans,McGraw-Hill,2020,Seventhedition.

WebResources:

1.https://nptel.ac.in/courses/108/105/108105131
2.https://nptel.ac.in/courses/108106072

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II B.Tech II Semester

L	T	P	C
3	0	0	3

(23AEE14) CONTROL SYSTEMS
(EEE)

CourseOutcomes:

CO	Statements	Blooms Level
CO1	Understandtheconceptsofvariousmathematicalrepresentationsofcontrol systems, Time response of first order and second order systems, stability, frequencyresponseandfundamentalsofmoderncontrolsystems	**L2**
CO2	ApplyBlockdiagramreduction,Signalflowgraph,Routhcriterion,Rootlocus, Bode,Polar,Nyquistconceptsfor solvingvariousnumericalproblems	**L3**
CO3	Analyzetimeresponsecharacteristics,frequencyresponsecharacteristics,stability analysisofvariouscontrolsystems	**L4**
CO4	Designvariouscompensatorsandcontrollersfordifferentcontrolsystemsby using designprocedures	**L5**
CO5	Createsuitablecontrolsystemsforvariousrealtimeapplications	**L5**

UNITI

CONTROLSYSTEMSCONCEPTS

Openloopandclosedloopcontrol systemsandtheirdifferences-Examplesof controlsystems-Classification of control systems, Feedback characteristics, Effects of positive andnegativefeedback,Mathematicalmodels–Differentialequationsoftranslationalandrotational mechanical systems and electrical systems, Analogous Systems, Block diagramreduction methods – Signal flow graphs - Reduction using Mason's gain formula. Principle ofoperation of DC andAC Servomotor, Transferfunction of DC servomotor - AC servomotor,Synchros.

UNITII

TIMERESPONSEANALYSIS

Step Response - Impulse Response - Time response of first order systems – CharacteristicEquation of Feedback control systems, Transient response of second order systems - Timedomain specifications – Steady state response - Steady state errors and error constants, P, PI,PIDControllers.

UNITIII

STABILITYANALYSIS INTIMEDOMAIN

The concept of stability – Routh's stability criterion – Stability and conditional stability – limitations of Routh's stability. The Root locus concept - construction of root loci-effects ofaddingpoles andzerostoG(s)H(s)ontherootloci.

UNITIV

FREQUENCYRESPONSEANALYSIS

Introduction, Frequency domain specifications-Bode diagrams-Determination of Frequencydomain specifications and transfer function from the Bode Diagram-Stability Analysis fromBodePlots.PolarPlots-NyquistPlots- PhasemarginandGainmargin-StabilityAnalysis.

Compensationtechniques–Lag, Lead,Lag-LeadCompensatordesigninfrequencyDomain.

UNITV

STATESPACEANALYSISOFCONTINUOUSSYSTEMS

Concepts of state, state variables and state model, state models -differential equations &Transfer function models - Block diagrams. Diagonalization, Transfer function from statemodel,SolvingtheTimeinvariantstateEquations-StateTransitionMatrixandit'sProperties. System response through State Space models. The concepts of controllability andobservability,Dualitybetweencontrollabilityandobservability.

Textbooks:

1. ModernControlEngineeringbyKatsuhikoOgata,PrenticeHallofIndiaPvt.Ltd.,5th edition, 2010.
2. ControlSystemsEngineeringbyI.J.NagrathandM.Gopal,NewAgeInternational (P)LimitedPublishers, 5th edition,2007.

ReferenceBooks:

1. ControlSystemsPrinciples&DesignbyM.Gopal,4th Edition,McGrawHillEducation,2012 .
2. AutomaticControlSystemsby B.C.KuoandFaridGolnaraghi,John wiley andsons,8thedition,2003.
3. FeedbackandControlSystems,JosephJDistefanoIII,AllenRStubberud&IvanJWilliams,2nd Edition,Schaum'soutlines,Mc GrawHillEducation,2013.
4. ControlSystemDesignbyGrahamC.Goodwin,StefanF.GraebeandMarioE.Salgado,Pearson,2000.
5. FeedbackControlofDynamicSystemsbyGeneF.Franklin,J.D.PowellandAbbasEmami-Naeini,6th Edition,Pearson,2010.

WebResources:

1. https://nptel.ac.in/courses/108102043
2. https://nptel.ac.in/courses/108106098.

