FOREWORD

The autonomy conferred Sri Venkateswara College Engineering and technology by JNT University, Ananthapuramu based on performance as well as future commitment and competency to impart quality education. It is a mark of its ability to function independently in accordance with the set norms the monitoring bodies UGC and AICTE. It reflects the confidence of the affiliating University in the autonomous institution to uphold and maintain standards it expects to deliver on its own behalf and thus awards degrees on behalf of college. Thus, an autonomous institution is given the freedom to have its own curriculum, examination system and monitoring mechanism, independent of the affiliating University but under its observance.

Sri Venkateswara College of Engineering and Technology is proud to win the confidence of all the above bodies monitoring the quality in education and has gladly accepted the responsibility of sustaining, the standards and ethics it has been striving for more than a decade in reaching its present standing in the arena of contemporary technical education. As a follow up, statutory bodies like Academic Council and Boards of Studies are constituted with the guidance of the Governing Body of the College and recommendations of the JNTUA, Ananthapuramu to frame the regulations, course structure and syllabi under autonomous status.

The autonomous regulations, course structure and syllabi

have been prepared after prolonged and detailed interaction with several expertise solicited from academics, industry and research, to produce quality engineering graduates to the society.

All the faculty, parents and students are requested to go through all the rules and regulations carefully. Any clarifications needed are to be sought at appropriate time and with principal of the college, without presumptions, to avoid unwanted subsequent inconveniences and embarrassments. The cooperation of all the stake holders is sought for the successful implementation of the autonomous system in the larger interests of the college and brighter prospects of engineering graduates.

Principal

Vision and Mission of the Institute

Vision

- Carving the youth as dynamic, competent, valued and knowledgeable professionals who shall lead the Nation to a better future.

Mission

- Providing quality education, student-centered teaching-learning processes and state-of-art infrastructure for professional aspirants hailing from both rural and urban areas.
- Imparting technical and management education to encourage independent thinking, develop strong domain of knowledge, own contemporary skills and positive attitudes towards holistic growth of young minds.
- Evolving Institution into a Center of Excellence and Research.

Quality policies

Sri Venkateswara College of Engineering and Technology strides towards excellence by adopting a system of quality policies and processes with continued improvements to enhance student's skills and talent for their exemplary contribution to the society, the nation and the word.

ACADEMIC REGULATIONS (R-17)
COURSE STRUCTURE &
DETAILED SYLLABI

B.Tech Regular Four Year Degree Courses

(For the Batches Admitted From 2017-2018)

&

B. Tech (Lateral Entry Scheme)

(For the Batches Admitted From 2018-2019

COMPUTER SCIENCE AND ENGINEERING

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
SRI VENKATESWARA COLLEGE OF ENGINEERING AND TECHNOLOGY
(AUTONOMOUS)
(Affiliated to JNTUA, Ananthapuramu, Approved by AICTE, New Delhi,
Accredited by NBA,Accredited by NAAC with A Grade, Bengaluru)
R.V.S. Nagar, CHITTOOR – 517 127, A.P, www.svcetedu.org,

SRI VENKATESWARA COLLEGE OF ENGINEERING AND TECHNOLOGY

(Autonomous)

R.V.S. Nagar, CHITTOOR – 517 127, A.P

Phones: (08572) 246339, 245044 Fax: (08572) – 245211

www.svcetedu.org

(**Affiliated to J.N.T. University Anantapur, Ananthapuramu).**

ACADEMIC REGULATIONS

B.Tech. Regular Four Year Degree Program

(For the batches admitted from the academic year 2017-18)

and

B.Tech. (Lateral Entry Scheme)

(For the batches admitted from the academic year 2018-19)

1.	**Applicability**	**:**	All the rules specified herein, approved by the Academic Council, will be in force and applicable to students admitted from the academic year 2017-2018 onwards. Any reference to "College" in these rules and regulations stands for Sri Venkateswara College of Engineering and Technology (Autonomous).
2.	**Extent**	**:**	All the rules and regulations, specified herein after shall be read as a whole for the purpose of interpretation and as and when a doubt arises, the interpretation of the Chairman, Academic Council is final. As per the requirements of statutory bodies, Principal, Sri Venkateswara College of Engineering and Technology (A) shall be the Chairman of the Academic Council.

3.   Admission   :

3.1   Admission in to first year of Four Year B.Tech., Degree Program of study in Engineering :

3.1.1 Eligibility   :   A candidate seeking admission into the first year of four year B.Tech., Degree Program should have

Passed either Intermediate Public Examination conducted by the Board of Intermediate Education, Government of Andhra Pradesh with Mathematics, Physics and Chemistry as optional subjects (or any equivalent examination recognized by the Board of Intermediate Education and JNTU Anantapur) or Diploma in Engineering

in the relevant branch conducted by the Board of Technical Education, Andhra Pradesh (or equivalent Diploma recognized by State Board of Technical Education, Government of Andhra Pradesh and JNTU Anantapur) for admission.

3.1.2 Admission Procedure : As per the existing stipulations of A.P State Council of Higher Education (APSCHE), Government of Andhra Pradesh, admissions are made into the first year of four year B.Tech., Degree Program as follows:

Seats under various categories are filled as per the norms prescribed by the Government of Andhra Pradesh.

3.2 Admission into the second year of four Year B.Tech., Degree Program in Engineering:

3.2.1 Eligibility : Candidates qualified in ECET (FDH) and / or admitted by the Convener, ECET (FDH).

In all such cases for admission, when needed, Permissions from the statutory bodies are to be obtained.

3.2.2 Admission Procedure : Lateral Entry seats are filled as per the norms prescribed by the Government of Andhra Pradesh from time to time.

4. Programs of study offered leading to the award of B.Tech degree

1. B.Tech (Civil Engineering)
2. B.Tech (Electrical and Electronics Engineering)
3. B.Tech (Mechanical Engineering)
4. B.Tech (Electronics and Communication Engineering)
5. B.Tech (Computer Science and Engineering)
6. B.Tech (Information Technology)
7. B.Tech (Automobile Engineering)
8. B.Tech (Electronics and Telecommunication Engineering)
9. B.Tech (Electronics Engineering)
10. B.Tech (Computer Science and Systems Engineering)

5. Choice Based Credit System

The Indian Higher Education Institutions (HEI's) are changing from the conventional course structure to Choice Based Credit System (CBCS) along with introduction to semester system at first year itself. The semester system helps in accelerating the teaching-learning process and enables vertical and horizontal mobility in learning.

The credit based semester system provides flexibility in designing curriculum and assigning credits based on the course content and hours of teaching. The choice based credit system provides a 'cafeteria' type approach in which the students can take courses of their choice, learn at their own pace, undergo additional courses and adopt an interdisciplinary approach to learning.

Choice Based Credit System (CBCS) is a flexible system of learning and provides choice for students to select from the prescribed elective courses. A course defines learning objectives and learning outcomes and comprises of lectures / tutorials / laboratory work / field work / project work / comprehensive Examination / seminars / presentations / self-study etc. or a combination of some of these.

Under the CBCS, the requirement for awarding a degree is prescribed in terms of number of credits to be completed by the students.

The CBCS permits students to:

1. Choose electives from a wide range of elective courses offered by the departments.
2. Undergo additional courses of interest.
3. Adopt an interdisciplinary approach in learning.
4. Make the best use of expertise of the available faculty.

6. Medium of instruction

The medium of instruction shall be English for all courses, examinations, seminar presentations and project work. The curriculum will comprise courses of study as given in course structure, in accordance with the prescribed syllabi.

7. Types of Courses

Courses in a programme may be of six kinds: **Foundation, Skill, Core, Elective, Audit and Mandatory.**

7.1 Foundation / Skill Course:

Foundation courses are the courses based upon the content leads to enhancement of skill and knowledge as well as value based and are aimed at man making education. Skill subjects are those areas in which one needs to develop a set of skills to learn anything at all. They are fundamental to learning any subject.

7.2 Core Course:

There may be a core course in every semester. This is the course which is to be compulsorily studied by a student as a core requirement to complete the requirement of a programme in a said discipline of study.

7.3 Elective Course:

Electives provide breadth of experience in respective branch and applications areas. Elective course is a course which can be chosen from a pool of courses. It may be:

- Supportive to the discipline of study
- Providing an expanded scope
- Enabling an exposure to some other discipline / domain
- Nurturing student's proficiency / skill.

An elective may be discipline centric (Professional Elective) focusing on those courses which add generic proficiency to the students or may be chosen from an interdisciplinary area called as "Open Elective".

There are four professional elective groups. Students can choose not more than one elective from each of the four groups. Also there are two open elective groups, students can choose not more than one elective from each of the two groups.

8. Academic Year

8.1 Course Duration

8.1.1 Course duration for B. Tech program of study is 4 years and the maximum duration to complete the program is 8 years excluding the gap year.

8.1.2 For lateral entry students the course duration is 3 years and the maximum duration to complete the program is 6 years excluding the gap year.

8.2 Each academic year is divided into two semesters and each semester shall have a minimum of 90 working days.

8.3 Students admitted on transfer from JNTU affiliated institutes, Universities and other institutes in the subjects in which they are required to earn credits so as to be on par with regular students as prescribed by concerned 'Board of Studies'.

9. Unique course identification code

Every course of the B. Tech program will be placed in one of the eleven groups of courses as listed in the table 1. The various courses and their two-letter codes are given below.

Table 1: Group of Courses

S.No.	Branch	Code
1	Civil Engineering	CE
2	Electrical and Electronics Engineering	EE
3	Mechanical Engineering	ME
4	Electronics and Communication Engineering	EC
5	Computer Science and Engineering	CS
6	Information Technology	IT
7	Automobile Engineering	AT

8	Electronics and Telecommunication Engineering	ET
9	Electronics Engineering	EL
10	Computer Science and Systems Engineering	CT
11	Humanities and Basic Sciences	HS
12	MBA	MB
13	MCA	MC

10. Curriculum and course structure

The curriculum shall comprise Foundation / Skill Courses, Core Courses, Elective Courses, Laboratory Courses, Audit Courses, Mandatory Courses, Comprehensive Examination, Mini Project, Internship and Project work. The list of elective courses may include subjects from allied disciplines also.

Contact Periods: Depending on the complexity and volume of the course, the number of contact hours per week will be assigned. Each Theory and Laboratory course carries credits based on the number of hours / week as follows.

- **Contact classes (Theory):** 1 credit per lecture hour per week.
- **Laboratory Hours (Practical):** 1 credit for 2 Practical hours, per week.
- **Project Work:** 1 credit for 2 hours of project work per week.
- **Mini Project:** 1 credit for 2 hours per week.

10.1 Course Structure

Every program of study shall be designed to have 38-42 theory courses and 20- 26 laboratory courses. Every course of the B.Tech program will be placed in one of the eight categories with average credits as listed in the Table 2. In this, a student has to carry out a mini project, project work and comprehensive Examination also.

Table 2: Category-wise Distribution of Credits

S.No.	Category	Subject Area and % of Credits	Average No. of Credits
1	Humanities and Social Sciences (HS), including Management.	HS (05% to 10%)	9
2	Basic Sciences (BS) including Mathematics, Physics and Chemistry.	BS (15% to 20%)	23
3	Engineering Sciences (ES), including Workshop, Drawing, Basics of Electrical / Electronics / Mechanical / Computer Engineering.	ES (15% to 20%)	34
4	Professional Subjects-Core (PC), relevant to the chosen specialization / branch.	PC (30% to 40%)	70

5	Professional Subjects-Electives (PE), relevant to the chosen specialization / branch.	PE (10% to 15%)	12
6	Open Subjects-Electives (OE), from other technical and / or emerging subject area.	OE (05% to 10%)	6
7	Project Work or Full Semester Internship, Mini Project, Comprehensive Examination.	10% to 15%	22
8	Mandatory Courses / Audit Courses.	MC / AC	-
TOTAL			176

11. Evaluation Methodology

11.1 Theory course:

Each theory course will be evaluated for a total of 100 Marks, with 40 Marks for Continuous Internal Assessment (CIA) and 60 Marks for Semester End Examination (SEE).

11.2 Continuous Internal Assessment (CIA)

The distribution of marks for Continuous Internal Assessment is as follows:

Two Sessional Examinations : 25 Marks

Two Quiz Examinations   : 10 Marks

2 Assignments   : 05 Marks

                              40 Marks

11.3 Question Paper Pattern for Sessional Examinations

11.3.1 Each sessional exam question paper consists of two parts, namely Part A and Part B. Part A is compulsory which carries 10 marks and consists of five short answer type questions with each carrying 2 marks. In Part B, 4 questions with each carrying 5 marks may be given and the student is expected to answer any three of the four questions. Thequestions may be set as per Bloom's Taxonomy. Time duration for each sessional examis 2 hours. Internal marks for sessional examinations shall be arrived at by considering the marks secured by the student in both the sessional examinations with 80% weightage to the better sessional exam and 20% to the other.

However if any of the students is absent for both the sessional exams, he may be permitted to appear for one make up examination after second sessional examination with valid medical / emergency grounds. Internal marks for sessional examinations shall be arrived as per the Weightage given above.

11.3.2 Two Quiz examinations, along with sessional examinations for 20 minute duration and for 10 marks shall be conducted. Each Quiz exam consists of 20 multiple choice questions and are to be answered by choosing the correct answer from a given set of 4

choices. Marks for the Quiz exams shall be awarded by considering the average of the two Quiz exams conducted.

11.3.3 Two Assignments, each one for 5 marks shall be given to the students one before the first sessional exam and the other before the second sessional exam. Internal marks for the assignments shall be awarded by considering the average of the two assignments.

11.4 Semester End Examination (SEE)

The SEE is conducted for 60 marks of 3 hours duration. The syllabus for the theory course is divided into FIVE units. SEE Question Paper consists of two parts, Part A and Part B. Part A consists of 5 short answer type questions, each carries 2 marks for a total of 10 marks with no choice.

Part B Consists of 5 questions with one question from each of the 5 units with internal choice with 10 marks for each question.

The emphasis on the questions is broadly based on objective skill, analytical skill and application skill following the outcome based education.

11.5 Laboratory Course

Each Laboratory Course will be evaluated for a total of 100 marks, consisting of 40 marks for internal assessment (CIA) and 60 marks for semester end lab examination. Out of 40 marks of CIA, continuous lab assessment (SEE) for day to day performance will be done for 20 marks, final internal lab examination carries 15 marks and Viva-Voce carries 5 marks. The semester end lab examination for 60 marks shall be conducted by two examiners, one of them being internal examiner (subject teacher) and the other being external examiner (other than the teacher handled) to be nominated by the Principal from the panel of experts as recommended by the Chairman, BOS. The scheme of valuation for the 60 Marks will be informed to the students in advance by the concerned Chairman, BOS and displayed in the laboratory during the beginning of the semester.

11.6. Drawing Courses:

All the **drawing** related courses are evaluated in line with laboratory courses. The distribution shall be 40 marks for internal evaluation (20 marks for day to day work and 20 marks for final internal test) and 60 marks for semester end examinations.

- **Question paper pattern for drawing courses will be followed as mentioned in the syllabus.**

    The following courses are considered as theory subjects, but for all practical purposes examination will be conducted like practical.

    i. Computer Aided Engineering Drawing

    ii. Production Drawing Practice & Machine Drawing

11.7 Mandatory courses (Other than MOOCs)

Mandatory courses will not carry any credits; but, a pass in each such course after attaining required CIE and SEE requirements during the programme shall be necessary requirement for student to qualify for the award of Degree. Its result shall be declared with "satisfactory" (Pass) or Not Satisfactory (Fail) performance.

11.8 Massive Open Online Courses (MOOCs):

The college in line with the developments in Learning Management Systems (LMS) intends to encourage the students to do online courses in MOOCs, offered internationally. The main intention to introduce MOOCs is to obtain enough exposure through online tutorials, self- learning at one's own pace, attempt quizzes, discuss with professors from various universities and finally to obtain certificate of completion of the course from the MOOCs providers.

Regulations for MOOCs:

11.8.1   MOOC courses are offered as Mandatory courses. Each student has to do 3 MOOC Courses.

11.8.2 Institution intends to encourage the students to do one MOOC in each semester, from III year I Semester to IV year I Semester of the B.Tech. Programme

11.8.3 The respective departments shall give a list of standard MOOCs providers among edx, Udacity, Coursera, NPTEL or any other standard providers, whose credentials are endorsed by the HOD.

11.8.4 The HOD shall appoint Coordinators / Mentors and allot the students to them who shall be responsible to guide students in selecting online courses and provide guidance for the registration, progress and completion of the same.

11.8.5 A student shall choose an online course (relevant to his / her programme of study in the concerned semester) from the given list of MOOCs providers, as endorsed by the teacher concerned, with the approval of the HOD.

11.8.6 HOD & Coordinator must review the progress of the conduct of these courses once in a fortnight and advise the students accordingly.

11.8.7 In case a student fails to complete the MOOCs he / she shall re-register for the same with any of the providers from the list provided by the department.

11.8.8 In case any provider discontinues to offer the course, Institution shall allow the student to opt for any other provider from the list provided by the department, for completion of the MOOC course.

11.8.9   The details of MOOC(s) shall be displayed in Grade card of a student, provided he / she submits the proof of completion of it or them to the department concerned through the Coordinator / Mentor, before the end of the concerned semester.HOD has to forward the same to the Exam cell with his attestation.

11.8.10 The Provisional Degree Certificate and / or consolidated grade sheet shall be issued only to those students, who have submitted proof of completion of MOOC(S), for the courses they have registered with to the Examination cell through the HOD concerned.

11.8.11 The result of all the three MOOC courses will be reflected in the corresponding semester Grade Sheet.

11.9 EPIC Courses: EPIC (Engineering Projects in Community Development) courses are introduced and offered as Mandatory courses, one in the II B. Tech I semester and another in the II B. Tech II semester.