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L	T	P	C
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(23AEE15) INDUCTION AND SYNCHRONOUS MACHINES LAB
(EEE)

CourseOutcomes:

CO	Statements	Blooms Level
CO1	Analyzevariousperformancecharacteristicsof3-phaseand1-phaseinduction motors	**L4**
CO2	Evaluatetheperformanceof3-phaseInductionMotorbyobtainingthecircle diagramandequivalentcircuitof3-phaseInductionMotorandsinglephaseinductionmotor	**L4**
CO3	AdaptthepowerfactorimprovementmethodsforsinglephaseInductionMotor	**L3**
CO4	Pre-determinetheregulationof3-phasealternator	**L3**
CO5	Determinethesynchronousmachinereactanceof3-phasealternator	**L3**

ListofExperiments:

Any10experimentsofthefollowingarerequired tobeconducted

1. Brake testonthreephaseInductionMotor.
2. Circlediagramofthreephaseinduction motor.
3. Speed controlofthree phaseinductionmotorbyV/fmethod.
4. Equivalentcircuitofsingle-phase inductionmotor.
5. Powerfactorimprovementofsingle-phaseinductionmotorbyusing capacitors.
6. Loadtestonsingle phaseinduction motor.
7. Regulationofathree-phasealternatorbysynchronousimpedance&MMFmethods.
8. Regulationofthree-phasealternatorbyPotiertrianglemethod.
9. Vand Inverted V curvesofathree-phasesynchronousmotor.
10. Determination of X_d, X_q & Regulationofasalientpolesynchronousgenerator.
11. Determination of efficiency of three phase alternator by loading with three phaseinductionmotor.
12. Paralleloperationofthree-phasealternatorunder no-loadandloadconditions.
13. DeterminationofefficiencyofasingIe-phaseACseriesMotorbyconducting Braketest.

Reference:

1.https://em-coep.vlabs.ac.in/List%20of%20experiments.html

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II B.Tech II Semester

L	T	P	C
0	0	3	1.5

(23AEE16) CONTROL SYSTEMS LAB
(EEE)

CourseOutcomes:

COs	Statements	Blooms Level
CO1	Understandhowtousefeedbackcontrolsystemtodeterminetransferfunctionof DC servo motorandanyothergivencircuit withR,LandC components	**L2**
CO2	Modelthesystems andableto designthecontrollersandcompensators.	**L3**
CO3	Gettheknowledgeabouttheeffectofpolesandzeroslocationontransientand steadystatebehaviorofsecondordersystemsandimplement throughsoftwaretools	**L4**
CO4	Determinetheperformanceandtimedomainspecificationsoffirstandsecondorder systems.	**L4**
CO5	Understandthestabilityanalysis	**L2**

ListofExperiments:

Any10oftheFollowing Experimentsareto beconducted.

1. Time response ofSecondordersystem
2. CharacteristicsofSynchros
3. Programmablelogiccontroller–Studyandverificationoftruthtablesoflogicgates,simple Booleanexpressions andapplicationofspeedcontrolofmotor.
4. EffectoffeedbackonDCservomotor
5. TransferfunctionofDCMachine
6. EffectofP,PD,PI,PID Controlleronasecondordersystem
7. Lagandleadcompensation–Magnitudeandphaseplot
8. Temperaturecontroller usingPID
9. Characteristicsofmagneticamplifiers
10. CharacteristicsofACservomotor
11. Linearsystemanalysis(Timedomainanalysis, Erroranalysis) usingMATLAB.
12. Stabilityanalysis(Bode,RootLocus,Nyquist)ofLinearTimeInvariantsystemusingMAT LAB
13. Statespacemodelfor classicaltransferfunctionusingMATLAB–Verification.

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L	T	P	C
0	1	2	2

(23ACS09) PYTHON PROGRAMMING

CourseObjectives:

- IntroducecoreprogrammingconceptsofPythonprogramminglanguage.
- DemonstrateaboutPythondatastructureslikeLists, Tuples, Setsanddictionaries
- ImplementFunctions,ModulesandRegularExpressionsinPythonProgrammingandtocrea tepracticalandcontemporaryapplications usingthese

CourseOutcomes: Aftercompletionofthecourse,studentswillbeableto

- Showcase adept command of Python syntax, deftly utilizing variables, data types,controlstructures,functions, modules, andexceptionhandlingtoengineerobustandefficientcodesolutions.(L4)
- ApplyPythonprogrammingconceptsto solve a varietyofcomputationalproblems(L3)
- Understand the principles of object-oriented programming (OOP) in Python,including classes, objects, inheritance, polymorphism, and encapsulation, and applythemtodesignandimplementPythonprograms(L3)
- Proficient in using commonly used Python libraries and frameworks such as JSON,XML,NumPy,pandas (L2)
- Exhibit competence in implementing and manipulating fundamental data structuressuchaslists,tuples,sets,dictionaries (L3)

UNTI-I:

History of Python Programming Language, Thrust Areas of Python, Installing AnacondaPythonDistribution,InstallingandUsingJupyterNotebook.

Parts of Python Programming Language: Identifiers, Keywords, Statements and Expressions,Variables, Operators, Precedence and Associativity, Data Types, Indentation, Comments,ReadingInput,PrintOutput,TypeConversions,thetype()FunctionandIsOperator,Dyn amic andStronglyTypedLanguage.

Control Flow Statements: if statement, if-else statement, if...elif…else, Nested if statement,while Loop, for Loop, continue and break Statements, Catching Exceptions Using try andexceptStatement.

SampleExperiments:

1. Writeaprogramtofindthelargestelementamongthree Numbers.
2. WriteaProgramto displayallprimenumberswithin aninterval
3. Writeaprogramtoswaptwonumberswithoutusingatemporaryvariable.
4. DemonstratethefollowingOperatorsinPythonwithsuitableexamples.

i) ArithmeticOperators ii)Relational Operators iii)AssignmentOperators iv)LogicalOperatorsv)BitwiseOperatorsvi)TernaryOperatorvii)MembershipOperators viii)IdentityOperators

5. Writeaprogramto add and multiplycomplexnumbers
6. Writeaprogramto printmultiplicationtableofagiven number.

UNIT-II:

Functions: Built-In Functions, Commonly Used Modules,Function Definition and Callingthe function, return Statement and void Function, Scope and Lifetime of Variables, DefaultParameters,Keyword Arguments,*argsand **kwargs,Command LineArguments.
Strings:CreatingandStoringStrings,BasicStringOperations,AccessingCharactersinStringbyIndexNumber,StringSlicingandJoining,StringMethods,FormattingStrings.
Lists: Creating Lists, Basic List Operations, Indexing and Slicing in Lists, Built-In FunctionsUsedonLists,ListMethods, delStatement.

SampleExperiments:

7. Writeaprogramtodefineafunctionwithmultiplereturnvalues.
8. Writeaprogramtodefineafunctionusingdefaultarguments.
9. Writeaprogramto findthelengthofthestringwithout usingany libraryfunctions.
10. Writeaprogramto checkifthesubstringispresent inagivenstring ornot.
11. Writea programtoperformthegivenoperationsonalist:
    i.additionii.insertioniii.slicing
12. Writea programto performany5built-in functionsbytaking anylist.

UNIT-III:

Dictionaries: Creating Dictionary, Accessing and Modifying key:value Pairs in Dictionaries,Built-InFunctionsUsedonDictionaries,DictionaryMethods,delStatement.
Tuples and Sets: Creating Tuples, Basic Tuple Operations, tuple() Function, Indexing andSlicing in Tuples, Built-In Functions Used on Tuples, Relation between Tuples and Lists,RelationbetweenTuplesandDictionaries,Usingzip()Function,Sets,SetMethods,Frozenset.

SampleExperiments:

13. Write a program to create tuples (name, age, address, college) for at least two membersandconcatenatethetuplesandprinttheconcatenatedtuples.
14. Writeaprogramtocount thenumberofvowelsinastring(Nocontrolflow allowed).
15. Write a programtocheckifa givenkeyexistsinadictionaryornot.
16. Writeaprogramtoaddanewkey-valuepairtoanexistingdictionary.
17. Writeaprogramtosumalltheitemsinagivendictionary.

UNIT-IV:

Files: Types of Files, Creating and Reading Text Data, File Methods to Read and Write Data,ReadingandWritingBinaryFiles,PickleModule,ReadingandWritingCSVFiles,Pythonosandos.pathModules.
Object-Oriented Programming: Classes and Objects, Creating Classes in Python, CreatingObjects in Python, Constructor Method, Classes with Multiple Objects, Class Attributes VsData Attributes,Encapsulation,Inheritance,Polymorphism.