Guidelines for awarding CIE & SEE marks for the EPIC courses:

CIE: For awarding CIE marks (maximum 40) there shall be two assessment with each Assessment carries 20 marks.

I Assessment: Report writing & Presentation-I which carries 20 marks conducted after completion of I & II units.

II Assessment: Report writing & Presentation-II which carries 20 marks conducted after completion of the last three units.

Marks obtained in the two assessments will be added to award CIE marks for 40.

However if any of the students is absent for both the assessments, he/she may be permitted to appear for one make up assessment conducted after second assessment on valid medical / emergency grounds.

SEE: For awarding SEE marks (maximum 60) student need to submit a detailed project and give a presentation on the date specified by the department. The work done, execution and presentation by the student will be evaluated for 60 marks by two examiners, one of them being internal examiner (subject teacher) and the other being external examiner (other than the teacher concerned) to be nominated by the Principal from the panel of experts as recommended by the chairman BOS.

One who fails to secure minimum pass marks in CIE & SEE put together has to reappear for SEE examination as and when it is conducted and to get pass marks in CIE & SEE put together so as to qualify for the award of B.Tech degree.

Attendance is mandatory for these courses.

11.10 Audit Courses

Students to be able to register for courses outside the prescribed range of Credits for audit only, when interested to supplement their knowledge / skills; any student who wishes to pursue audit course can register for the same with the concerned teacher and attend to the classes regularly. No examination will be conducted, no grade will be given for the audit courses. However such of those students who have registered and got the requisite attendance of 75% in the audit course, it will be mentioned in their grade sheet.

11.11 Comprehensive Online Examination

There shall be two comprehensive online examinations, one at the end of the III year I sem and the other at the end of III year – II sem, with 50 objective questions for 100 marks on the subjects studied in the respective semesters. A student shall acquire half credit assigned to the comprehensive online examination only when he secures 40% or more marks. In case, if a student fails in comprehensive online examination, he shall reappear/re-register by following a similar procedure adopted for the lab examinations.

11.12 Comprehensive Viva-Voce

There shall be a Comprehensive Viva-Voce in IV year – II sem for 2 credits. The Comprehensive Viva-Voce will be conducted by the committee consisting of Head of the Department and two senior faculty members of the department nominated by the Principal as recommended by the chairman, BOS. The Comprehensive Viva – Voce is aimed to assess the students understanding in various subjects he studies during the B. Tech course of study. The Comprehensive Viva – Voce shall be evaluated for 100 marks by the committee. There are no internal marks for the Comprehensive Viva – Voce. A student shall acquire 2 credits assigned to the Comprehensive Viva – Voce only when he secures 40% or more marks. In case, if a student fails in Comprehensive Viva – voce, he shall reappear as and when IV/II supplementary examinations are conducted.

11.13 Mini Project

The Mini Project shall be carried out during IV year I semester with one credit along with other lab courses by having regular weekly slots. Students will take mini project batch wise and the batches will be divided as per the guidelines issued. The topic of mini project should be so selective that the students are enabled to complete the work in the stipulated time with the available resources in the respective laboratories. The scope of the mini project could be handling part of the consultancy work, maintenance of the existing equipment, development of new experiment setup or can be a prelude to the main project with a specific outcome. Mini project report will be evaluated for 100 marks in total, assessment will be done by the supervisor / guide for 40 marks based on the work and presentation / execution of the mini project. Subdivision for the remaining 60 marks is based on report, presentation, execution and viva-voce. Evaluation shall be done by a committee comprising the mini project supervisor, Head of the department and one senior faculty nominated by the Principal from the panel of experts recommended by chairman, BOS.

11.14 Project Work

There shall be a Project Work in the IV year second semester which carries 12 credits. Out of 100 marks allotted for the project work, 40 marks shall be for Internal Evaluation and 60marks for the End Semester Examination (Viva – Voce). The Viva – Voce shall be conducted bya committee consisting of HOD, Project Supervisor and an External Examiner nominated by the

Principal from the panel of examiners recommended by Chairman, BOS. The Evaluation of project work shall be conducted at the end of the IV year – II semester. The Internal Evaluationshall be made by the departmental committee, on the basis of two seminars given by each student on the topic of his project.

11.15 Internship

Students shall have an option to do internship for a minimum period of 6 weeks in an Industry during summer break after III year II semester examinations. In such cases the industry shall evaluate the students performance in terms of his attendance and marks scored out of 100 in the prescribed format supplied by the department, and return the same directly to the department after the end of the internship. A student who attains required attendance and minimum 40% marks shall be awarded 3 Credits and he shall be exempted from taking one Professional elective offered in the IV year II semester by the department for 3 credits.

11.16 Gap Year

Gap Year – concept of Student Entrepreneur in Residence shall be introduced and outstanding students who wish to pursue entrepreneurship are allowed to take a break of one year at any time after II year to pursue entrepreneurship full time. This period may be extended to two years at the most and these two years would not be counted for the time for the maximum timefor graduation. The HOD of the respective department shall forward such proposals submitted by the students to the Principal. An evaluation committee shall be constituted by the Principal to evaluate the proposal submitted by the student and the committee shall decide whether or not to permit student (s) to avail the Gap Year.

12. Attendance Requirements and Detention Policy

12.1 A student shall be eligible to appear for Semester – End examinations if he acquires a minimum of 75% of attendance in aggregate of all the subjects in a semester.

12.2 Condonaion of shortage of attendance in aggregate up to 10% (65% and above and below 75%) in each semester may be granted on medical grounds by the College Academic Committee. A stipulated fee shall be payable towards condonation of shortage of attendance to the College.

12.3 Shortage of Attendance below 65% in aggregate shall in no case be condoned and the candidate will be detained.

12.4 Detained students are not eligible to take their end examination of that class and their registration shall stand cancelled.

12.5 A student detained due to shortage of attendance, will have to repeat that semester when offered next.

13. Conduct of Semester End Examination and Evaluation

13.1 Semester end examination shall be conducted by the Controller of Examination (COE) by inviting 70% Question Papers from the External and 30% Question papers from the Internal Subject Experts. Principal will decide the External and Internal subject experts.

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

13.3 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 anysubject in that semester.

13.4 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.

13.5 Results Committee:

Results Committee comprising of Director, Principal, Controller of Examinations, 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.

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

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

14. Academic Requirements for Promotion / Completion of regular B.Tech programme of study

The following academic requirements have to be satisfied in addition to the attendance requirements for promotion/completion of regular B.Tech Program of study.

14.1 For students admitted in B.Tech (Regular) Program:

i.   A student shall be deemed to have satisfied the minimum academic requirements for each theory, practical, design drawing subject or project, if he secures not less than 35% of marks in the Semester End examination and a minimum of 40% of marks in the sum total of the internal evaluation and Semester-End examination taken together.

ii.   A student shall be promoted from second year to third year only if he fulfills the academic requirement of securing 44 credits from:
- a) Two regular and two supplementary examinations of I-year I semester.
- b) Two regular and one supplementary examinations of I-year II semester.
- c) One regular and one supplementary examination of second year I semester.
- d) One regular examination of II- year II Semester.

Irrespective of whether the candidate appear for Semester-End examination or not as per the normal course of study.

iii. A student shall be promoted from third year to fourth year Program of study only if he fulfills the academic requirements of securing 66 credits from:

a) Three regular and three supplementary examinations of I-year I semester.

b) Three regular and two supplementary examinations of I-year II Semester

c) Two regular and two supplementary examination of second year I semester.

d) Two regular and one supplementary examinations second year II semester.

e) One regular and one supplementary examination of third year I semester.

f) One Regular Examination of Third year II semester.

Irrespective of whether the candidate appears for the Semester-End examination or not as per the normal course of study and in case of getting detained for want of credits by sections 14.1(ii) and 14.1 (iii) above, the student may make up the credits through supplementary examinations before the date of commencement of class work for III year I semester or IV year I semester as the case may be.

iv. A student shall register for all the 176 credits and earn all the 176 credits. Marks obtained in all the 176 credits shall be considered for the award of the class based on CGPA.

v. A student who fails to earn 176 credits as indicated in the course structure within eight academic years from the year of his admission shall forfeit his seat in B. Tech., Program and his admission stands cancelled.

14.2 For Lateral Entry Students

i. A student shall be deemed to have satisfied the minimum academic requirements for each theory, practical, design, drawing subject or project if he secures not less than 35%of marks in the Semester-End examination and a minimum of 40% of marks in the sum total of the internal evaluation and Semester-End examination taken together.

ii. A student shall be promoted from third year to fourth year only if he fulfills the academic requirements of securing 44 credits from the following examinations.

a) Two regular and two supplementary examinations of II year I semester.

b) Two regular and one supplementary examination of II year II semester.

c) One regular and one supplementary examination of III year I semester.

d) One Regular Examination of Third year II semester.

Irrespective of whether the candidate appear the Semester-End examination or not as per the normal Course of study and in case of getting detained for want of credits the student may make up the credits through supplementary exams of the above exams before the date of commencement of class work for IV year I semester.

iii. A student shall register for all 132 credits and earn all the 132 credits. Marks obtained in all 132 credits shall be considered for the award of the class based on CGPA.

iv. A student who fails to earn 132 credits as indicated in the Course structure within six academic years from the year of his admission shall forfeit his seat in B.Tech., Program and his admission stands cancelled.

15. Letter Grades and Grade points

15.1 Performances of students in each course are expressed in Letter Grades based on absolute grading system. The UGC recommends a 10-point grading system with the following letter grades as given in the Table 3.

Table 3: Grade Points Scale (Absolute Grading)

Range of Marks	Grade Point	Letter Grade
90-100	10	S (Outstanding)
80-89	9	A+ (Excellent)
70-79	8	A (Very Good)
60-69	7	B+ (Good)
50-59	6	B (Above Average)
45-49	5	C (Average)
40-44	4	D (Pass)
Below 40	0	F (Fail)
Absent	0	N (Absent)

15.2 A student obtaining Grade F shall be considered Failed and will be required to re-appear in the examination.

15.3 For non credit courses, 'P' for 'Satisfactory' or 'F' for 'Not Satisfactory' is indicated and this will not be counted for the computation of SGPA / CGPA.

15.4 At the end of each semester, the institute issues grade sheet indicating the SGPA and CGPA of the student. However, grade sheet will not be issued to the student if he has any outstanding dues.

16. Computation of SGPA and CGPA

The UGC recommends to compute the Semester Grade Point Average (SGPA) and Cumulative Grade Point Average (CGPA). The credit points earned by a student are used for calculating the Semester Grade Point Average (SGPA) and the Cumulative Grade Point Average (CGPA), both of which are important performances indices of the student. SGPA is equal to the sum of all the total points earned by the student in a given semester divided by the number of credits registered by the student in that semester. CGPA gives the sum of all the total points earned in all the previous semesters and the current semester divided by the number of credits registered in all these semesters. Thus,

$$SGPA = \sum_{i=1}^{n}(C_i G_i) \Big/ \sum_{i=1}^{n} C_i$$

Where, C_i is the number of credits of the ith course and G_i in the grade point scored by the student in the ith course and n represent the number of courses in which a student is registered in the concerned semester.

$$CGPA = \sum_{j=1}^{m}(C_jS_j) \ / \ \sum_{j=1}^{m} C_j$$

Where, S_j is the SGPA of the jth semester and C_j is the total number of credits upto the semester and m represent the number of semesters completed in which a student registered upto the semester.

The SGPA and CGPA shall be rounded off to 2 decimal points and reported in the transcripts.

16.1 In case of a specific query by students / employers regarding Semester Grade Point Average (SGPA) / Cumulative Grade Point Average (CGPA) into percentage, the following formulae will be adopted for notional conversion of SGPA / CGPA into percentage.

SGPA to Percentage = (SGPA-0.5) $\times$ 10

CGPA to Percentage = (CGPA-0.5) $\times$ 10

17. Grade Sheet

A grade sheet will be issued to each student indicating his performance in all subjects registered in that semester indicating the SGPA and CGPA. SGPA and CGPA will be rounded off to the second place of decimal.

18. Consolidated Grade Sheet

After successful completion of the entire Program of study, a Consolidated Grade Sheet containing performance of all academic years will be issued as a final record. Transcripts will also be issued, if required, after payment of requisite fee.

19. Award of Degree

The Degree will be conferred and awarded by Jawaharlal Nehru Technological University Anantapur, Ananthapuramu on the recommendation of the Principal of SVCET (Autonomous), Chittoor

19.1 Eligibility:

A student shall be eligible for the award of B.Tech., Degree if he fulfills all the following conditions:

➢ Registered and successfully completed all the components prescribed in the program of study for which he is admitted.

➢ Successfully acquired the minimum required credits as specified in the curriculum corresponding to the branch of study within the stipulated time.

➢ Obtained CGPA greater than or equal to 4.0 (Minimum requirement for declaring as passed.)

19.2. Award of Class

Declaration of Class is based on CGPA.

Cumulative Grade Point Average	Class
≥7.5	First Class with Distinction
≥6.5 and<7.5	First Class
≥5.5 and <6.5	Second Class
≥4.0 and<5.5	Pass Class

20. Personal verification / Revaluation / Final Valuation

20.1 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 / deletionin evaluation if found, the institution will correct the same.

20.2 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.

20.3 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.

21. Termination from the program

The admission of a student to the program may be terminated and the student is asked to leave the institute in the following circumstances:

a. The student fails to satisfy the requirements of the program within the maximum period stipulated for the program.

b. The student fails to satisfy the norms of discipline specified by the institute from time to time.

22. With-Holding of results

If the candidate has not paid any dues to the institute / if any case of indiscipline / malpractice is pending against him, the results of the candidate will be withheld. The issue ofthe degree is liable to be withheld in such cases.

23. Graduation Day

The institute shall have its own annual Graduation Day for the award of Provisional Certificates to students completing the prescribed academic requirements in each case, in consultation with the University and by following the provisions in the Statute. The college shall institute prizes and medals to meritorious students and award them annually at the Graduation Day. This will greatly encourage the students to strive for excellence in their academic work.

24. Discipline

Every student is required to observe discipline and decorum both inside and outside the institute and not to indulge in any activity which will tend to bring down the honor of the institute. If a student indulges in malpractice in any of the theory / practical examination, continuous assessment examinations he shall be liable for punitive action as prescribed by the Institute from time to time.

25. Grievance Redressal Committee

The institute shall form a Grievance Redressal Committee for each course in each department with the Course Teacher and the HOD as the members. This Committee shall solve all grievances related to the course under consideration.

26. Transitory Regulations

Students who got detained for want of attendance (or) who have not fulfilled academic requirements (or) who have failed after having undergone the course in earlier regulations (or) have discontinued and wish to continue the course are eligible for admission into the unfinished

semester from the date of commencement of class work with the same (or) equivalent subjects as and when subjects are offered and they continue to be in the academic regulations of the batch they join later.

A regular student has to satisfy all the eligibility requirements within the maximum stipulated period of eight years, and a lateral entry student within six years, for the award of B.Tech Degree.

i. The students joining under R-17 Regulations from previous Regulations in II B.Tech II semester need not complete the mandatory course EPIC I offered in the II B.Tech I semester for the award of B.Tech degree.

ii. The students joining under R-17 Regulations from previous Regulations in III B.Tech I semester/III B.Tech II semester/ IV B.Tech I semester/ IV B.Tech II semester need not complete the mandatory EPIC course offered in the II B.Tech I semester and II B.Tech II semester for the award of B.Tech degree.

27. Revision of Regulations and Curriculum

The Institute from time to time may revise, amend or change the regulations, scheme of examinations and syllabi if found necessary and on approval by the Academic Council and the Governing Body shall come into force and shall be binding on the students, faculty, staff, all authorities of the Institute and others concerned.

28. General

Where the words "he", "him", "his", "himself" occur in the regulations, they include "she", "her", "herself".

> # FAILURE TO READ AND UNDERSTAND THE REGULATIONS IS NOT AN EXCUSE

Identification of Courses

B.Tech

Each course shall be uniquely identified by an alphanumeric code of with 7 characters as given below

No. of digits	Description
First two digits	Year of regulation Ex: 17
Next one letter	Type of program: A: B.Tech B: M.Tech C: M.B.A D: M.C.A
Next two letters	Code of department: HS/CE/CS/EE/EC/IT/ME/MB/MC
Last two digits	Indicate series numbers: ≥ 01

Ex: I Year Course:

17AHS02	17AHS01
17AHS04	17AHS09
17ACS01	17AHS03
17ACS05	17ACS03
17AEE01	17AHS07
17AHS05	17AHS08
17AHS06	
17ACS02	

Vision and Mission of the Department under R17 Regulation

Department Vision:

- Evolve as a centre of excellence in Computer Science and Engineering education with national and international reputation and to adapt itself to the rapid advancements in the Computer science and Engineering field.

Department Mission:

- To impart high quality professional training in undergraduate and postgraduate level with emphasis on basic principles of Computer Science and Engineering and to foster leading edge research in the fast changing field.

- To inculcate professional behavior, strong ethical values, innovative research capabilities and leadership abilities in the young minds so as to work with a commitment to the progress of the nation.

Program Educational Objectives (PEOs)

PEO1: To be able to solve wide range of computing related problems in order to cater to the needs of industry and society.

PEO2: To exhibit analytical decision making and problem solving skills by applying research principles for handling dynamic real time challenges.

PEO3: To be able to adapt to the evolving technical challenges and changing career opportunities. Learn to effectively communicate ideas in oral, written, or graphical form to promote collaboration other engineering teams in accordance with social standards and ethical practices.

Program Specific out comes (PSOs)

PSO1: Design and develop Mobile Applications and Web based applications to cater societal needs.