SampleExperiments:

18. Write a program to sort words in a file and put them in another file. The output fileshould have only lower-case words, so any upper-case words from source must belowered.
19. Pythonprogramtoprinteach lineofafileinreverseorder.
20. Pythonprogramtocomputethenumberofcharacters,wordsandlinesinafile.
21. Write a program to create, display, append,insertand reverse the order of the itemsinthearray.
22. Writeaprogramto add,transpose andmultiplytwomatrices.

23. Write a Python program to create a class that represents a shape. Include methods tocalculate its area and perimeter. Implement subclasses for different shapes like circle,triangle,andsquare.

UNIT-V:

IntroductiontoDataScience:FunctionalProgramming,JSONandXMLinPython,NumPywithPython, Pandas.

SampleExperiments:

24. Pythonprogramto check whetheraJSONstring containscomplexobjectornot.
25. PythonProgramto demonstrateNumPyarrayscreationusing array()function.
26. Pythonprogramto demonstrateuseofndim,shape,size,dtype.
27. Pythonprogramtodemonstratebasicslicing,integer andBooleanindexing.
28. Pythonprogramto findmin,max,sum,cumulativesumofarray
29. Create a dictionary with at least five keys and each key represent value as a list where thislist contains at least ten values and convert this dictionary as a pandas data frame andexplore thedatathroughthedata frameasfollows:
    a) Applyhead ()functiontothepandasdataframe
    b) PerformvariousdataselectionoperationsonDataFrame
30. Selectany twocolumnsfrom the above data frame, and observe the changein oneattributewithrespectto otherattributewithscatterand plotoperationsin matplotlib

ReferenceBooks:

1. Gowrishankar S, VeenaA., IntroductiontoPythonProgramming, CRCPress.
2. PythonProgramming,SSridhar,JIndumathi,VMHariharan,2nd Edition,Pearson,2024
3. IntroductiontoProgrammingUsingPython, Y.DanielLiang,Pearson.

OnlineLearningResources/VirtualLabs:

1. https://www.coursera.org/learn/python-for-applied-data-science-ai
2. https://www.coursera.org/learn/python?specialization=python#syllabus

SRI VENKATESWARA COLLEGE OF ENGINEERING AND TECHNOLOGY,

(AUTONOMOUS)

II B.Tech II Semester

L	T	P	C
1	0	2	2

(23AMB05) DESIGN THINKING & INNOVATION

CourseObjectives:

Theobjectiveofthiscourseistofamiliarizestudentswithdesignthinkingprocessasatoolfor breakthrough innovation. It aims to equip students with design thinking skills and ignitethemindstocreateinnovativeideas,developsolutionsforreal-timeproblems.

CourseOutcomes:

- Definetheconceptsrelatedtodesignthinking.(L1,L2)
- ExplainthefundamentalsofDesignThinkingandinnovation(L1, L2)
- Applythedesignthinkingtechniquesforsolvingproblemsinvarioussectors.(L3)
- Analysetoworkinamultidisciplinaryenvironment(L4)
- Evaluatethe value ofcreativity(L5)
- Formulatespecificproblemstatementsofrealtimeissues(L3,L6)

UNITI IntroductiontoDesignThinking

Introduction to elements and principles of Design, basics of design-dot, line, shape, form asfundamental design components. Principles of design. Introduction to design thinking, historyofDesignThinking,NewmaterialsinIndustry.

UNITII DesignThinkingProcess

Design thinking process (empathize, analyze, idea & prototype), implementing the process indriving inventions, design thinking in social innovations. Tools of design thinking - person,costumer,journeymap,brainstorming,productdevelopment

Activity: Every student presents their idea in three minutes, Every student can present designprocess in the form of flow diagram or flow chart etc. Every student should explain aboutproductdevelopment.

UNITIII Innovation

Artofinnovation,Differencebetweeninnovationandcreativity,roleofcreativityandinnovation in organizations- Creativity to Innovation- Teams for innovation- Measuring theimpactandvalueofcreativity.

Activity: Debate on innovation and creativity, Flow and planning from idea to innovation,Debate onvalue-basedinnovation.

UNITIV ProductDesign

Problem formation, introduction to product design, Product strategies, Product value, Productplanning,product specifications-Innovationtowardsproduct design-Case studies

Activity: Importance of modelling, how to set specifications, Explaining their own productdesign.