PSO2: Understand the structure, evolutionary changes and Devolopment methodologies of software systems to address modern computing challenges.

SRI VENKATESWARA COLLEGE OF ENGINEERING AND TECHNOLOGY(AUTONOMOUS)

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Scheme of Instruction and Examination under R17 Regulations

I B.Tech., I Semester

Course Code	Course Name	Subject Area	Category	Periods per week			Credits	Scheme of Examination Max. Marks		
				L	T	P		CIA	SEE	Total
17AHS01	English for communication I	BS	Foundation	3	-	-	3	40	60	100
17AHS02	Differential Equations and Vector Calculus	BS	Foundation	3	1	-	3	40	60	100
17AHS03	Engineering Physics	BS	Foundation	3	1	-	3	40	60	100
17ACS01	Computer Programming in C	ES	Foundation	3	-	-	3	40	60	100
17AHS05	Environmental Studies	HS	Foundation	3	-		3	40	60	100
17AME02	Computer Aided Engineering Drawing	ES	Foundation	1	-	4	3	40	60	100
17AHS07	Communication Skills Lab	BS	Foundation	-	-	2	1	40	60	100
17AHS08	Engineering Physics Lab	BS	Foundation	-	-	3	1.5	40	60	100
17ACS02	Computer Programming Lab	ES	Foundation	-	-	3	1.5	40	60	100
TOTAL				**16**	**2**	**12**	**22**	**360**	**540**	**900**

I B.Tech., II Semester

Course Code	Course Name	Subject Area	Category	Periods per week			Credits	Scheme of Examination Max. Marks		
				L	T	P		CIA	SEE	Total
17AHS09	Numerical and Transform Techniques	BS	Foundation	3	1	-	3	40	60	100
17AHS04	Engineering Chemistry	BS	Foundation	3	-	-	3	40	60	100
17ACS03	Data Structures	ES	Foundation	3	-	-	3	40	60	100
17AEE03	Basic Electrical Engineering	ES	Foundation	3	1	-	3	40	60	100
17AEC01	Electronic Devices & Circuits	ES	Foundation	3	1	-	3	40	60	100
17ACS04	Essentials of Computer Science	ES	Foundation	3	-	-	3	40	60	100
17AHS06	Engineering Chemistry Lab	BS	Foundation	-	-	3	1.5	40	60	100
17ACS05	Data structures Lab	ES	Foundation	-	-	3	1.5	40	60	100
17AME03	Engineering Practice Lab	ES	Foundation	-	-	2	1	40	60	100
	***Audit Course -I	AC	Perspective	-	-	-	-	-	-	-
TOTAL				**18**	**3**	**8**	**22**	**360**	**540**	**900**

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

II B.Tech.,I Semester

Course Code	Course Name	Subject Area	Category	Periods per week			Credits	Scheme of Examination Max. Marks		
				L	T	P		CIA	SEE	Total
17AHS16	Discrete Structures & Graph Theory	PC	Core	3	1	-	3	40	60	100
17ACS06	Object oriented programming through Java	PC	Core	3	1	-	3	40	60	100
17AMB01	Managerial Economics and Financial Analysis	HS	Foundation	3	-	-	3	40	60	100
17ACS07	Database Management Systems	PC	Core	3	1	-	3	40	60	100
17ACS08	File Structures with C++	PC	Core	3	-	-	3	40	60	100
17AEC05	Digital Logic Design	ES	Core	3	-	-	3	40	60	100
17ACS09	Java Programming Lab	PC	Core	-	-	3	1.5	40	60	100
17AHS17	Technical Writing and Content Development Lab	BS	Foundation	-	-	2	1	40	60	100
17ACS10	Database Management Systems Lab	PC	Core	-	-	3	1.5	40	60	100
17AHS18	English for Communication - II	MC	Perspective	-	-	-	-	40	60	100
17AME64	Introduction to Engineering Projects	MC	Perspective	-	2	-	-	40	60	100
TOTAL				**18**	**5**	**8**	**22**	**440**	**660**	**1100**

II B.Tech.,II Semester

Course Code	Course Name	Subject Area	Category	Periods per week			Credits	Scheme of Examination Max. Marks		
				L	T	P		CIA	SEE	Total
17ACS11	Programming in python	ES	Core	3	1	-	3	40	60	100
17ACS12	Computer Organization	PC	Core	3	-	-	3	40	60	100
17ACS13	Operating Systems	PC	Core	3	-	-	3	40	60	100
17ACS14	Design & Analysis of Algorithms	BS	Foundation	3	1	-	3	40	60	100
17AHS23	Probability Distributions and Statistical Methods	BS	Foundation	3	1	-	3	40	60	100
17ACS15	Free and open source software	PC	Core	3	-	-	3	40	60	100
17ACS16	Programming in Python Lab	PC	Core	-	-	2	1	40	60	100
17ACS17	Operating systems Lab	PC	Core	-	-	3	1.5	40	60	100
17ACS18	Free and open source software Lab	PC	Core	-	-	3	1.5	40	60	100
	*** Audit Course -II	AC	Perspective	-	-	-	-	-	-	-
17AME65	Engineering Projects in Community Services	MC	Perspective	-	2	-	-	40	60	100
TOTAL				**18**	**5**	**8**	**22**	**400**	**600**	**1000**

III B.Tech., I Semester

Course Code	Course Name	Subject Area	Category	Periods per week			Credits	Scheme of Examination Max. Marks		
				L	T	P		CIA	SEE	Total
17ACS19	Theory of Computation	PC	Core	3	1	-	3	40	60	100
17ACS20	Software Engineering	PC	Core	3	-	-	3	40	60	100
17ACS21	Computer Networks	PC	Core	3	1	-	3	40	60	100
17ACS22	Data ware housing and Data mining	PC	Core	3	1	-	3	40	60	100
17AEC29	Microprocessors & interfacing	ES	Core	3	-	-	3	40	60	100
	*Professional Elective-I	PE	Elective	3	-	-	3	40	60	100
17ACS28	Computer Network Lab	PC	Core	-	-	3	1.5	40	60	100
17AEC34	Microprocessors and Interfacing Lab	ES	Core	-	-	3	1.5	40	60	100
17ACS29	Data Ware housing and Data mining Lab	PC	Core	-	-	3	1.5	40	60	100
17ACS30	Comprehensive Online Examination	-	Skill	-	-	-	0.5	-	100	100
17ACS74	MOOC-1	MC	Perspective	-	-	-	-	-	-	-
TOTAL				**18**	**3**	**9**	**23**	**360**	**640**	**1000**

III B.Tech., II Semester

Course Code	Course Name	Subject Area	Category	Periods per week			Credits	Scheme of Examination Max. Marks		
				L	T	P		CIA	SEE	Total
17ACS31	Compiler Design	PC	Core	3	1	-	3	40	60	100
17ACS32	Big data Analytics	PC	Core	3	1	-	3	40	60	100
17ACS33	Cryptography and Network Security	PC	Core	3	-	-	3	40	60	100
17ACS34	Web Technologies	PC	Core	3	1	-	3	40	60	100
	*Professional Elective-II	PE	Elective	3	-	-	3	40	60	100
	**Open Elective-I	OE	Elective	3	-	-	3	40	60	100
17ACS42	Compiler Design Lab	PC	Core	-	-	3	1.5	40	60	100
17ACS43	Data Analytics Lab	PC	Core	-	-	3	1.5	40	60	100
17ACS44	Web Technologies Lab	PC	Core	-	-	3	1.5	40	60	100
17ACS45	Comprehensive Online Examination	-	Skill	-	-	-	0.5	-	100	100
17ACS75	MOOC-2	MC	Perspective	-	-	-	-	-	-	-
TOTAL				**18**	**3**	**9**	**23**	**360**	**640**	**1000**

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

IV B.Tech., I Semester

Course Code	Course Name	Subject Area	Category	Periods per week			Credits	Scheme of Examination Max. Marks		
				L	T	P		CIA	SEE	Total
17ACS40	Cloud Computing	PC	Core	3	1	-	3	40	60	100
17ACS46	Software Testing	PC	Core	3	1	-	3	40	60	100
17ACS47	Internet of Things	PC	Core	3	1	-	3	40	60	100
	*Professional Elective-III	PE	Elective	3	-	-	3	40	60	100
	*Professional Elective-IV	PE	Elective	3	-	-	3	40	60	100
	**Open Elective II	OE	Elective	3	-	-	3	40	60	100
17ACS58	Software Testing Lab	PC	Core	-	-	3	1.5	40	60	100
17ACS59	Internet of Things Lab	PC	Core	-	-	3	1.5	40	60	100
17ACS60	Mini Project	-	Skill	-	-	2	1	40	60	100
17ACS76	MOOC-3	MC	Perspective	-	-	-	-	-	-	-
TOTAL				**18**	**3**	**8**	**22**	**360**	**540**	**900**

IV B.Tech., II Semester

Course Code	Course Name	Subject Area	Category	Periods per week			Credits	Scheme of Examination Max. Marks		
				L	T	P		CIA	SEE	Total
	Internship/*Professional Elective-V	PE	Elective	3	-	-	3	40	60	100
	*Professional Elective-VI	PE	Elective	3	-	-	3	40	60	100
17ACS72	Comprehensive Viva Voce	-	Skill	-	-	-	2	-	100	100
17ACS73	Project Work	-	-	-	-	20	12	40	60	100
TOTAL				**6**	**-**	**20**	**20**	**120**	**280**	**400**

*Refer to Professional Elective courses List Appended

**Refer to Open Elective courses List Appended

***Refer to Audit Course courses List Appended

	*Professional Elective-I	
Course Code	**Subject**	**Offering Department**
17ACS23	Computer Graphics	CSE
17ACS24	Principles of Programming Languages	CSE
17ACS25	Distributed Operating Systems	CSE
17ACS26	Relational Database Management Systems	CSE
17ACS27	Advanced Computer Architecture	CSE

	*Professional Elective-II	
Course Code	**Subject**	
17ACS35	Object Oriented Analysis and design	CSE
17ACS36	Mobile Computing	CSE
17ACS37	Multimedia information systems	CSE
17ACS38	Software Architecture	CSE
17ACS39	Distributed Data Base	CSE

	*Professional Elective-III	
Course Code	**Subject**	**Offering Department**
17ACS48	Software Project Management	CSE
17ACS49	Machine Learning	CSE
17AIT04	Human Computer Interaction	IT
17ACS50	Network Programming	CSE
17ACS51	Web Services	CSE

	*Professional Elective-IV	
Course Code	**Subject**	**Offering Department**
17ACS52	Service Oriented Architecture	CSE
17ACS53	Wireless Sensor Networks	CSE
17ACS54	Digital forensics	CSE
17ACS55	Artificial Intelligence	CSE
17ACS56	E – Commerce	CSE

	Internship/*Professional Elective-V	
Course Code	**Subject**	**Offering Department**
17ACS61	Internship	CSE
17ACS62	Data Sciences	CSE
17ACS63	Deep Learning	CSE
17ACS64	Android Application Development	CSE
17ACS65	High Speed Networks	CSE
17ACS66	Information Retrieval Systems	CSE

*Professional Elective-VI		
Course Code	Subject	Offering Department
17ACS67	Software quality assurance and Testing	CSE
17ACS68	Storage Area Networks	CSE
17ACS69	Introduction to Cyber Security	CSE
17ACS70	Social Media Networking	CSE
17ACS71	Advanced Computer Networks	CSE

**Open Elective-I		
Course Code	Subject	Offering Department
17AME40	Robotics	ME
17AEC45	Digital Image processing	ECE
17AEC43	MEMS & MICROSYSTEMS	ECE
17AEC44	Communication Engineering	ECE
17AME39	Operation Research	ME
**Open Elective-II		
Course Code	Subject	Offering Department
17AEC53	Satellite Communication	ECE
17AAT26	Supply chain Management	AT
17AME57	Total Quality management	ME
17ACE63	Disaster Management	Civil Engineering
17AMB03	Professional Ethics	MBA

***Audit Course – I

Course Code	Subject
17AHS10	Quantitative Aptitude and Reasoning I
17AHS11	Intellectual Property Rights
17AHS12	Clinical Psychology
17AHS13	German Language

***Audit Course – II

Course Code	Subject
17AHS19	Quantitative Aptitude and Reasoning II
17AHS20	Legal Sciences
17AHS21	Gender Sensitivity
17AHS22	French Language

I B.Tech – I Semester (Common to ECE, ETE, EE, EEE, CSE, IT & CSSE) /
II Semester (Common to Civil Engineering, ME & AE)

L   T   P   C
3   0   0   3

Code: 17AHS01   **ENGLISH FOR COMMUNICATION - I**

After completion of the course the student will be able to
1. Understand to communicate ideas effectively to the target audience.
2. Enhance their LSRW skills.
3. Apply the acquired technology in their communication.
4. Utilize their enhanced skills to meet the demands of Industry and corporative world.
5. Retrive the grammatical concepts.

In order to improve the skills in LSRW the following course content are prescribed and divided into five units.

UNIT-I

Environmental Consciousness: Climate Change- Green cover-Pollution

REMEDIAL GRAMMAR:
1. Articles
2. Prepositions
3. Tenses
4. Sentence Construction-Strategies (avoiding Repetition and ambiguity)

UNIT-II

Emerging Technologies: Solar Thermal Power-Cloud Computing-Nanotechnology

Remedial Grammar
1. Sentence Transformation (Degrees, Voice, Speech & synthesis)
2. Common Errors in English
3. Subject + Verb Agreement
4. Modal Verbs, Question Tags

UNIT-III

Energy: Renewable and Non-Renewable sources-Alternative sources-Conservation-
         Nuclear Energy

Vocabulary:
1. Roots-Prefixes-Suffixes(RPS Method)
2. Synonyms
3. Antonyms

UNIT-IV

Engineering Ethics: Challenger Disaster-Biotechnology-Genetic Engineering-Protection
          From Natural Calamities

Vocabulary:

1. Phrasal Verbs
2. Idioms
3. One-word substitutes
4. Words often confused

UNIT-V

Travel and Tourism: Advantages and Disadvantages of Travel-Tourism- Atithi Devo Bhava-Tourism in India.

Writing Practice (Composition):

1. Paragraph-Writing(Descriptive &Narrative)
2. Precise-Writing
3. Essay Writing, Expansion of Proverbs
4. Note-Making
5. Letter-Writing (Formal &Informal)

Text Books Prescribed:

Mindscapes, Orient Blackswan.

Reference Books:

1. M. Ashraf RizWi, "Technical English Communication", Tata Mc Graw Hill, Latest Edition.
2. Basic communication skills for Technology, Andrea J Rutherford, Pearson Education, Asia.
3. Technical communication by Meenakshi Raman Sangeetha Sharma, Oxford
4. Oxford Practice Grammar by John Eastwood , Oxford.
5. English Pronouncing Dictionary by Daniel Jones Oxford.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	-	-	-	-	1	-	-	-	3	-	-	2	-
CO2	3	3	-	-	-	-	-	-	-	-	-	-	2	-
CO3	3	3	-	-	-	3	-	-	-	3	-	-	-	-
CO4	-	3	-	-	-	2	-	-	-	-	-	-	2	-
CO5	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SRI VENKATESWARA COLLEGE OF ENGINEERING AND TECHNOLOGY
(AUTONOMOUS)
I B.Tech- I Semester (Common to All Branches)
Code: 17AHS02   L   T   P   C
                                                             3   1   -   3
DIFFERENTIAL EQUATIONS AND VECTOR CALCULUS

Outcomes:
After completion of the course the student will be able to
1. Classify and interpret the solutions of ordinary differential equations.
2. Explain concepts of maxima and minima of function of several variables.
3.Apply multiple integral techniques by evaluating areas bounded by regions.
4. Solving system of linear equations and determine the eigen values and eigen vectors.
5. Illustrate the physical interpretation of concepts of vector calculus.

UNIT-I

DIFFERENTIAL EQUATIONS: Linear Differential Equations - Bernoulli's Equations – Non - homogenous Linear Differential equation of second and higher order with constant coefficients with R.H.S terms of the form $e^{ax}, Sinax, Cosax, x^m, e^{ax}V(x), x^mV(x)$ and $xV(x)$.

UNIT-II

 FUNCTIONS OF SEVERAL VARIABLES: Maxima and Minima for functions of two variables –Lagrange's method of multipliers of 3 variables only. Taylor's and Maclaurin's series expansion of functions of two variables. **Radius of Curvature**: Cartesian and polar curves.

UNIT-III
APPLICATIONS OF INTEGRATION: Length of an arc and area using integral.
Multiple Integrals: Double and Triple integrals-Change of variables-Change of Order of Integration (Cartesian and polar forms). Surface area and Volume of solid of revolution.

UNIT-IV
MATRICES - I: Rank of a matrix-Echelon form, Normal form -solution of linear system of homogeneous and non-homogeneous equations -Gauss elimination method. Eigen values and Eigen vectors. Cayley-Hamilton theorem - Linear Transformations - Orthogonal transformations -Diagonalization of a matrix. Quadratic forms-Reduction of Quadratic form to Canonical form and their nature.

UNIT-V
VECTOR CALCULUS: Gradient, Divergence, Curl and their properties (without identities).
Vector Integration: Line Integrals – Potential functions - Area, Surface and Volume integrals -Green's theorem-

Stoke's theorem& Gauss Divergence theorems (without proof) – problems onGreen's, Stoke's and Gauss's Theorem.

Text Books:
1. Dr.B.S.Grewal, Higher Engineering Mathematics. Kanna Publications, 40thedition.
2. B.V.Ramana, A Text book of Engineering Mathematics-I, Tata McGrawhill.
3. T.K.V.Iyengar, B.Krishna Gandhi and others, A Text book of Engineering Mathematics –I, S.Chand andcompany.

Reference Books:
1. Erwin Kreyszig, Advanced Engineering Mathematics. John Wiley &Sons.2016
2. Thomson, A Text book of Engineering Mathematics, BookCollection
3. N.Bail, M.Goyal & C.Walking, A Text book of Advanced Engineering Mathematics-A computer Approach.
4. E.Rukmangadachari and Keshava Reddy, A Text book of Engineering Mathematics-I, Pearson Education.

Mapping of Course Outcomes with Programme Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	1	-	-	-	-	-	-	-	-	-	-	1	-
CO2	3	2	1	-	-	-	-	-	-	-	-	-	1	-
CO3	3	3	1	-	-	-	-	-	-	-	-	-	1	2
CO4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO5	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SRI VENKATESWARA COLLEGE OF ENGINEERING AND TECHNOLOGY
(AUTONOMOUS)
I B.Tech- I Semester (Common to All Branches)
Code: 17AHS03   **L   T   P   C**
                                                         3   1   -   3

ENGINEERING PHYSICS

After completion of the course the student will be able to
1. Apply concepts of optics, lasers and fibre optics, and their application in both scientific and technological systems
2. Determine crystal properties, Crystal defects , periodicity and structures using X-rays and various ultrasonic techniques
3. Define quantum structure of sub-atomic particles
4. Apply superconducting and magnetic materials and their applications to understand electronic devices.
5. Apply semiconductors and nanomaterials to design equipment.

UNIT – I
OPTICS:
   INTERFERENCE: Introduction - Interference in thin films by reflection – Newton Rings.
   DIFFRACTION: Introduction - Fraunhofer diffraction due to single slit- Diffraction spectra using Grating.
LASERS: Introduction – Laser Characteristics – Spontaneous and stimulated emission of radiation – Einstein's coefficients – population inversion –Ruby laser - He-Ne laserSemiconductor Laser - Applications of laser.
FIBER OPTICS: Introduction – Principle of optical fiber – Acceptance angle and acceptance cone – Numerical aperture – Classification of Optical Fibers- Attenuation in optical fibers –Optical fiber communication system- Applications of optical fibers.

UNIT – II
CRYSTAL STRUCTURES AND X-RAY DIFFRACTION: Introduction – Space lattice – Basis – Unit cell – Lattice parameters – Crystal systems – Bravais lattices – Structure and packing fractions of Simple cubic, body centered cubic, face centered cubic crystals-Directions and planes in crystals – Miller Indices – Bragg's law – X-ray diffraction by powder method
ULTRASONICS: Introduction – Production of ultrasonic by piezoelectric method – Properties and detection of Ultrasonic waves – Applications of Ultrasonics.
   UNIT – III
PRINCIPLES OF QUANTUM MECHANICS: Wave and particles – de Broglie hypotheses – Properties of Matter waves –Heisenberg uncertainity principle- Schrödinger time independent wave equation – Physical

significance of wave function – Particle in one dimensional Infinite potential box

FREE ELECTRON THEORY: Classical free electron theory – Electrical conductivity – merits and demerits – Quantum free electron theory –merits and demerits - Fermi Dirac distribution- Kronig penny model qualitative only.

UNIT – IV

MAGNETIC PROPERTIES: Introduction and basic definitions – Origin of magnetic moment – Classification of magnetic materials – Hysteresis curve – Hard and Soft Magnetic MaterialsApplications.

SUPERCONDUCTORS: General properties of superconductors – Meissner effect – Penetration depth – Type I and Type II superconductors – Flux quantization – Josephson effect – Application of superconductors.

UNIT - V

SEMICONDUCTORS: Introduction – Intrinsic and extrinsic Semiconductors–Fermi levelEquation of conductivity - Drift and diffusion – Einstein's equation – Hall Effect - Solar Cell.

NANOMATERIALS: Introduction – Significance of Nano scale - Types of nanomaterialsDimensionality – Growth of nanomaterials: Ball milling method - Sol-Gel method – Chemical vapor deposition – Properties of nanomaterials: Optical, Electrical, Mechanical and Magnetic – application of nano materials.

TEXT BOOKS:

1. Avadhanulu and Kshirasagar "A Text book of Engineering Physics" Revised Edition, S.Chand, New Delhi 2014
2. Gaur and Gupta "Engineering Physics" New Delhi, DhanpatRai Publishers, 2010
3. Thyagarajan K "Engineering Physics" Delhi, Tata Mcgraw Hill Publishers, 2013.

REFERENCE BOOKS:

1. Pillai.S.O: Solid State Physics, 6thedition, New Delhi: New Age International, 2005.
2. Chattopadhyay, K. K; Banerjee, A.N "Introduction to Nano Science and Technology" New Delhi: PHI, 2009
3. Resnick, Halliday and Walker "Fundamentals of Physics" 9th Edition, New Delhi: Wiley Publishers, 2010.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2	-	2								2		
CO2	3	-	-	2	1							1	2	
CO3	-	-	-	-								3		
CO4	-	2	-	2										2
CO5	-	2	-	2										2

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

SRI VENKATESWARA COLLEGE OF ENGINEERING AND TECHNOLOGY
(AUTONOMOUS)