UNITV Design ThinkinginBusinessProcesses

Design Thinking applied in Business & Strategic Innovation, Design Thinking principles thatredefinebusiness–
Businesschallenges:Growth,Predictability,Change,MaintainingRelevance, Extreme competition, Standardization. Design thinking to meet corporate needs-Design thinking for Startups- Defining and testing Business Models and Business Cases-Developing&testingprototypes.

Activity: How to marketour own product, Aboutmaintenance, Reliability and plan forstartup.

Textbooks:

1. TimBrown,Changebydesign,HarperBollins(2009)
2. IdrisMootee, DesignThinkingforStrategicInnovation, 2013,JohnWiley&Sons.

ReferenceBooks:

1. DavidLee, DesignThinkingintheClassroom, Ulyssespress
2. ShrutinN Shetty,DesigntheFuture,NortonPress
3. WilliamLidwell,UniversalPrinciplesofDesign-Kritinaholden,JillButter.
4. Chesbrough.H,TheEraofOpenInnovation–2013

Online
LearningResources:https://nptel.ac.in/courses/110/106/11010
6124/https://nptel.ac.in/courses/109/104/109104109/https://sw
ayam.gov.in/nd1_noc19_mg60/preview

SRI VENKATESWARA COLLEGE OF ENGINEERING AND TECHNOLOGY,

(AUTONOMOUS)

	L	T	P	C
II B.Tech - II Semester (Common to All Branches)	**2**	**0**	**0**	**0**

(23AHS 25) Quantitative and Aptitude and Reasoning -II

23AHS25 QUANTITATIVE APTITUDE AND REASONING - II

Course Outcomes:

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

1. Develop the thinking ability to meet the challenges in solving Logical Reasoning problems.
2. Solve campus placements aptitude papers covering Quantitative Ability and Verbal Ability.
3. Apply different placement practice techniques.

UNIT-I **6 Hours**

QUANTITATIVE ABILITY III: Percentage [Percentage values from ½ to 1/30 , Successive increase / Decrease, Increased / Decreased percentage, How much % more / less, Population Problems, Election Problems, Application type of problems] – Profit & Loss[Cost Price , Selling Price , Retail Price , Marked Price / List Price / Printed price, Discounts, Error problems, Application type of problems] – Simple Interest[Principle, Time period, Rate of interest, Interest, Amount, Annual Payment, Application type of problems]- Compound Interest[Principle, Time period, Rate of interest, Interest, Different formulae of amount, Annual Payment, Differences between C.I & S.I for 1 year, 2years & 3years]

UNIT-II **6 Hours**

QUANTITATIVE ABILITY IV: Time and Work [One person is working, 2 persons are working, 3 persons are working, Relation among Men, days, hours & Work, Alternate days, Graphical method, Application type of problems] – Pipes & Cisterns[Inlet, Outlet or leakage, Alternate hours, Application type of problems] – Time, Speed and Distance[Relation among time, speed & distance, Relative Speed, Average Speed, Problems on trains, Application type of problems] –Boats and Streams[Still water, Stream, Current rate, Boat's rate, Downstream, Upstream, Downstream Speed, Upstream speed, Application type of problems] – Races & Circular Tracks [2 persons are running around a circular track, 3 persons are running around a circular track]

UNIT-III **6 Hours**

REASONING ABILITY II: Alphabet - Coding & Decoding - Directions - Ranking Test – Blood Relations - Inserting the missing number – Venn diagrams – Symbols and Notations - Syllogism – Statement and Conclusion– Data Arrangement – Linear and Circular arrangement

UNIT-IV **6 Hours**

VERBAL II: Tense – Present Tense, Past Tense, Future Tense - Voice – Active voice, Passive voice and Active to Passive Voice Conversion Rules – Speech – Direct Speech, Indirect Speech and Direct to Indirect Speech Conversion Rules –Essay Writing – Types, Steps, Format.

UNIT V **6 Hours**

SOFT SKILL II: Time Management - Stress Management - Team Work - Accent and Voice Communication - Interview Skills.

Text Books:

1. Quantitative Aptitude, Logic Reasoning & Verbal Reasoning, R S Agarwal, S.Chand Publications-2022.
2. Quantitative Aptitude for Competitive Examinations, R S Agarwal, S.Chand Publications-2022.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	-	-	-	-	-	-	-	-	-	-
CO2	1	2	-	-	-	-	-	-	-	-	-	-
CO3	2	-	-	-	-	-	-	-	-	-	-	-

3-High Mapping 2- Medium Mapping 1-Low Mapping

SRI VENKATESWARA COLLEGE OF ENGINEERING AND TECHNOLOGY,

(AUTONOMOUS)

II B.Tech - II Semester (Common to All Branches)

COMMUNITY SERVICE PROJECT

……Experientiallearningthroughcommunityengagement

Introduction

- CommunityServiceProjectisanexperientiallearningstrategythatintegratesmeaningfulcommunityservicewithinstruction,participation,learningandcommunitydevelopment.
- Community Service Project involves students in community development and serviceactivitiesandappliesthe experiencetopersonalandacademic development.
- Community Service Projectis meant tolink the community with the collegeformutual benefit. Thecommunity will benefitwith thefocused contribution of thecollege students for the village/local development. The collegefinds an opportunitytodevelopsocialsensibilityandresponsibilityamongstudentsandemergeasasociallyresponsibleinstitution.

Objective

Community Service Project should be an integral part of the curriculum, as an alternative tothe 2 months of Summer Internships / Apprenticeships / On the Job Training, whenever thereisanexigencywhenstudentscannotpursuetheirsummerinternships.Thespecificobjectivesare ;

- Tosensitizethestudentsto thelivingconditionsofthepeoplewhoarearoundthem,
- Tohelp studentsto realizethestarkrealitiesofsociety.
- To bring about an attitudinal change in the students and help them to develop societalconsciousness,sensibility,responsibilityandaccountability
- To make students aware of their inner strength and help them to find new /out of boxsolutionstosocialproblems.
- To make students socially responsible citizens who are sensitive to the needs of thedisadvantagedsections.
- To help students to initiate developmental activities in the community in coordinationwithpublicandgovernmentauthorities.
- To develop a holisticlife perspective among the students by making them studyculture,traditions,habits,lifestyles,resourceutilization,wastagesanditsmanagement,socialproblems,publicadministrationsystemandtherolesandresponsibilitiesofdifferentpersonsacrossdifferentsocialsystems.

ImplementationofCommunityServiceProject

- Every student should put in 6 weeks for the Community Service Project during thesummervacation.
- Eachclass/sectionshould beassigned withamentor.
- SpecificDepartmentscouldconcentrateontheirmajorareasofconcern.Forexample,Dept.of ComputerSciencecantakeupactivitiesrelatedtoComputerLiteracyto differentsectionsofpeoplelike-youth,women,housewives,etc
- Alogbookmustbemaintainedbyeachofthestudents,whereetheactivitiesundertaken/involvedtoberecorded.
- Thelogbookhastobecountersignedbytheconcernedmentor/facultyincharge.
- An evaluation to be done based on the active participation of the student and gradecouldbeawardedbythementor/facultymember.
- Thefinalevaluationtobereflected inthegradememoofthestudent.

- TheCommunityServiceProjectshouldbedifferentfromtheregularprogramsofNSS/ NCC/GreenCorps/RedRibbonClub,etc.
- Minor project reports should be submitted by each student. An internal Viva shall alsobe conductedbya committeeconstitutedbytheprincipalofthe college.
- Awardofmarksshallbemadeasperthe guidelinesofInternship/apprentice/onthejobtr aining.

Procedure

- A group of studentsoreven asinglestudentcouldbeassignedforaparticularhabitation or village or municipal ward, as far as possible, in the near vicinity of theirplace of stay, to enable them to commute from their residence and return back byeveningorso.
- TheCommunityServiceProjectisatwofoldone–
    - First, the student/s could conduct a survey of the habitation, if necessary, interms of their own domain or subject area. Or it can even be a general survey,incorporatingall thedifferentareas.A common surveyformatcouldbedesigned. This should not be viewed as a duplication of work by the VillageorWard volunteers,rather,itcouldbe anotherprimarysourceofdata.
    - Secondly,thestudent/scouldtakeupasocialactivity,concerningtheirdomain orsubjectarea.The differentareas,couldbelike–
        - Agriculture
        - Health
        - MarketingandCooperation
        - AnimalHusbandry
        - Horticulture
        - Fisheries
        - Sericulture
        - RevenueandSurvey
        - NaturalDisasterManagement
        - Irrigation
        - Law &Order
        - ExciseandProhibition
        - Minesand Geology
        - Energy
        - Internet
        - FreeElectricity
        - DrinkingWater

EXPECTEDOUTCOMES

BENEFITSOFCOMMUNITYSERVICEPROJECTTOSTUDENTS

LearningOutcomes

- Positiveimpactonstudents'academiclearning
- Improvesstudents'abilitytoapplywhat theyhavelearnedin"therealworld"
- Positiveimpactonacademicoutcomessuchasdemonstratedcomplexityofunderstanding,problem analysis,problem-solving,critical thinking,and cognitivedevelopment.
- Improvedabilitytounderstandcomplexityand ambiguity

PersonalOutcomes

- Greatersenseofpersonalefficacy,personalidentity,spiritualgrowth,andmoraldevelopment
- Greaterinterpersonaldevelopment,particularlytheabilitytoworkwellwithothers,andbuildleadershipandcommunicationskills.