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

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L   T   P   C
3   -   -   3
```

Code: 17ACS01   COMPUTER PROGRAMMING IN C

Outcomes:

Upon completion of this course, students will be able to:

1. *Apply the paradigms of structured programming to solve different problems.*
2. *List out the salient features and applications of C programming language.*
3. *Demonstrate the techniques for implementing applications using C programming.*
4. *Use basic data structure like array in simple data processing applications.*

UNIT – I

Introduction to Computers and Problem Solving:

What is computer, Block diagram of a Computer, Hardware Vs Software, Types of Programming Languages, The Problem Solving aspect, Top Down design.

C Fundamentals : The C character set, Variables, Identifiers and keywords, Data types, Constants, Input-Output statements, Structure of a C program, Simple C programs to exchange the values of two variables, Counting the number of factors of a given integer.

Algorithm, Flowchart: Fundamental algorithms- Factorial computation, Greatest Common Divisor computation, Sine function computation, Reversing the digits of an integer, Generating prime numbers.

UNIT – II

C Statements: Conditional and Unconditional Statements, Iterative Statements: Concept of a loop, Pre-test and Post-test loops, Event and Counter Controller loops, Operators- Classification of operators, Expressions- Precedence and Associativity, Evaluation of Expressions, Standard library functions.

Functions: Defining a function, Accessing a function, Function prototypes, Passing arguments to a function, Parameter passing mechanisms - Call-by-value, Call-by-reference, Recursion, Storage classes (auto, static, register, extern).

UNIT – III

Arrays: Declaration and Definition of an array, Processing an Array, Passing arrays to functions, Two-dimensional and Multi-dimensional arrays, Array techniques-Array order reversal, Removal of duplicatesfrom an ordered array.

Strings: Defining and Initialization of Strings, NULL character, Reading and Writing a string , Processing the string , String handling functions.

UNIT – IV
Pointers: Fundamentals, Pointer declarations, Pointers and One-dimensional array, Dynamic memory allocation, Operations on pointers, Arrays of pointers, Pointers for Inter function communications.
Structures and Unions: Declaration, Definition and Initialization of structures, Accessing structures, User-defined data type (typedef), Enumerated Data types, Nested structures, Array of structures, Structures and pointers, Passing structures to functions, Unions.

UNIT – V
Files: Significance of files, Opening and Closing a data file, Reading and Writing a data file, Processing a data file, Concept of text files and binary files, File handling functions, Additional features – Command line parameters, Preprocessor directives.

Text Books:

1. Behrouz A. Forouzan, Richard F. Gilberg, ‑C Programming & Data Structures‖ , India Edition, Course Technology, 2010.

2. R.G. Dromey, ‑How to Solve it by Computer‖ , Low Price Edition, Pearson Education India, 2008.

Reference Books:

1. Elliot B. Koffman , Jeri R. Hanly , Ashok Kamthane , A. Ananda Rao, ‑Programming in C and Data Structures‖ , First Impression, Pearson Education India, 2009.
2. E Balagurusamy, ‑Programming In C And Data Structures", Fourth Edition, McGraw-Hill Education, 2014.
3. Yashavant P Kanetkar, ‑Let Us C, 12th Edition, BPB Publications, 2010.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	-	2			-	-	-				1	-	-
CO2	3	-	-	1	1	-	-	-				-	3	1
CO3	-	3	3	1	2	-	-	-				-	-	2
CO4	-	3	1	1	3	-	-	-				3	3	3

Code:17AHS05   **Environmental Studies**   L T P C
                                                                                        3 - - 3

After completion of the course the student will be able to
1. Will be able to understand what constitutes the environment, how to conserve the precious resources and maintain the ecological balance. They will be aware of maintain the ecological balance based on the cultural and biological diversity can realize the importance of ecosystem, biodiversity and its conservation.
3. Will be able to identify the major pollutants and abatement devices in order to protect the environment from pollution for effective environmental management.
4. Will be Capable of managing social issues related to the environment and be aware of the enforcement of environment acts in our constitution.
5. Will be able to analyse of the population growth and its effect on environment and human health..

UNIT – I
ENVIRONMENT AND NATURAL RESOURCES: Definition, Scope and Importance, Need for Public Awareness - Components of Environment(Atmosphere, Hydrosphere, Lithosphere and Biosphere) – Natural resources and associated problems- Forest resources: Use and over-exploitation, deforestation, case studies– Timber extraction, Mining, Dams and other effects on forest and tribal people- Water resources: Use and over utilization of surface and ground water, Floods, Drought, conflicts over water, dams-benefits and problems- Food resources: World food problems, Sources, changes caused by agriculture and overgrazing, impacts of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies. Energy resources: Renewable and Non-renewable energy resources

UNIT – II
ECOSYSTEMS AND BIODIVERSITY : Concept of an ecosystem, Structure and function of an ecosystem – Producers, Consumers and decomposers – Energy flow in the ecosystem – Food chains, food webs and ecological pyramids – Ecological Succession - Introduction, types, characteristic features, structure and function of the following ecosystems: Forest- Grassland-Desert-Aquatic (ponds, streams, lakes, rivers, oceans, estuaries)- Introduction to biodiversity: Definition, types(genetic, species and ecosystem diversity)- Bio-geographical classification of India-Value of biodiversity(Consumptive use, Productive use, Social use, Ethical use, Aesthetic and Option values)- India as a mega diversity nation-Hot spots of India-Threats to 35 biodiversity(habitat loss, Poaching of wildlife, man-wildlife conflicts)- Conservation of biodiversity(In-situ and Ex-situ conservation of biodiversity).

UNIT – III
ENVIRONMENTAL POLLUTION: Definition, causes, effects and control measures of: a. Air Pollution b. Water Pollution c. Soil Pollution d. Noise Pollution e. Thermal Pollution f. Nuclear hazards, Solid Waste Management: Causes, effects and control measures of urban and industrial wastes- Role of an individual in prevention of pollution- Pollution case Studies- Environmental Impact Assessment-Disaster management: Floods, Earthquake, Cyclone, Landslides and Tsunamis - Field Trip- Visit to a local polluted siteUrban/Industrial etc.

UNIT – IV
SOCIAL ISSUES AND THE ENVIRONMENT: From unsustainable to sustainable development- Water conservation(rainwater harvesting, watershed management), Cloud seeding-Resettlement and rehabilitation of people its problems and concerns, case studies- Environmental ethics-Issues and possible

solutionsClimate change, global warming, acid rain, ozone layer depletion-Act's: Environment Protection Act-Air (Prevention and Control of Pollution) Act-Water (Prevention and control of Pollution) Act-Wildlife Protection Act-Forest Conservation Act.

UNIT – V
HUMAN POPULATION AND THE ENVIRONMENT Population growth, variation among nation, Population explosion-Family Welfare Programme-Environment and human health-Human Rights-Value Education-HIV/AIDS-Women and Child Welfare-Role of Information Technology in Environment and human health.

TextBooks:
1. Benny Joseph, Environmental Studies, Mc Graw Hill Publications, 2nd Edition, 2016.
2. Kaushik, Anubha & Kauhsik, C.P., Environmental Science (As per the latest syllabus JNTU, Anantpur), New Age International Publishers, 5th Edition, 2016.
3. Dr. A. Ravikrishnan, Environmental Sciences (JNTU Anantapur), Sri Krishna Hitech Publishing company Pvt Ltd, 2016.

ReferenceBooks:

1. G. Tyler Miller and Scottt Spoolman, Environmental Science, Cengage Learning

Publishers, 15th Edition, 2015.

2. Gilbert M. Masters and Wendell P. Ela, Introduction to Environmental Engineering

and Science, Prentice Hall, 3rd Edition, 2007.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	-	-	-	-	-	-	-	-	-	-	-	2	-
CO2	3	1	-	-	-	-	-	2	-	-	-	-	2	1
CO3	3	2	1	1	-	-	3	-	-	-	-	-	-	1
CO4		3	2	1	-	-	3	2	-	-	-	-	2	-
CO5	-	-	3	1	-	-	-	-	-	-	-	-	-	-

SRI VENKATESWARA COLLEGE OF ENGINEERING AND TECHNOLOGY
(AUTONOMOUS)

I B.Tech – I Semester (Common to ECE, ETE, EE, EEE, CSE, IT & CSSE) /

	L	**T**	**P**	**C**
	1	-	4	3

Code: 17AME02   **COMPUTER AIDED ENGINEERING DRAWING**
                                   (First Angle Projection)

Outcomes:

After completion of this course, the student will be capable to:

1. *Articulate his/her ideas effectively by using orthographic projections in computer software.*
2. *Develop engineering drawing shapes in AutoCAD.*
3. *Compile the projection of points, lines, planes and solids then create virtual drawings by using computer.*
4. *Analyze the various sectional views and develop the surfaces of engineering objects.*
5. *Use the BIS and create drawings.*
6. *Elaborate the Conversion of 2D to 3D and vice-versa.*

Introduction:

1. Information about sketch book and allotment of marks for both sketching and computer execution work.
2. AutoCAD commands and use of limits, units and dimensioning the views on computer.
3. Orthographic projections - Principles of projection – both first and third angle and symbols.
4. Practicing on computer (first classes).
5. All the problems are to be solved on the sketch book and after it is checked by the instructor, it should be executed on the computer.

Theory:

UNIT-I:

Geometrical constructions – construction of polygons (inscribing, circumscribing), special methods– circle-tangents, Conics-ellipse, parabola, hyperbola -properties of conics, special methods of construction.

UNIT-II

Projections of points – Projections of straight lines- lines inclined to both the principal planes, determination of true length, traces and true inclinations.

UNIT-III

Projections of planes – inclined to both the principal planes.
Projection of regular solids – prisms, Pyramids, cylinders, tetrahedron and cones – axis inclined to one plane.

UNIT-IV

Sections of solids such as prisms, pyramids, cylinders, tetrahedron and cones (solids in simple position) – True shape of the section.
Development of surfaces of simple solids, as above and part solids.

UNIT-V

Principles of isometric projection – isometric scale – isometric projection of planes and solids – conversion of orthographic views into isometric views and vice- versa.

Practice:

1. **Geometrical constructions**:

　　a) Sketching of polygons - Triangles, Square, Rectangle, Pentagon, Hexagon, Circle at different positions.

　　b) Sketching of Tangents to the circles.

2. **Conics**:

　　Constructions of Ellipse, Parabola, Hyperbola

3. **Points:**

　　Drawing the quadrants and positioning of the points with reference to H.P & V.P with   dimensions.

4. **Lines:**

　　a) Sketching of lines when they are

　　　　i. Parallel to both H.P & V.P

　　　　ii. Parallel to V.P/H.P and perpendicular to H.P /V.P

　　　　iii. Parallel to V.P/H.P and inclined to H.P /V.P

　　　　iv. Inclined to both the planes

　　b) Sketching of the line to measure true length & true inclinations

　　c) Sketching of the line to determine the traces

5. **Planes:**

　Sketching of the planes when they are

　　a) Perpendicular to V.P/H.P and parallel to H.P /V.P

　　b) Inclined to V.P/H.P and perpendicular to H.P /V.P

　　c) Perpendicular to both V.P and H.P.

d) Inclined to both V.P and H.P.

6. Solids:

    a) Sketching of 2D shapes and convert it to 3D solids (Prisms, Pyramids, cube, cylinder, one, tetrahedron)

    b) Sketching of projections of solids when the position of axis is

        i. Perpendicular to V.P/H.P and parallel to H.P /V.P.

        ii. Inclined to V.P/H.P and parallel to H.P /V.P.

        iii. Parallel to both V.P and H.P.

7. Sections of solids:

    a) Different types of hatching on the polygons.

    b) Sketching of sections of solids when the section/cutting plane is

        i. Parallel to V.P/H.P and perpendicular to H.P /V.P.

        ii. Inclined to V.P/H.P and perpendicular to H.P /V.P.

        iii. Perpendicular to both principal planes.

    c) Sketching of sections when the cutting plane passing through different positions- base, axis, corner, apex/vertex, generator, lateral edge.

    d) Sketching of true shapes.

8. Development of surfaces:

  Sketching of developed surfaces of

    a) cylinder, prisms using parallel line method

    b) cone, pyramids using radial line method

    c) truncated solids and frustum

9. Orthographic Projections:

    Sketching of 2D views of front, top and side views of 3D objects.

10. Isometric projections:

    a) Setting of isometric grid

    b) Sketching of isometric views of 3D models / shapes.

Text Books

1. K. L. Narayana and S. Bheemanjaneyulu, Engineering Drawing with AutoCAD 2016, New Age Publishers, New Delhi, 2017.

2. Basant Agrawal and C.M.Agrawal, Engineering Drawing, Mc Graw Hill Education 2e

Reference Books:

1. **K.Venugopal,** Engineering Drawing and Graphics + AutoCad , New Age International (P) Ltd,Publishers, New Delhi, Fourth Edition

2. **Siddiquee Arshad. N., Zahid A. Khan, Mukhtar Ahmad,** Engineering Drawing: With primer on AUTOCAD, PHI Learning Pvt. Ltd.,

Internal examination : (Max 40 Marks)

    Average day-to-day evaluation = 20 marks

<div align="center">Internal Test = 20 marks</div>

Internal Test Question paper pattern **(Max 20 Marks)**

Paper setting: Answer any two out of three questions. Prepare sketches to scale in the sketch book and later on execute in the computer using AutoCAD. 10 marks for work in the sketch book and 10 marks for computer work.

1. First question from unit I or Unit II, Second question from Unit III or Unit IV, Third question from Unit V.
2. Internal exam duration 2 Hours.

External /Final examination Question paper pattern **(Max 60 Marks)**

(Internal Evaluation & Paper setting)

Paper setting:

1. Answer any three out of five questions. Prepare sketches to scale in the sketch book and later on execute in the computer using AutoCAD. 30 marks for work in the sketch book and 30 marks for computer work.
2. Five questions with one question from each unit.
3. Final exam duration 3 Hours.

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO10	PO11	PO12	PSO 1	PSO 2
CO 1	2	2	3	3	-	-	-	-					3	2
CO 2	2	3	1	3	-	-	-	-				2	2	3
CO 3	2	3	2	3	2	-	-	-				2	-	-
CO 4	3	3	3	1	3	-	-	-				3	2	2
CO 5	2	3	1	3	-	-	-	-				2	2	3

	L	T	P	C
	-	-	2	1

Code: 17AHS07   **COMMUNICATION SKILLS LAB**

The **Language Lab** focuses on the production and practice of sounds of language and equips students with the use of English in everyday situations and contexts.

Outcomes:

1. *recognize English sounds- Monopthongs, Diphthongs and consonantal sounds.*
2. *use correct Pronunciation in English.*
3. *differentiate between Received Pronunciation and varieties of English.*
4. *apply proper stress pattern in speaking English language.*
5. Develop skills to meet the demands of the industry.

The following course content is prescribed for the **English Language Laboratory** sessions.

I PHONETICS: Organs of speech, speech mechanism, vowels, consonants, diphthongs, syllable division, word stress, intonation, phonetic transcription with support of speech solutions,

II TENSES: Speaking of past, present & Future, Role play.

III INFORMAL CONVERSATIONS:

Situational conversation

- Greeting/Self-introduction
- Expressing the cause of something
- Describe a current situation
- Speaking traditions/customs/public issues
- Making plans for vacation
- Expressing of emotions
- Shopping –bargaining price and making purchases

IV FORMAL CONVERSATIONS:

Situational conversation

- Making an appointment
- Naming foods and describing tastes
- Reporting other person's messages
- Requesting

- Asking for directions and describing
- Making suggestions, agreements and refusals

V GROUP DISCUSSIONS:

Do's and Don'ts of a G.D. speaking on Knowledge based, controversial or abstract topics.

Prescribed software for Practice:

Sky Pronunciation, Pro-power 2 & Globarena

Reference Books:

1. A Text Book of English Phonetics for Indian students by T. Balasubramaniyam, Macmillan Ltd., 2000.
2. Sasikumar.V and P.V. Dhamija, Spoken English: A Self-Learning Guide to Conversation Practice. 34th Reprint. Tata MCGraw Hill. New Delhi, 1993.
3. Spoken English, R.K. Bansal and J.B. Harrison, Orient Longman 2006 Edn.
4. Speaking English Effectively, Krishna Mohan & NP Singh (Macmillan)
5. Body language- Your success Mantra, Dr Shalini Verma, S. Chand & Co, 2008.

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

SRI VENKATESWARA COLLEGE OF ENGINEERING AND TECHNOLOGY
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Code: 17AHS08   L   T   P   C
                                                          -   -   3   1.5

ENGINEERING PHYSICS LAB

Outcomes:

1. Explain importance of optical phenomenon like interference and diffraction of light
2. Define concepts pertaining to optical fiber, semiconductor, magnetic materials, lasers and their relative parameters
3. Use optical fibers in the field of communication.

A minimum of 10 experiments to be conducted during the academic year

1. Determine the wavelengths of given light source - Spectrometer.

2. Dispersive power of prism

3. Determine the thickness of thin wire by Interference.

4. Determine the wavelength of given laser source – Diffraction grating.

5. Determine the radius of curvature of given plano convex lens by forming Newton Rings.

6. Magnetic field along the axis of a current carrying coil – Stewart and Gee's method.

7. Numerical Aperture of an optical fiber.

8. Bending losses in Optical Fiber.

9. Determine the wavelength of Laser source using optical fiber.

10. Determine Hall Coefficient and Carrier concentration of the given Semiconductor.

11. Determine the energy loss of ferromagnetic sample by plotting B-H curve

12. Energy gap of a given semiconductor.

13. Determination of lattice constant using x-ray diffraction spectrum.

14. Determine the particle size using laser source.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PS02
CO1	3			2								1	3	1
CO2	3	2		2								1		1
CO3	3	2											3	

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

SRI VENKATESWARA COLLEGE OF ENGINEERING AND TECHNOLOGY
(AUTONOMOUS)

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

L	**T**	**P**	**C**
-	-	3	1.5

Code: 17ACS02   **COMPUTER PROGRAMMING LAB**

Outcomes:

After performing this laboratory, the students will be able to:

1.   *Develop skills for C programming development environment.*
2.   *Identify the behavior of variables using different types of storage classes.*
3.   *Use files concept to read / write data in secondary storage area.*
4.   *Develop programs by applying the derived data types such as structures, unions and pointers.*

Week 1

a) Write a C Program to exchange the values of two variables with a temporary variable and without using a temporary variable.
b) Write a C program to generate the prime factors of a given positive integer.
c) Write a C program to find the cosine value of a given integer by using mathematical function.

Week 2

a) Sum of the individual digits means adding all the digits of a number. Ex: 123, sum of the digits is 1+2+3 = 6. Write a C program to find the sum of individual digits of a positive integer.
b) A Fibonacci sequence is defined as follows: the first and second terms of the sequence are 0 and 1. Subsequent terms are found by adding the preceding two terms in the sequence.
   Write a C program to generate first n terms of the sequence.
c) Prime number is a number in which is exactly divisible by one and itself only.
   Ex: 2, 3, 5, 7, ...
   Write a c program to generate all the prime numbers between 1 and n, where n is a value supplied by the user.

Week 3

a) Write a C program to convert the Celsius temperature into Fahrenheit temperature or vice versa by using a standard formula.

b) Write a C program to construct a pyramid of numbers.

c) Write a C program to generate Pascal's triangle.

Week 4

a) Write a C program to calculate the following: Sum = $1 - x^2/2! + x^4/4! - x^6/6! + x^8/8! - x^{10}/10!$

b) Write a C program, which takes two integer operands and one operator from user, performs the operation and then prints the result.(consider the operators +, - , *, / , % and use the **switch** Statement).

Week 5

a) Write a C program that uses both recursive and non-recursive functions

i. To find the factorial of a given integer. Factorial of a number is nothing but the multiplication of numbers from a given number to 1.

ii. To find the GCD (Greatest Common Divisor) of two integers. GCD means Greatest Common Divisor. i.e. the highest number which divides the given numbers.