SocialOutcomes

- Reducedstereotypesandgreater inter-culturalunderstanding
- Improvedsocialresponsibilityandcitizenshipskills
- Greaterinvolvementincommunityserviceafter graduation

CareerDevelopment

- Connectionswithprofessionalsandcommunitymembersforlearningandcareeropportunities
- Greateracademiclearning,leadershipskills,andpersonal efficacycanleadtogreateropportunity.

RelationshipwiththeInstitution

- Stronger relationshipswithfaculty
- Greatersatisfactionwithcollege
- Improvedgraduationrates

BENEFITSOFCOMMUNITYSERVICEPROJECTTOFACULTYMEMBERS

- Satisfactionwiththequalityofstudentlearning
- Newavenuesforresearchandpublicationvianewrelationshipsbetweenfacultyandcommunity
- Providingnetworkingopportunitieswithengagedfacultyinotherdisciplinesorinstitutions
- Astrongercommitment toone'sresearch.

BENEFITS OF COMMUNITY SERVICE PROJECT TO COLLEGES ANDUNIVERSITI

- Improvedinstitutionalcommitment.
- Improvedstudentretention
- Enhancedcommunityrelations

BENEFITSOFCOMMUNITYSERVICEPROJECTTOCOMMUNITY

- Satisfactionwithstudentparticipation
- Valuablehumanresourcesneededtoachievecommunitygoals.
- Newenergy,enthusiasmandperspectivesappliedtocommunitywork.
- Enhancedcommunity-universityrelations.

SUGGESTIVE LIST OF PROGRAMMES UNDER COMMUNITY SERVICEPROJECT

The following the recommended list of projects for Engineering students. The lists are notexhaustive and open for additions, deletions, and modifications. Colleges are expected tofocus on specific local issues for this kind of project. The students are expected to carry outtheseprojectswithinvolvement,commitment,responsibility,andaccountability.Themen tors of a group of students should take the responsibility of motivating, facilitating, andguiding the students. They have to interact with local leadership and people and appraise theobjectives and benefits of this kind of project. The project reports shall be placed in thecollege website for reference. Systematic, Factual, methodical and honest reporting should beensured.

ForEngineeringStudents

1. Waterfacilitiesanddrinkingwateravailability
2. Healthandhygiene
3. Stresslevelsandcoping mechanisms
4. Healthinterventionprogrammes
5. Horticulture
6. Herbalplants
7. Botanicalsurvey
8. Zoologicalsurvey
9. Marineproducts
10. Aquaculture
11. Inland fisheries
12. Animalsandspecies
13. Nutrition
14. Traditionalhealthcaremethods
15. Foodhabits
16. Air pollution
17. Water pollution
18. Plantation
19. Soilprotection
20. Renewableenergy
21. Plant diseases
22. Yogaawarenessandpractice
23. Healthcareawarenessprogrammesandtheirimpact
24. Useofchemicalsonfruitsandvegetables
25. Organicfarming
26. Croprotation
27. Flouryculture
28. Accesstosafedrinkingwater
29. Geographicalsurvey
30. Geologicalsurvey
31. Sericulture
32. Studyofspecies
33. Foodadulteration
34. IncidenceofDiabetesandotherchronicdiseases
35. Humangenetics
36. Bloodgroupsandbloodlevels
37. InternetUsageinVillages
38. AndroidPhoneusagebydifferentpeople
39. Utilisationoffreeelectricitytofarmersandrelated issues
40. Genderrationinschoolinglvel-observation.