Ex: GCD (12,24) is 12.

Formula: GCD = product of numbers / LCM of numbers.

b) Towers of Hanoi problem means we have three towers here source, intermediate and destination. We have to transfer all the disks from source to destination towers. Here the restriction is not to place a big disk on the smaller one and for this we use the intermediate tower. Finally the arrangements in the destination tower must be same as the disks in the source tower at first.

Write a C program that use recursive function to solve the Towers of Hanoi problem.

Week 6

a) Write a C Program to find the largest and smallest number in a list of integers using arrays.

b) Write a C program that uses functions to perform the following using arrays:

   i) Addition of Two Matrices   ii) Multiplication of Two Matrices

Week 7

a) 2's Compliment of a number is obtained by scanning it from right to left and complimenting all the bits after the first appearance of a 1. Thus 2's Compliment of 11100 is 00100.

Write a C program to find 2's Compliment of a binary number.

b) In converting the Roman numeral to its equivalent decimal number, we have to take ROMAN value as input and this value is converted into its equivalent decimal number.

Write a C program to convert the given Roman numeral to its decimal equivalent.

Week 8

a) Write a C program that uses functions to perform the following operations:

   i. To insert a substring into a given main string from a given position.

ii. To delete n characters from a given position in a given string.

b) Write a C program to determine whether the given string is Palindrome or not.

Week 9

    a) Write a C program that displays the position or index in the string S where the string T begins, or 1 if S doesn't contain T.

    b) Write a C program to count the lines, words and characters in a given text.

Week 10

Write a C program that uses functions to perform the following operations:

    i) Reading a complex number   ii) writing a complex number

    iii) Addition of two complex numbers   iv) Multiplication of two complex numbers

(Note: Represent complex number using a structure)

Week 11

    a) Write a C program to display the contents of a file.

    b) Write a C program which copies the contents of one file to another.

Week 12

    a) Write a C program to reverse the first n characters in a file.

    b) Write a C program to merge two files into a third file (i.e., the contents of the first file.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	-	-	-	-	-	-	-	-	-	-	-	3	1
CO2	3	-	2	1	-	-	-	-	-	-	-	-	1	1
CO3	-	2	2	1	-	-	-	-	-	-	-	-	1	3
CO4	-	2	-	1	-	-	-	-	-	-	-	-	3	3

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

SRI VENKATESWARA COLLEGE OF ENGINEERING AND TECHNOLOGY
(AUTONOMOUS)

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

L	T	P	C
3	1	0	3

17AHS09   NUMERICAL AND TRANSFORM TECHNIQUES

UNIT-I

SOLUTION OF ALGEBRAIC AND TRANSCENDENTAL EQUATIONS

Introduction - The Bisection method-The method of false position - Newton - Raphson method. **Interpolation:** Forward Differences – backward differences-Newton's forward and backward differences formulae for interpolation - Lagrange's interpolation formula - Inverse interpolation .Cubic Spline interpolation.

UNIT-II

NUMERICAL DIFFERENTIATION

First and second order derivatives.**Numerical integration**-Trapezoidal rule - Simpson's1/3 rule and 3/8 th Rule- **Numerical solutions of ordinary differential equations** by Taylor's series-Picard's method of successive Approximations - Euler's and Modified Euler'sMethod – Runge-Kutta Methods – Predictor - corrector method - Milne's method.

UNIT-III

LAPLACE TRANSFORMS

Laplace transforms of standard functions - First Shifting Theorem -Transforms of derivatives and integrals-Unit step Function – Second Shifting Theorem –Laplace transforms of Periodic functions – Inverse Laplace transforms - Convolution theorem. Applications of Laplace Transformsto ODE

UNIT-IV

FOURIER SERIES

Fourier series- Even and odd functions-Fourier series in an arbitrary interval -Half-range Fourier sine and cosine expansions. Fourier integral theorem (statement) - Fourier sine and cosine integrals.Fourier Transforms - Fourier sine and cosine Transforms.

UNIT-V

PARTIAL DIFFERENTIAL EQUATIONS

Formation of partial differential equations by elimination of arbitrary constants and arbitrary functions - Method of separation of variables - solution of onedimensionalwave equation, heat equation and two –

dimensional Laplace's equation.

Z-TRANSFORMS

Inverse Z- transforms – Properties - Damping rule- Shifting rule - Initial and final value theorems. Convolution theorem - Solution of difference equations by Z- transforms.

Course Outcomes:

After completion of the course the student will be able to

1. Apply interpolation to solve engineering problems
2. Apply numerical solutions to solve ordinary differential equations.
3. Apply Laplace transform techniques to solve engineering problems.
4. Analyse periodic functions using Fourier Transform.
5. Solve one dimensional and two dimensional problems using partial differential equations.

Text Books:

1. Dr.B.S.GREWAL, Higher Engineering Mathematics. Kanna Publications, 40th edition.
2. B.V.RAMANA, A Text Book Of Engineering Mathematics-I, TATA MC GRAWHILL
3. E. RUKMANGADACHARI AND KESHAVA REDDY, A Text Book of Engineering Mathematics-I, PEARSONEDUCATION.
4. T.K.V.IYENGAR, B.KRISHNA GANDHI AND OTHERS, A Text Book Of Engineering Mathematics –I,S.Chand and Company.

REFERENCES:

1. Erwin Kreyszig, Advanced Engineering Mathematics. JOHN WILEY & SONS-2016.
2. Jain.M.K, Iyengart.K.V,.Jain.R.K. Numerical Methods For Scientific And Engineering Computation.Newage International Publishers.
3. N.Bail, M.Goyal&C.Walking, A Text Book Of Advanced Engineering Mathematics- A Computer Approach.
4. Pal, Mathematical Methods, Oxford University Press, 2009.
5. S.S. Sastry, Introductory Methods of Numerical Analysis, Printice Hall of India publications, 2012.

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

SRI VENKATESWARA COLLEGE OF ENGINEERING AND TECHNOLOGY
(AUTONOMOUS)

**I B.Tech – I Semester (Common to Civil Engineering, ME & AE) /
II Semester (Common to ECE, ETE, EE, EEE,CSE, IT, & CSSE)**

L	T	P	C
3	-	-	3

Code: 17AHS04   **ENGINEERING CHEMISTRY**

Course Outcomes:
   After completion of the course the student will be able to
   1. Explain the impact of hard water and removal of hardness of water by internal and external methods, desalination of Brackish water.
   2. Select suitable engineering materials for specific applications.
   3. Define Formation of corrosion, effect of corrosion and to design of corrosion resistant articles.
   4. Select suitable fuels based on calorific value for a particular application, calculation of air requirements for combustion of fuel.
   5. Construct the various types of batteries and applications of various electrochemical cells.

UNIT – I: WATER TECHNOLOGY:
Sources of water, impurities in water, Hardness of Water and its unit of expression – Estimation of hardness in water by EDTA titration method – Numerical problems-Boiler troubles and prevention methods, Water softening methods by Internal conditioning and External conditioning methods–Chlorination Of Domestic Water Treatment - Desalination of Brackish Water – Reverse Osmosis and distillation methods.

UNIT – II: MATERIALS CHEMISTRY:
High Polymers: Polymers- Definition – Nomenclature of polymers- Types of polymerization reactions – addition, condensation and copolymerization with examples. Plastics: Thermoplastics and thermosetting plastics and differences between them –Preparation, Properties and Engineering applications of PE, PTFE, PVC, Nylon and Bakelite. Rubbers: Natural Rubbers – Vulcanization – Synthetic Rubbers (Buna-S, Silicone Rubber, Neoprene)– Preparation, properties and applications. Lubricants: Functions of Lubricants – Classification of Lubricants – various properties of Lubricants. Refractories: Important properties of refractories and their applications.

UNIT – III: CHEMISTRY OF CORROSION:
Introduction on corrosion- causes and consequences of corrosion – Types of corrosion - Mechanism of corrosion - Factors influencing the corrosion – Control of corrosion – Cathodic protection by Sacrificial anodic and Impressed current cathodic protection- Electro Plating and Electroless plating (Copper and Nickel).

UNIT – IV: FUELS AND COMBUSTION:
Fuels: Classification of Solid, Liquid and Gaseous fuels – Analysis of coal - Proximate and Ultimate analysis, Preparation of synthetic petrol – Bergius process - Calorific value – HCV, LCV - Numerical problems using Dulong-Petit's formula – Measurement of calorific value using Bomb calorimeter and Junkers gas calorimeter – Numerical problems. Combustion: Calculation of air quantity requirement for Combustion -Numerical problems.

UNIT–V: ELECTRO CHEMICAL ENERGY SYSTEMS: Electrochemical Cells – Electrode potential - Standard electrode potential – Working principles and applications of different batteries – Dry cell, Lithium-ion cell, Lead-acid cell and Nickel-cadmium cell- with discharging and Recharging reactions, Working principles

and applications of hydrogen-oxygen fuel cell, Methanol-oxygen fuel cells.

Text Books:

1. Jain & Jain*, A text book of Engineering Chemistry,* Dhanpat Rai Publishing Company, 15[th] edition, New Delhi, 2008.

2. Prof.K.N.Jayaveera, Dr.G.V.Subba Reddy and Dr. C. Ramachandraiah*,* Chemistry forEngineers,McGraw Hill Higher Education Hyd., 3[rd] edition, 2009.

3. Dr.K.RaviKrishnan,A text book of Engineering Chemistry, Sri Krishna Publications,Secunderabad, Telengana, New edition. July, 2015.

Reference Books:

1. N.Krishnamurthy, P.Vallinayagam, D.Madhavan, *Engineering Chemistry,* (second edition),PHI Learning Pvt Ltd, New Delhi, 2008

2. Dr. K. B. Chandrasekhar, Dr. U.N. Dash, Dr. Sujatha Mishra*,* Engineering Chemistry,ScitechPublications(India) Pvt. Limited, Hyderabad, 2009.

3. C.V. Agarwal, C. Parameswara Murthy and Andra Naidu*,* Chemistry of Engineering Materials, BSPublications, Hyderabad, 9th edition, 2006.

4. S.S. Dara and S.S.Umare*, A text book of Engineering Chemistry,* S. Chand & Co. Ltd.,12[th] edition, 2010.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3													
CO2	3	1												2
CO3	3	2											2	2
CO4		3											2	2
CO5														

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

SRI VENKATESWARA COLLEGE OF ENGINEERING AND TECHNOLOGY
(AUTONOMOUS)
I B.Tech –II Semester (Common to CSE, IT & CSSE)

L   T   P   C
3   1   -   3

Code: 17AEE03   **BASIC ELECTRICAL ENGINEERING**

Outcomes:

After completion of this course the students will be able to:

1. *Demonstrate knowledge on basics of electrical circuits, Construction and working principle of various electrical machines.*
2. *Analyze the behavior and performance of electrical circuits and machines.*
3. *Apply knowledge in various sources of electrical power generating methods.*

UNIT - I: CIRCUITS AND ELECTROMAGENTISM

D. C. Circuits: Ohm's Law and Kirchhoff"s Laws **-** Analysis of series, parallel and series-parallel circuits excited by independent voltage sources **-** Power and energy.

Electromagnetism: Faradays Laws, Lenz's Law, Fleming's Rules, Statically and dynamically induced EMF **-** Concepts of self inductance, mutual inductance and coefficient of coupling **-** Energy stored in magnetic fields.

UNIT - II: AC CIRCUITS

Generation of sinusoidal voltage **-** Definition of average value, root mean square value, form factor and peak factor of sinusoidal voltage and current and phasor representation of alternating quantities **-** Analysis with phasor diagrams of R, L, C, RL, RC and RLC circuits; Real power, reactive power, apparent power and power factor, Introduction to three phase circuits.

UNIT - III: DC MACHINES

Working principle of DC machine as a generator and a motor **-** Types and constructional features- EMF equation of generator **-** Back EMF and its significance **-** torque equation **-** Types of D.C. motors **-** characteristics and applications **-** Necessity of a starter for DC motor

UNIT - IV: TRANSFORMERS & INDUCTION MACHINE

Transformers: Principle of operation and construction of single phase transformers **-** EMF equation **–** losses **-** efficiency and voltage regulation.

Three Phase Induction Motors: Concept of rotating magnetic field **-** Principle of operation **-** types and constructional features **-** Slip and its significance **-** Applications of squirrel cage and slip ring motors **-** Principle of Operation of alternators.

UNIT - V: SOURCES OF ELECTRICAL POWER

Introduction to Wind, Solar, Hydroelectric, Thermal, Nuclear power plants **-** Concept of cogeneration and distributed generation.

Text Books:

1. D.P.Kothari and I.J. Nagarath –-Basic Electrical & Electronics Engineering‖, Mc.Grawhill publications, 1st Edition, 2014.
2. S.Hasan Saeed, D.K.Sharma, Non-Conventional Energy Resources, Katson Books, 3rd Edition, 2013

References:

1. V.K.Mehta & Rohit Mehta, Principles of Electrical Engineering, S.Chand publications, 2nd Edition, 2003.
2. H.Cotton, Electrical Technology, CBS Publishers & Distributors, 7th Edition, 2004.

SRI VENKATESWARA COLLEGE OF ENGINEERING AND TECHNOLOGY, CHITTOOR
(AUTONOMOUS)

I-B.Tech II Semester   (Common to ECE, ETE, EEE, CSE, CSSE and IT)

L	**T**	**P**	**C**
3	**1**	**-**	**3**

Code: 17AEC01   **ELECTRONIC DEVICES AND CIRCUITS**

Outcomes

1. Apply concepts related to various Semiconductor Devices like Diode, BJT, JFET,MOSFET, SCR & UJT.
2. Design and analyze the DC bias circuitry of BJT and FET.
3. Design and analyze basic transistor amplifier circuits using BJT and FET.

UNIT-I

Semiconductor – Diode Characteristic and Applications

Qualitative Theory of the p-n Junction, The p-n Junction as a Diode, Band Structure of an Open–Circuited p-n Junction, The Current Components in a p-n Diode, Quantitative Theory of the p-n Diode Currents, The Volt – Ampere Characteristic, The Temperature Dependence of p-n Characteristics, Diode Resistance, Space-Charge, or Transition capacitance C_T, Diffusion Capacitance. Zener Diode, V-I Characteristics of Zener Diode. Different types of breakdown.

UNIT-II

Transistor Characteristics - Biasing and Thermal Stabilization

The Junction Transistor, Transistor Current Components,The Transistor as an Amplifier, Transistor Construction, Detailed study of the Currents in a Transistor, The Transistor Alpha.The Common-Base Configuration, The Common-Emitter Configuration, The Common-Collector Configuration. The Ebers-Moll model, The operating point, Analysis of Fixed Bias, Collector-to-Base bias, Emitter–Feedback bias, Collector-Emitter feedback bias and Self—bias circuits, Stability factor, Bias compensation techniques, Bias Compensation, Thermal Runaway, Thermal Stability.

UNIT-III

Field-Effect Transistors

The Junction Field-Effect Transistor, The Pinch-Off Voltage V_P, The JFET Volt-Ampere Characteristics, The FET Small-Signal Model, Biasing the FET, The FET as a Voltage-Variable Resistor (VVR), Comparison of JFET and

BJT, The Metal Oxide Semiconductor Field Effect Transistor (MOSFET) – Enhancement and Depletion Modes-Construction and Volt-Ampere characteristics, Comparison of MOSFET with JFET.

UNIT-IV
Special Purpose Electronic Devices:
The Tunnel diode and its characteristics, The p-i-n diode and its characteristics, Point Contact diode, Schottky Barrier diode, Schottky effect and Current-Voltage relation of a Schottky Barrier diode, UJT andSCR characteristics.

UNIT-V
Photoelectric devices*:*
Photoemissivity, Photoelectric Theory, Phototubes, Applications of Photo-devices, Multiplier Phototubes, Photoconductivity, The Semiconductor Photodiode,Multiple-Junction Photo Diodes, The Photovoltaic Effect, The p-i-n Photo-detector, The Avalanche Photo Diode(APD) and Light Emitting Diode (LED)

Text Books:

1. Jacob Millman, Christos C. Halkias and SatyabrathaJit, Millman's Electronic Devices and Circuits, Mc Graw Hill Education, Fourth Edition, 2016.
2. S Salivahanan and N Suresh Kumar, Electronic Devices and Circuits, Mc Graw Hill Education, Fourth Edition, 2017.

Reference Books*:*
1. T.F. Bogart Jr., J.S.Beasley and G.Rico, Electronic Devices and Circuits, Pearson Education, 6[th] edition, 2008.
2. R.L. Boylestad and Louis Nashelsky, Electronic Devices and Circuits, Pearson / Prentice Hall, 10[th] Edition, 2009.
3. David A.Bell, Electronic Devices and Circuits, 5[th] edition, Oxford University Press, 2008.

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

SRI VENKATESWARA COLLEGE OF ENGINEERING AND TECHNOLOGY
(AUTONOMOUS)
I B.Tech- II Semester (Common to CSE, IT & CSSE)

L   T   P   C
3   -   -   3

Code: 17ACS04   ESSENTIALS OF COMPUTER SCIENCE

Outcomes:

After completion of the course the student will be able to

1. *List types of computers and their usage in different fields*
2. *Distinguish input devices and output devices and their usage.*
3. *Differentiate System software and application software.*
4. *Demonstrate the significance of internal hardware components.*
5. *Explain the concepts involved in computer networks and Internet.*

UNIT - I

Introduction to Computers: Define Computer, Types of Computers for individual users, and Types of Computers for organizations, why computers are so important. **Parts of Computer System:** Hardware, software, data, user, information processing cycle.

Essential Computer Hardware: Processor, Memory, Input and Output, Storage. **Computer Software:** System software and application software. Computer Data, Computer Users.

Interacting with Computers: The Keyboard, Types of keys, how computer accepts input from keyboard. Basic shortcuts, Mouse operations: Clicking, Double Clicking, Dragging, and Right Clicking. **Other Input Devices:** Pens, Touch Screens, Game Controllers, Barcode readers, Image scanners and optical character recognition.

UNIT - II

Output Devices: Types of Monitors, Types of Printers. **How Computers represent data**: Number system, bits and bytes, Text codes. **How Computers Process data:** The CPU, machine cycles, Memory, factors affecting processing speed. Types of Bus: Address bus, Data bus, Cache memory.

UNIT - III

Computer Memory: Memory hierarchy, CPU registers, Primary Memory, Secondary Memory, and Access Types of storage devices, Magnetic Storage devices, Optical storage devices, solid state storage devices.

UNIT - IV

Computer processors: Inside of a processor, Intel processors, AMD Processors, IBM Processors.

Operating system basics: Types of Operating Systems, User interfaces, Enhancing OS with utility software. PC operating systems, network operating systems.

UNIT - V

Computer Networking Basics: The uses of network, Common types of networks, Hybrid networks, how networks are structured, network media, network hardware.

Internet: Internet History, Internet major services, understanding World Wide Web, Searching in internet with browsers, E-mail.

Text Books:

1. Introduction to computers, Peter Norton, 6th Edition, Tata McGraw-Hill.
2. Computer Fundamentals, Anita Goel, Pearson Education India, 2010.

Reference Books:

1. Fundamentals of Computers, Reema Thareja, Oxford Higher Education, Oxford University Press

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	-	3	-	1	-	-	-	-	-	-	-	3	-
CO2	3	1	-	2	1	-	-	-	-	-	-	-	3	3
CO3	-	1	1	1	-	-	-	-	-	-	-	-	3	3
CO4	3	1	2	3	1	-	-	-	-	-	-	-	-	3
CO5	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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

SRI VENKATESWARA COLLEGE OF ENGINEERING AND TECHNOLOGY
(AUTONOMOUS)

I B.Tech – I Semester (Common to Civil Engineering, ME & AE) /
II Semester (Common to ECE, ETE, EE, EEE, CSE, IT, & CSSE)

L T P C
0 0 3 1.5

ENGINEERING CHEMISTRY LAB

After completion of the course the student will be able to

1. Use volumetric analysis for the estimation of metal ions, hardness of water, and chlorides in water.

2. The importance of viscosity index, flash point and fire point of lubricants.

3. The use of pH meter, conductivity meter and potentiometer.

Any TEN of the following experiments:
 1. Estimation of Hardness of water by EDTA method.
2. Estimation of Chlorides in Water sample.
3. Determination of acid strength by using a pH meter.
4. Estimation of Copper by EDTA method.
5. Estimation of Ferrous Ion by Potassium Dichromate method.
 6. Determination of viscosity of oils through Redwood viscometer No.1.
 7. Estimation of Ferrous Ion by potentiometry using standard Potassium Dichromate
8. Determination of rate of corrosion by weight loss method.
9. Acid- Base titration by Conduct metric method.
10. Determination of Alkalinity of water sample.
11. Determination of Flash and Fire point by using Pensky Marten's apparatus.
 12. Preparation of Phenol-Formaldehyde resin.
13. Determination of Acidity of water sample.
Outcomes:

After completion of practicals, student will be able to

4. Use volumetric analysis for the estimation of metal ions, hardness of water, and chlorides in water.

5. The importance of viscosity index, flash point and fire point of lubricants.

6. The use of pH meter, conductivity meter and potentiometer.

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

SRI VENKATESWARA COLLEGE OF ENGINEERING AND TECHNOLOGY
(AUTONOMOUS)

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

L	T	P	C
-	-	3	1.5

Code: 17ACS05   **DATA STRUCTURES LAB**

Outcomes:

After Completing this lab the student must demonstrate the Knowledge and ability to:

1. Demonstrate the application of software engineering principles in design, coding, and testing of large programs..
2. Develop need for identifying the specification of each data structure as an abstract data type before discussingimplementations and application of the structure.
3. Use structured programming methods in developing the software.
4. Apply systematic approach to study algorithms , by focuses first on understanding the action ofthe algorithm then analyzing it

Week 1

> Write a C program that implements Stack & Queue operations using arrays

Week 2

> Write a C program that uses Stack operations to perform the following

a) Converting Infix expression to Postfix expression.
b) Evaluating the Postfix expression.

Week 3

> Write a C program that implements Circular Queue operations using Arrays.

Week 4

> Write a C program that implements Dequeue operations using Arrays.

Week 5

> Write a C program that implements Stack & Queue operations using Pointers

Week 6

> Write a C program that uses functions to perform the following operations on singly linked list.

> i) Creation   ii) Insertion   iii) Deletion   iv) Traversal

Week 7

Write a C program that uses functions to perform the following operations on doubly linked list.

i) Creation   ii) Insertion iii) Deletion   iv) Traversal

Week 8

Write a C program that uses functions to perform the following operations on circular linked list.

i) Creation   ii) Insertion   iii) Deletion iv) Traversal

Week 9

Write C programs that use both recursive and non recursive functions to perform the following searching operations for a Key value in a given list of integers:

i) Linear search   ii) Binary search

Week 10

Write a C program that implements the following sorting methods to sort a given list of integers in ascending order

i) Bubble sort   ii) Selection sort iii) Insertion sort

Week 11

Write a C program that implements the following sorting method to sort a given list of Integers in ascending order:

i) Merge sort   ii) Quick sort

Week 12

Write a C program that uses functions to perform the following Binary Tree Traversals

a) Inorder   b) Preorder   c) Postorder

Week 13

Write a C program to implement the following graph traversals

a) Depth-First Search b) Breadth- First Search

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2
CO1	3	-	1	1	1	-	-	-	-	-	3	3	3	2
CO2	3	3	-	1	-	-	-	-	-	-	1	2	-	-
CO3	-	3	1	1	1	-	-	-	-	-	2	1	-	-
CO4	-		1	1	1	-	-	-	-	-	-	-	3	2
CO5	-	-	-	-	-	-	-	-	-	-	-	-		

SRI VENKATESWARA COLLEGE OF ENGINEERING AND TECHNOLOGY
(AUTONOMOUS)
I B.Tech – II Semester (Common to ECE, ETE, EE, EEE, CSE, IT & CSSE)

	L	T	P	C
	-	-	2	1

Code: 17AME03　　　　　　　**ENGINEERING PRACTICES LAB**

OUTCOMES:

After completion of the study of this lab a student will be able to:

1. produce different prototypes in the carpentry trade such as Mortise and tenon joint, and Table stand using woodturning lathe.

2. Assess time in a Fitting trade such as Dove tail joint and Half Round joint.

3. Design basic prototypes in the trade of Tin smithy such as rectangular tray, and funnel.

4. Complete various basic House Wiring techniques such Stair case wiring (i.e. control of one lamp by two switches fixed at two different places), and wiring for tube light (Fluorescent Lamp)/Focus light.

5. Design different models in a foundry shop such as single- and two-pieces patterns.

6. Construct various basic prototypes in the trade of Welding such as T-Joint and H-Joint

1. TRADES FOR EXERCISES:

a. Carpentry shop.

1. Prepare a Mortise and tenon joint from a given 300 x 40 x 25 mm soft wood stock.

2. Prepare a Table stand (desired shape) by using wood turning Lathe from a given 300 x 40 x 25 mm soft wood stock.

b. Fitting shop

1. Prepare a Dove tail joint from a given 100 x 50 x 5 mm M.S. stock.

2. Prepare a Half Round joint from a given100 x 50 x 5 mm M.S. stock.

c. Sheet metal shop

1. Prepare a Funnel from given G.I. sheet.

2. Prepare a Rectangular Tray from given G.I. sheet.

d. House-wiring

1. Stair case wiring (i.e. control of one lamp by two switches fixed at two different places).
2. Prepare a wiring for tube light(-Fluorescent Lamp‖)/Focus light

e. Foundry

1. Prepare a mould for a single piece pattern (Connecting rod)
2. Prepare a mould for a Double piece pattern (Stepped Pulley)

f. Welding

1. Prepare a T-Joint from given M.S Flat pates using Arc Welding.
2. Prepare a H-Joint from given M.S Flat pates using Arc Welding.

2. TRADES FOR DEMONSTRATION:

a. Plumbing
b. Machine Shop
c. Metal Cutting

   Apart from the above the shop rooms should display charts, layouts, figures, circuits, hand tools, hand machines, models of jobs, materials with names such as different woods, wood faults, Plastics, steels, meters, gauges, equipment, CD or DVD displays, First aid, shop safety etc. (though they may   not be used for the exercises but they give valuable information to the student). In the class work or in the examination knowledge of all shop practices may be stressed upon rather than skill acquired in making the job.

Reference Books:

1. Work shop Manual / P.Kannaiah/ K.L.Narayana/ SciTech Publishers.
2. Engineering Practices Lab Manual, Jeyapoovan, Saravana Pandian, 4/e Vikas
3. Dictionary of Mechanical Engineering, GHF Nayler, Jaico Publishing House.
4. Engineering Workshop by Vishnu Universal Learning.
5. Engineering Workshop by GRIE institute.

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

SRI VENKATESWARA COLLEGE OF ENGINEERING AND TECHNOLOGY

(AUTONOMOUS)

I B.Tech – II Semester (Common for all Branches)

L	T	P	C
3	-	-	-

Code: **17AHS10**   **QUANTITATIVE APTITUDE AND REASONING –I**

Outcomes:

After completion of the course the student will be able to

1. Strengthen their ability to meet the challenges in solving Time and distance problems.
2. Apply Data interpretation to solve the problems on Line, Bar, Piegraphs.
3. Develop the thinking ability and apply Venn diagram and binarylogic.
4. Apply the number series and letter anal ogiesin problems onverbalanalogy

Syllabus for Quantitative Aptitude

Competency 1:

Numbers

Classification of numbers - Divisibility rules - Finding the units digit -Finding remainders in divisions involving higher powers -LCM and HCF Models.
Decimal Fractions
Simplification
Square Roots & Cube Roots

Average

Definition of Average - Rules of Average - Problems on Average - Problems on Weighted Average - Finding Average using assumed mean method.

Problems on Numbers
Problems on Ages
Surds &Indices

Percentage

Introduction - Converting a percentage into decimals - Converting a Decimal into a percentage - Percentage equivalent of fractions - Problems on Percentages

Profit And Loss & True Discount

Problems on Profit and Loss percentage - Relation between Cost Price and Selling price - Discount and Marked Price –Two different articles sold at same Cost Price - Two different articles sold at same Selling Price - Gain% / Loss% on Selling.

Ratio and proportion

Definition of Ratio - Properties of Ratios - Comparison of Ratios - Problems on Ratios - Compound Ratio - Problems on Proportion, Mean proportional and

Continued Proportion .

Competency 2:

Partnership

Introduction-Relation between capitals, Period of Investments and Shares .

Chain Rule

Time &work

Problems on Unitary method - Relation between Men, Days, Hours and Work - Problems on Man-Day-Hours method – Problems on alternate days - Problems on Pipes and Cisterns .

Time &Distance

Relation between speed, distance and time – Converting kmph into m/s and vice versa - Problems on average speed -Problems on relative speed – Problems on trains -Problems on boats and streams - Problems on circular tracks – Problems on races .

Mixtures and Allegations

Problems on mixtures - Allegation rule - Problems on Allegation

Simple Interest

Definitions - Problems on interest and amount – Problems when rate of
 interest and time period are numerically equal.

Compound Interest

Definition and formula for amount in compound interest - Difference between simple interest and compound interest for 2 years on the same principle and time period.

Logarithms

Syllabus for Reasoning

Competency 3:

Cubes

Basics of a cube - Formulae for finding volume and surface area of a cube - Finding the minimum number of cuts when the number of identical pieces are given - Finding the maximum number of pieces when cuts are given - Problems on painted cubes of same and different colors - Problems on cuboids - Problems on painted cuboids - Problems on diagonal cuts

Venn diagrams

Representing the given data in the form of a Venn diagram –Problems on Venn diagrams with two sets - Problems on Venn diagrams with three sets – Problems on Venn diagrams with four sets

Binary Logic

Definition of a truth-teller - Definition of a liar - Definition of an alternator – Solving problems using method of assumptions - Solving analytical puzzles using binary logic .

Competency 4:

Number and letter series
Difference series - Product series - Squares series - Cubes series - Alternate series
  Combination series - Miscellaneous series - Place values of letters.
Number and Letter Analogies
Definition of Analogy -Problems on number analogy -Problems on letter analogy - Problems on verbal analogy .
Odd man out
Problems on number Odd man out -Problems on letter Odd man out – Problems on verbal Odd man out .

Competency 5:

Coding and decoding

Coding using same set of letters - Coding using different set of letters – Coding into a number - Problems on R-model .
Direction sense

Solving problems by drawing the paths-Finding the net distance travelled – Finding the direction - Problems on clocks - Problems on shadows - Problems on damaged compass - Problems on direction sense using symbols and notations
Critical Reasoning
roblems on assumption - Problems on conclusions –Problems on inferences – Problems on strengthening and weakening of arguments - Problems on principle -Problems on paradox

Lateral reasoning puzzle
Problems on common balance -Problems on digital balance -Problems on coins - Problems on lockers -Problems on heights -Digit puzzles using basic arithmetic operations .

Text Books:

GL Barrons,Tata Mc Graw Hills, ‗Thorpe‗s Verbal reasoning‗, LSAT Materials.
R S Agarwal, 'A Modern approach to Logical reasoning‗ , S chand Company Ltd 2002.
Reference Books:
Abhjit Guha ‗Quantitative Aptitude‗ Tata Mc Graw Hills, 4th Edition, 2011.
R S Agarwal, 'Quantitative Aptitude‗ S. Chand Company Ltd 2008.
G.L BARRONS 'Quantitative Aptitude‗. Tata Mc Graw Hills.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	-	2	-	3	3	-	-	-	-	-	-	-	2	1
CO2	-	-	-	3	-	-	-	-	-	-	-	-	-	-
CO3	3	-	3	-	-	-	-	-	-	-	-	-	-	-
CO4	3		3	-	3	-	-	-	-	-	-	-	-	-

SRI VENKATESWARA COLLEGE OF ENGINEERING AND TECHNOLOGY

(AUTONOMOUS)

I B.Tech – II Semester (Common for all Branches)

L T P C

3 - - -

Code: 17AHS11   **INTELLECTUAL PROPERTY RIGHTS**

UNIT-I   INTRODUCTION TO INTELLECTUAL PROPERTY

Introduction, types of intellectual property, international organizations, agencies and treaties, importance of intellectual property rights.

UNIT-II   TRADE MARKS

Purpose and function of trademarks, acquisition of trademarks rights, protectable matter, selecting and evaluating trademark, trademark registration processes.

UNIT-III   LAW OF COPYRIGHTS AND LAW OF PATENTS

Fundamentals of copyrights law, originality of material, rights to reproduction, rights to perform the work publicly, copyright ownership issues.

Copyright registration, notice of copyright, international copyright law, foundation of patent law, patent searching process, ownership rights and transfer.

UNIT-IV   TRADE SECRETS AND UNFAIR COMPETITION:

Trade secrets law, determination of trade secrets status, liability for misappropriations of trade secrets, protection for submission, trade secrets litigation, misappropriation of right of publicity and false advertising.

UNIT-V   NEW DEVELOPMENTS OF INTELLECTUAL PROPERTY

New developments in trade law, copyright law, patent law, intellectual property audits international overview of intellectual property, international-trademark law, copyright law, international patent law, international development in trade secrets law.

Text Books:

1. Deborah. E. Bouchoux, -Intellectual Property Right‖, Cengage Learning, 4ᵗʰ Edition, 2013.
2. Prabuddha Ganguli, -Intellectual Property Right: Unleashing the Knowledge Economy‖, TataMcGraw Hill Publishing Company Ltd., 3ʳᵈ Edition, 2005.

Reference Books:

1. Catherine J. Holland, -Intellectual Property: Patents, Trademarks, Copyrights, Trade Secrets‖ , Entrepreneur Press, CDR Edition, 2007.
2. Stephen Elias, -Patent, Copyright & Trademark: A Desk Reference to Intellectual Property Law‖, LisaGoldoftas Publishers, Nolo Press, 1996.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	-	2	-	3	3	-	-	-	-	-	-	-	2	1
CO2	-	-	-	3	-	-	-	-	-	-	-	-	-	-
CO3	3	-	3	-	-	-	-	-	-	-	-	-	-	-
CO4	3		3	-	3	-	-	-	-	-	-	-	-	-
CO5	3	-	3	-	-	-	-	-	-	-	-	-	-	-

SRI VENKATESWARA COLLEGE OF ENGINEERING AND TECHNOLOGY
(AUTONOMOUS)

I B.Tech – II Semester (Common for all Branches)

L   T   P   C
3   -   -   -

Code: **17AHS12**   **CLINICAL PSYCHOLOGY**

The course should enable the students to:

1. Develop the knowledge pertinent to the organism, developmental, social and situational factors those are relevant to the initiation and maintenance of human behavior.
2. Understand the present and implement effective strategies to deal with these issues during work with patients.
3. interpret professional identity and practice as clinical psychologists through fundamental knowledge of psychology, commitment to professional ethics.
4. Use the concepts of multiculturalism, diversity and participation for life-long learning.

UNIT-I BASIC PSYCHOLOGY

Introduction: Psychology, definition, psychology as a science, early schools of psychology, modern perspectives, methods of psychology, experimental method, systematic observation, case study method, survey method, fields of psychology.

UNIT-II BIOLOGY OF BEHAVIOR AND SENSORY PROCESS

Neurons and synapses: Nervous system , peripheral and central nervous system: brain and sleep: importance of fore brain, association cortex, left and right hemisphere functions; Some general properties of senses, subliminal stimuli, the visual sense, auditory sense, the other senses; Consciousness, meaning, functions, divided consciousness, stages of sleep, dreams, meditation, hypnosis.

UNIT-III ATTENTION AND PERCEPTION

Selective attention; physiological correlates of attention, internal influences on perception, learning set, motivation and emotion, cognitive styles.

External influences on perception, figure ground, movement, illusions, perceptual organization, constancy, depth perception, binocular and monocular cues.

UNIT-IV MOTIVATION AND EMOTION MOTIVES

Definitions, motivation cycle, theories of motivation, biological motivation, social motives, frustration and conflicts of motives, defense mechanism, emotion, expression and judgment of emotion, the physiology of emotion, theories of emotion.

UNIT-V CLINICAL PSYCHOLOGY & MENTAL HEALTH

History of clinical psychology and its role in understanding and alleviation of mental illness, promotion of mental health and rehabilitation of the mentally ill, role and functions of clinical psychologists in DMHP, professional code of conduct and ethical issues.

Text Books:

1. M. S. Bhatia, -Clinical Psychology‖, B J Publishers,1st Edition, 2008.

2.Paul Bennett, -Abnormal and Clinical Psychology: An Introductory Textbook‖, Pearson Publishers, 2nd Edition, 2006.

Reference Books:

1. Robert A. Baron, Girishwar Misra, -Psychology: Indian Subcontinent Edition‖, Pearson Education, 5th Edition, 2009.

2.HillGard, E. R., C.A. Richard, L.A.Rita, -Introduction to Psychology‖, Oxford and IBH, New Delhi, 6th Edition, 1976.

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2
CO1	-	2	-	3	3	-	-	-	-	-	-	-	2	1
CO2	-	-	-	3	-	-	-	-	-	-	-	-	-	-
CO3	3	-	3	-	-	-	-	-	-	-	-	-	-	-
CO	3	-	-	-	3	-	-	-	-	-	-	-	-	-

SRI VENKATESWARA COLLEGE OF ENGINEERING AND TECHNOLOGY

(AUTONOMOUS)

I B.Tech – II Semester (Common for all Branches)

	L	T	P	C

Code: 17AHS13   **3**   **-**   **-**   **-**

GERMAN LANGUAGE

The course should enable the students to:
1. develop reading, writing, speaking, and listening skills with ever increasing proficiency and accuracy.

UNIT-I GERMAN SOUNDS

Vowels, consonants, diphthongs, umlaut, the nouns, gender distinctions, cases, definite and indefinite articles, conjugation of verbs, verbs with separable and inseparable prefixes, modal verbs, personal pronouns, possessive pronouns, reflexive pronouns, cases nominative, accusative and dative; Structure of sentence and categories of sentences, subordinate clause, causative and conditional sentences; A very interesting slideshow presentation is held to enlighten the students about the culture, people, and lifestyle in Germany.

UNIT-II SENTENCES FORMATION

Infinite sentences, use of conjunctive and conjunctive ii (contd.) plusquam perfect, modal verb (contd.) Conjunction, temporal, subordinate clauses complex sentences.

UNIT-III GERMAN BASIC GRAMMAR

Verbs: Different forms, past tense and present perfect tense, adjectives and their declension, degrees of comparison; Prepositions, genitive case, conjunctive.

Different conjunctions (co-ordinating and subordinating), simple, complex and compound sentences, active and passive voice, relative pronouns.

UNIT-IV PURPOSE OF LANGUAGE STUDY

Pictures and perceptions, conflicts and solutions, change and the future, the purpose of the study of the German language, listening, understanding, reacting, speaking, communicating, use of language, pronunciation and intonation ,reading, reading and understanding, writing, text writing, text forming, use of language, language reflection, building up the language, language comparison, culture reflection, other cultures and cultural identity.

UNIT-V GERMAN ADVANCED COMMUNICATION LEVEL-1

The significance of language study 1. Speaking and thinking 2. Self – discovery 3. Communication 4. Language Competence 5. Language and culture 6. Language changes 7. Connection with other areas of study 8. The mother—language 9. Other languages.

Text Books:

1. Korbinian, Lorenz Nieder Deutschals Fremdsprache IA. Ausländer, -German Languageǀ , Perfect Paperback Publishers, 1st Edition, 1992.

2. Deutsch alsFremdsprache, IB, Erganzungskurs, -German Languageǀ , Front Cover. Klett, Glossar Deutsch- Spanisch Publishers, 1st Edition, 1981.

Reference Books:

1. Griesbach, -Moderner Gebrauch der deutschen Spracheǀ , Schulz Publishers, 10th Edition, 2011. 2.Anna Quick , Hermann Glaser U.A, -Intermediate German: A Grammar and workbookǀ , Paperback,
 1st Edition, 2006.

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO10	PO1 1	PO1 2	PSO 1	PSO 2
CO1	-	2	-	3	3	-	-	-	-	-	-	-	2	1
CO2	-	-	-	3	-	-	-	-	-	-	-	-	-	-
CO3	3	-	3	-	-	-	-	-	-	-	-	-	-	-

SRI VENKATESWARA COLLEGE OF ENGINEERING & TECHNOLOGY, (AUTONOMOUS)

II B.Tech, I Semester (Common to CSE & IT)

	L	T	P	C
	3	1	0	3

CODE: 17AHS16   DISCRETE STRUCTURES & GRAPH THEORY

Outcomes:
 After Completion of the course the student will be able to

1. apply the rules of inference to determine the validity of argument.
2. apply lattice theory and Boolean in theory and design of computers.
3. Compare different methods of computations and to decide whether the given computation in feasible solution.
4. apply generating functions to solve the combinatorial problems which makes easier to solve broad spectrum of problems.
5. apply the graph theory and trees in describing structures involving hierarchy. Also used in switching and logical design.

UNIT-I:

MATHEMATICAL LOGIC AND PREDICATES: Statements and notations, Connectives, Well formed formulas, Truth Tables, tautology, equivalence implication, Normal forms.
Predicative logic, Free & Bound variables, Rules of inference, Consistency, proof by contradiction,

UNIT-II:

SET THEORY AND BOOLEAN ALGEBRA: Properties of binary Relations, equivalence, compatibility and partial ordering relations, Hasse diagram. Functions: Inverse Function Compositions of functions, Lattice and its Properties. Introduction to Boolean Algebra- Sub Algebra, Direct product and homomorphism.

UNIT-III:

ELEMENTARY COMBINATORICS: Basis of counting, Combinations & Permutations, with repetitions, Constrained repetitions, Binomial Coefficients, Binomial Multinomial theorems, the principles of Inclusion – Exclusion.