Complimenting the community service project the students may be involved to take upsomeawarenesscampaignsonsocialissues/specialgroups.Thesuggestedlistofprograms

ProgramsforSchoolChildren

1. ReadingSkillProgram(ReadingCompetition)
2. PreparationofStudyMaterialsforthenextclass.
3. Personality/LeadershipDevelopment
4. CareerGuidancefor Xclassstudents
5. ScreeningDocumentaryandothereducational films
6. AwarenessProgramonGoodTouchandBadTouch(Sexualabuse)
7. AwarenessProgramonSociallyrelevantthemes.ProgramsforWomenEmpowerment

1. Government GuidelinesandPolicyGuidelines
2. Women'sRights
3. DomesticViolence
4. PreventionandControlofCancer
5. PromotionofSocialEntrepreneurshipGeneralCamps

1. GeneralMedicalcamps
2. EyeCamps
3. DentalCamps
4. Importanceofprotected drinkingwater
5. ODFawarenesscamp
6. SwatchBharath
7. AIDSawarenesscamp
8. AntiPlasticAwareness
9. ProgramsonEnvironment
10. HealthandHygiene
11. Handwashprogrammes
12. Commemoration and Celebration of important daysProgramsforYouthEmpowerment

1. Leadership
2. Anti-alcoholismandDrugaddiction
3. Anti-tobacco
4. AwarenessonCompetitiveExaminations
5. PersonalityDevelopmentCommonPrograms

1. AwarenessonRTI
2. Healthinterventionprogrammes
3. Yoga
4. Treeplantation
5. ProgramsinconsonancewiththeGovt.Departmentslike–
    i. Agriculture
    ii. Health
    iii. MarketingandCooperation
    iv. AnimalHusbandry
    v. Horticulture
    vi. Fisheries
    vii. Sericulture
    viii. RevenueandSurvey
    ix. NaturalDisasterManagement

x. Irrigation
xi. Law &Order
xii. ExciseandProhibition
xiii. Minesand Geology
xiv. Energy

RoleofStudents:

- Studentsmay nothavetheexpertise toconductalltheprogrammesontheirown.Thestudentsthencanplayafacilitatorrole.
- ForconductingspecialcampslikeHealthrelated,theywillbecoordinatingwiththeGovernmentalagencies.
- Asand whenrequired theCollegefacultythemselvesactasResourcePersons.
- Students can work in close association with Non-Governmental Organizations likeLionsClub,RotaryClub,etcorwithanyNGO activelyworkinginthathabitation.
- And also, with the Governmental Departments.If the program is rolled out, theDistrictAdministrationcouldberopedinforthesuccessfuldeploymentoftheprogram.
- An in-house training and induction program could be arranged for the faculty andparticipatingstudents,toexpose themtothe methodologyofService Learning.

Timeline for the Community Service Project

ActivityDuration:8weeks

1. **PreliminarySurvey(OneWeek)**
   - Apreliminarysurveyincludingthesocio-economicconditionsoftheallottedhabitationtobeconducted.
   - A survey form based on the type of habitation to be prepared before visiting thehabitation with the help of social sciences faculty.(However, a template could bedesignedfordifferenthabitations,rural/urban.
   - The Governmental agencies, like revenue administration, corporation and municipalauthoritiesandvillage secreteriatscouldbe alignedforthe survey.

2. **CommunityAwarenessCampaigns(OneWeek)**
   - Basedonthesurveyandthespecificrequirementsofthehabitation,differentawareness campaigns andprogrammestobe conducted, spread over twoweeks oftime.Thelistofactivitiessuggestedcouldbe taken intoconsideration.

3. **CommunityImmersionProgramme(ThreeWeeks)**

   Along with the Community Awareness Programmes, the student batch can alsowork with any one of the below-listed governmental agencies and work in tandemwith them.This community involvement programme will involve the students inexposing themselves to experiential learning about the community and its dynamics.Programscouldbeinconsonance withtheGovt.Departments.

4. **CommunityExitReport(OneWeek)**
   - DuringthelastweekoftheCommunityServiceProject,adetailedreportoftheoutcome ofthe8weeks'workstobedraftedandacopyshallbesubmittedtothelocal administration.Thisreportwillbeabasisforthenextbatch ofstudentsvisitingthathabitation.Thesamereportsubmittedtotheteacher-mentorwillbeevaluatedbythe mentor and suitable marks are awarded for onward submission to the University.Throughout the Community Service Project, a daily logbook need to be maintained bythestudentsbatch,whichshouldbecountersignedbythegovernmentalagencyrepresentativeandtheteacher-mentor,whoisrequiredtoperiodicallyvisitthestudentsandguidethem.