UNIT- IV:

RECURRENCE RELATION: Generating Functions, Sequences, Calculating Coefficient of generating functions, Recurrence relations. Solving recurrence relation by substitution.

Generating functions and Characteristic equations (both homogeneous and non homogeneous Recurrence Relation).

UNIT-V:

GRAPH THEORY: Representation of Graph, Directed Graph, Sub graphs, Isomorphism of Graphs, Planar Graphs, Connected Graphs, Euler and Hamiltonian circuits and their necessary and sufficient conditions for existence of Euler Circuits and Hamiltonian Circuits.(without Proof). Trees, Spanning and minimal spanning Trees, Prim's and Kruskal algorithm. Searching Algorithms of Trees - DFS, BFS.

Text Books:

1. Trembly J.P. & Manohar .P, Discrete Mathematical Structures with applications to computer science TMH. 2017.
2. Ralph. P.Grimaldi. Discrete and Combinatorial Mathematics- An Applied Introduction-5th Edition –Pearson Education. 2004.
3. Dr D.S.Chandrasekharaiaha, Mathematical Foundations of computer science Prism books Pvt Ltd.2012.

Reference Books:

1. Bernand Kolman, Roberty C. Busby, Sharn Cutter, Discrete Mathematical Structures, Ross, Pearson Education/PHI. 2013.
2. Garry Haggard and others, Discrete Mathematics for Computer science, Thomson.2005.
3. Mallik and Sen, Discrete Mathematical Structures, Thomson. 2004.
4. J.L. Mott, A. Kandel, T.P. Baker, Discrete Mathematics for Computer Scientists & Mathematicians Prentice Hall, 1986 .
5. Narsingh Deo, 'Graph Theory' PHI Publishers. 2004.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
C01	3	2		1								2	2
C02	2	3		2								2	2
C03	3	3		3								2	2
C04	3	3		4								2	2

SRI VENKATESWARA COLLEGE OF ENGINEERING AND TECHNOLOGY (AUTONOMOUS)

	L	T	P	C
II B.Tech I Semester ,CSE	3	1	-	3

Code : 17ACS06   OBJECT ORIENTED PROGRAMMING THROUGH JAVA

Outcomes:

Successful completion of this course, students should be able to:

1. apply   principles of Object,Oriented Programming.
2. apply object,oriented concepts are incorporated into the Java programming Language.
 3. Develop problem solving and programming skills using OOP concept.
 4. Develop the ability to solve real world problems through software development in high, level programming language like Java .

UNIT-I OBJECT ORIENTED CONCEPTS: OOP principles, Class fundamentals, declaring objects, introducing methods, usage of static with data and methods. JAVA BASICS: Java buzzwords, JVM architecture, data types, variables, scope and life time of variables, arrays, operators, control statements, type conversion and casting, simple java program, constructors, string and String Buffer handling functions.

UNIT-II INHERITANCE AND POLYMORPHISM: Basic concepts, types of inheritance, member access rules, usage of this and super key word, method overloading, method overriding, abstract classes, dynamic method dispatch, usage of final keyword, Garbage Collection**. PACKAGES AND INTERFACES**: Defining package, access protection, importing packages, defining and implementing interface, and variables in interface and extending interfaces.

UNIT-III EXCEPTION HANDLING: Exception handling fundamentals, exception types, uncaught exceptions, usage of try, catch, throw, throws and finally keywords, built,in exceptions, creating own exception sub classes**.**

MULTI THREADING: Concepts of thread, thread life cycle, creating threads, synchronization, thread priorities, inter thread communication**. COLLECTIONS:** set, list, Queue

UNIT -IV APPLETS: Life cycle of an applet, inheritance hierarchy for applets, differences between applets and applications, developing applets, simple applet display methods, passing parameters to applets .

EVENT HANDLING: Events, event sources, event listeners, relationship between event sources and listeners, delegation event model, handling mouse and keyboard events, adapter classes.

UNIT -V SWINGS: Introduction to swings. Containers, top level containers , JFrame, JWindow, JDialog, JPanel, swing components , JButton, JToggleButton, JCheckBox,

JRadioButton, JLabel, JTextField, JTextArea, JList, JComboBox, JTable, JTree, JTabbedPanes, JScrollPane.

NETWORKING: Introduction to JDBC Connectivity, Remote Method Invocation(RMI),Client server communications.

TEXT BOOK: Herbert schildt, "The complete reference JAVA", 7th edition, Tata Mcgraw Hill, New Delhi, 2010.

REFERENCE BOOKS:

1. T. Budd, "An Introduction to Object Oriented Programming", 3rd edition, Pearson Education, India, 2009.
2. J. Nino, F. A. Hosch, An Introduction to programming and OO design using Java, John Wiley & sons, New Jersey,2002.
3. Y. Daniel Liang, Introduction to Java programming, 7th edition, Pearson education, India, 2010.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C01	3	-	2	-	-	-	-	-	-	-	-	-	2	-
C02	3	3	2	-	1	-	-	-	-	-	-	-	2	3
C03	-	-	2	-	1	-	-	-	-	-	-	-	-	3
C04	-	3	-	-	-	-	-	-	-	-	-	-	-	-

SRI VENKATESWARA COLLEGE OF ENGINEERING AND TECHNOLOGY
(AUTONOMOUS)

	L	**T**	**P**	**C**
II B.Tech I Semester - CSE	**3**	**-**	**-**	**3**

Code : 17AMB01   MANAGERIAL ECONOMICS AND FINANCIAL ANALYSIS

Outcomes:
After the completion of the course student will be able to
1. Describe principles of managerial economics
2. Develop an understanding of economic principles and to enhance skills in high,level problem solving and critical thinking
3. Evaluate the economic environment and the impact of governmental economic policies on consumers and financial institutions.
4. Apply financial accounting in the field of Engineering.

UNIT–I
INTRODUCTION TO MANAGERIAL ECONOMICS
Managerial Economics: Definition, Nature and Scope –Demand analysis: Law of demand, Demand determinants, Elasticity of Demand: Definition, Types, Measurement and Significance –Demand forecasting methods (Survey methods, Statistical methods, Expert opinion method, Test marketing, Controlled experiments, Judgmental approach)

UNIT–II
THEORY OF PRODUCTION AND COST ANALYSIS
Production function –Cobb Douglas Production function –Laws of Returns–Internal and External economies of scale COST ANALYSIS: Cost concepts, Fixed vs. Variable costs, Explicit vs. Implicit Costs, Out of Pocket costs Vs Imputed costs, Opportunity Cost and Sunk costs BREAK EVEN ANALYSIS: Concept of Break Even Point (BEP)–Break Even Chart – Assumptions underlying and Practical significance of BEP (Simple Problems).

UNIT –III
INTRODUCTION TO MARKETS AND BUSINESS ORGANIZATIONS:
Market structures –Types of Competition –Features of perfect competition, Monopoly, Monopolistic competition –Price,Output Determination under perfect competition and Monopoly –Types of Business organization –Features, Merits and demerits of Sole proprietorship, Partnership and Joint stock companies –Types of companies –Public enterprises –Types and Features –Changing business environment in post –Liberalization scenario

UNIT –IV
CAPITAL AND CAPITAL BUDGETING:
Capital and its Significance –Types of capital –Estimation of fixed and working capital requirements –Methods and sources of raising capital –Capital Budgeting Methods: Payback Method, Accounting Rate of Return (ARR), and Net Present Value (NPV) Method (Simple Problems).

UNIT –V

FINANCIAL ACCOUNTING AND FINANCIAL ANALYSIS THROUGH RATIOS:
Double entry book keeping –Journal –Ledger –Trial Balance –Trading Account and balance sheet with simple adjustments Ratio analysis: Computation of Liquidity Ratios (Current and Quick Ratio), Activity Ratios (Inventory Turnover Ratio and Debtor Turnover Ratio), Capital Structure Ratios (Debt,Equity Ratio and Interest Coverage Ratio) and Profitability Ratios (Gross Profit Ratio, Net Profit Ratio, Operating Ratio, P/E Ratio and EPS).

TEXT BOOKS:
1. Aryasri A. R., Managerial Economics and Financial Analysis, 4/E, TMH, 2009.
2. Varshney R.L. and K.L. Maheswari, Managerial Economics, Sultan Chand & Sons, 19/E, 2009.
3. Siddiqui S.A. and Siddiqui A.S., Managerial Economics and Financial Analysis, New Age international, 2009.

REFERENCES:
1. Gupta R.L., Financial Accounting, Volume I, Sultan Chand & Sons, New Delhi, 2001
2. James C. Van Horne, Financial Management policy, 12/E, PHI, 2001.
3. Joel Dean, Managerial Economics, PHI, 2001.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C01	-	2	-	2	-	1	-	-				-	3	-
C02	-	2	1	2	-	1	-	-				-	3	-
C03	-	-	1	-	-	-	1	-			3	-	3	2
C04	-	2	1	2	-	1	1	-			3	-		2

SRI VENKATESWARA COLLEGE OF ENGINEERING AND TECHNOLOGY
(AUTONOMOUS)

	L	**T**	**P**	**C**
II B.Tech I Semester -CSE	3	1	-	3

Code : 17ACS07   DATABASE MANAGEMENT SYSTEMS

Outcomes:
At the end of the course the student will be able to:
1. List functional components of the DBMS.
2. Develop skills in maintenance of huge amounts of data along with reducing of redundancy in data.
3. Design data base schema, Develop E, R Model, Evaluate and optimize queries.
4. Apply transaction processing, concurrency control and recovery techniques.

UNIT-I
INTRODUCTION: History of database systems, Database system applications, Database system Vs file systems, Purpose of Database System, Describing and storing data in a DBMS, Structure of a DBMS.
ENTITY RELATIONSHIP MODEL (E-R MODEL): E,R Diagrams,Features of ER Model, Conceptual Database design with the ER model, Conceptual design for large enterprises.

UNIT-II
RELATIONAL MODEL: Introduction to relational model, Integrity constraints, Querying relational data, Logical Database design, Procedural and Non procedural Query languages (Relational Algebra, Introduction to Relational Calculus).
SQL: SQL Languages, The form of a basic SQL query, Data types, Operators, Null values, Aggregate operators ,Union, Intersect and Except operators, Nested queries ,Complex integrity constraints in SQL , Introduction to views, Destroying/Altering Tables and views.

UNIT-III
PL/SQL: Introduction to PL/SQL programming – Advantages of PL/SQL, The generic PL/SQL block, Character set, Literals ,Data types, Variables, Constants, Displaying user messages on the VDU screen, Comments, Conditional and Control statements, Iterative statements, Exception handling, Procedures, Functions ,Cursors , Triggers , Packages.
SCHEMA REFINEMENT AND NORMAL FORMS: Introduction to schema refinement, Functional   Dependencies, Reasoning about FDs, Normal Forms: 1NF, 2NF, 3NF, Boyce,Codd Normal Form, Properties of decompositions, Multi,valued Dependencies and Fourth Normal Form, Join Dependencies and Fifth Normal Form.

UNIT-IV
TRANSACTIONS: Transaction Concepts, Transaction state, Implementation of Atomicity and Durability, Concurrent executions, Implementation of Isolation, Serializability, Recoverability.

CONCURRENCY: Concurrency control, Lock based protocols, Time stamp based protocols, Validation based protocols, Multiple granularity, Deadlock handling.

UNIT-V
INDEXING AND HASHING: File Organization, Organization of Records in Files, Ordered Indices, B+ Tree Index Files, B,Tree Index Files, Multiple Key Access, Static Hashing, Dynamic Hashing, Comparison of Ordered Indexing and Hashing, Bitmap Indices.

TEXT BOOKS:

1. Raghurama Krishnan, Johannes Gehrke, "*Data base Management Systems",* TATA McGraw,Hill 3rd Edition,2007.
2. Abraham Silberschatz, Henry F. Korth, S. Sudharshan, *"Database System Concepts"*, Fifth Edition, Tata McGraw Hill, 2006.
3. Ivan Bayross, "*SQL, PL/SQL programming language of Oracle*", BPB Publications 4th edition, 2010.

REFERENCE BOOKS:

1. Peter Rob, Carlos Coronel, *Database Systems Design Implementation and Management*, 7th edition, 2009.
2. Scott Urman, Michael McLaughlin, Ron Hardman, "*Oracle database 10g PL/SQL programming* ",6th edition, Tata McGraw Hill,2010
3. S.K.Singh, "*Database Systems Concepts, Design and Applications*", First edition, Pearson Education, 2006.
4. Ramez Elmasri, Shamkant B. Navathe, "*Fundamentals of Database Systems*", Fourth Edition, Pearson / Addision wesley, 2007.
5. Ashutosh Kumar Dubey," *Database Management Concepts",* 3rd edition,S.K.Katari & Sons,2008.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C01	3	3	-	-	-	-	-	-	-	-	-	-	2	2
C02	3	3	3	-	-	-	-	-	-	-	-	-	2	2
C03	-	3	3	2	-	-	-	-	-	-	-	-	2	2
C04	-	-	3	2	-	-	-	-	-	-	-	-	2	2
C05	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SRI VENKATESWARA COLLEGE OF ENGINEERING AND TECHNOLOGY (AUTONOMOUS)

	L	T	P	C
II B.Tech I Semester-CSE	3	-	-	3

Code : 17ACS08   **File Structures with C++**

Outcomes:

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

1. Apply the basic concepts of C++.
2. Analyze and implement the advanced concepts in C++.
3. Implement the different file management techniques.
4. Choose appropriate file structure as applied to specified problem definition.

UNIT-I

The Origins of C++, What is Object Oriented Programming, some C++ fundamentals, C++ Class Overview, Class Definition, Objects, Class Members Access Control, Constructors and Destructors, Inline functions, this pointer, friend functions, Exception handling.

UNIT-II

Function Overloading, Operator Over loading, Generic Programming–Function and Class Templates, Inheritance basics, base and derived classes, inheritance types, base class access control, runtime polymorphism using virtual functions, abstract classes.

UNIT-III

Files, File structures, Data structures and File Structures, physical files and logical files, Data management in files, organizational Hiererachy of Data in files, packing and Buffering, Data compression in files, optimizing data storage in files, storing non, textual data in files, structured and unstructured files.

UNIT-IV

Preliminary Data Accessing Methods, Direct Access, Sequential search, Binary search, keysort, Indexing, Primary Indexing, Secondary Indexing, A note on Implementing Indexing, C++ Implementation of Indexing.

UNIT-V

B,Trees Binary search Trees, Height balanced trees, Paged Binary tree, Performance of B,Trees, Implementation issues of B,Trees, C++ Implementation of B Trees, B+ Trees, Sequential access to data, Simple prefix B+ Trees, C++ Implementation of B+Trees, Hashing, Hash function, Probability of collision, collision Handling techniques, Extendible hashing, Dynamic hashing, linear hashing, C++ Implementation of Extendible hashing.

Text Books:

1. Ananda Rao Akepogu, Radhika Raju Palagiri, " Data Structures and algorithms using C ++", Pearson Education, 2010.
2. K R.Venugopal, K.G.Srinivasa, P. M. Krishnaraj, "File Structures using C++", Tata McGraw,Hill, 2009.

Reference Books:

1. Michael J. Folk, Bill Zoellick, Greg Riccardi, "File Structures – An Object – Oriented Approach with C++", Third Edition, Pearson Education, 2012.
2. Panos E. Livadas, "File Strucutures: Theory and Practice", Prentice Hall, 1990.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C01	2	2	-	1	-	-	-	-	-	-	-	-	2	-
C02	1	2	-	-	3	-	-	-	-	-	-	2	2	2
C03	3	-	2	2	3	-	-	-	-	-	-	2	-	2
C04	-	2	2	3	3	-	-	-	-	-	-	-	-	2

SRI VENKATESWARA COLLEGE OF ENGINEERING AND TECHNOLOGY
(AUTONOMOUS)

	L	**T**	**P**	**C**
II B.Tech I Semester -CSE	3	-	-	3

Code : 17AEC05   **Digital Logic Design**

Outcomes:
After completion of the course, the student will be able to:
1. Design and Analyze combinational and sequential circuits for various practical problems Using basic gates and flip   flops.
2. Implement LSI and MSI circuits using programmable logic devices (PLDs).
3. Demonstrate knowledge of hazards and race conditions generated within asynchronous circuits.
4. Implement synchronous state machines using flip-flops.

UNIT I
NUMBER SYSTEM & BOOLEAN ALGEBRA: Digital systems, Binary Numbers, Octal Numbers, Hexadecimal Numbers, Number base conversions, Complements of numbers, Signed Binary numbers, Binary codes. Boolean algebra–Basic Basic definition, Basic theorems and properties, Boolean Functions, Canonical & Standard forms, other logic operations & Digital logic gates.

UNIT II
GATE LEVEL MINIMIZATION: The map method, four variable K-map, five variable K-map, POS & SOP Simplification, Don't care conditions, NAND & NOR Implementation, other two-level Implementations, Exclusive-OR Function.

UNIT III
COMBINATIONAL CIRCUITS: Combinational circuits, Analysis & Design procedure, Binary Adder and Subtractor, Decimal Adder, Binary Multiplier, Magnitude comparator, Decoder, Encoders, Multiplexers, De-multiplexers, Code Converters.

UNIT IV
SEQUNTIAL CIRCUITS: Sequential Circuits, Latches, Flips-Flops, Analysis of Clocked sequential circuits, State Reduction & Assignment, Design procedure, Registers & Counters-Registers, Shift Registers, Ripple Counters, Synchronous counters, Design of modulo-N Counters, Ring and Johnson Counters.
.
UNIT V
MEMORIES: Random-Access Memory, Memory Decoding, Error Detection and correction, Read-Only Memory, Programmable Logic Array(PLA), Programmable Array Logic(PAL), Sequential Programmable Devices.

TEXT BOOKS:
   1. M. Morris Mano and Michael D.Ciletti, Digital Design, 4th Edition, Pearson Ed, 2009.
   2. Charles Roth, Fundamentals of Logic Design, 5th Edition, Thomson, 2008.

REFERENCE BOOKS:
   1. Zvi. Kohavi, Switching and Finite Automata Theory, Tata McGraw Hill, 2002.
   2. C.V.S. Rao, Switching Theory and Logic Design, Pearson Education, 2004.

3. Donald D.Givone, Digital Principles and Design, Tata McGraw Hill, 2001.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C01	2	1	1	1	1								2	3
C02	2	2	1	1	1								2	2
C03	1	2	1	2	1								3	2
C04	2	2	2	1	1								3	3

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	L	T	P	C
	-	-	3	1.5

II B.Tech I Semester -CSE
Code : 17ACS09   **JAVA Programming Lab**

Outcomes:

After completion of this course, the students would be able to

1. Implement Java classes from specifications and effectively create and use objects from predefined class libraries.
2. explain the behavior of primitive data types, object references, and arrays.
3. Apply decision and iteration control structures to implement algorithms and Write simple recursive algorithms.
4. Implement interfaces, inheritance, and polymorphism as programming techniques, apply Exception Handling.

Week-1:

a) Write a Java program that prints all real solutions to the quadratic equation $ax^2 + bx + c = 0$. Read in a, b, c and use the quadratic formula. If the discriminate $b^2 - 4ac$ is negative, display a message stating that there are no real solutions.

b) The Fibonacci sequence is defined by the following rule: The fir two values in the sequence are 1 and 1. Every subsequent value is the sum of the two values preceding it. Write a Java program that uses recursive functions to print the nth value in the Fibonacci sequence

c) Write a Java program that uses non-recursive functions to print the nth value in the Fibonacci sequence

Week-2:

a) Write a Java program that prompts the user for an integer and then prints out all prime numbers up to that integer.

b) Write a Java Program that reads a line of integers, and then displays each integer, and the sum of all the integers (Use String Tokenizer class of java.util)

Week-3:

a) Write a Java program that checks whether a given string is a palindrome or not. Ex: MADAM is a palindrome.

b) Write a Java program for sorting a given list of names in ascending order.

c) Write a Java program to make frequency count of words in a given text.

Week-4:

a) Write a Java program that reads a file name from the user, then displays information about whether the file exists, whether the file is readable, whether the file is writable, the type of file and the length of the file in bytes.

b) Write a Java program that reads a file and displays the file on the screen, with a line number before each line.

c) Write a Java program that displays the number of characters, lines and words in a text file.

Week-5:

a) Develop an applet that displays a simple message

b) Develop an applet that receives an integer in one text field, and computes its factorial
Value and returns it in another text field, when the button named —Compute‖ is clicked.

Week-6:

a)Write a Java program that works as a simple calculator. Use a grid layout to arrange buttons
for the digits and for the +, *, % operations. Add a text field to display the result.

b) Write a Java program for handling mouse events.

Week-7:

a) Write a Java program that creates three threads. First thread displays —Good Morning‖
every one second, the second thread displays —Hello‖ every two seconds and the third
thread displays —Welcome‖ every three seconds.

b) Write a Java program that correctly implements producer consumer problem using the
concept of inter thread communication.

Week 8:

Write a program that creates a user interface to perform integer divisions. The user enters two
numbers in the text fields, Num1 and Num2. The division of Num1 and Num2 is displayed in
the Result field when the Divide button is clicked. If Num1 or Num2 were not an integer, the
program would throw a Number Format Exception. If Num2 were Zero, the program would
throw an Arithmetic Exception Display the exception in a message dialog box.

Week-9:

Write a Java program that implements a simple client/server application. The client sends data
to a server. The server receives the data, uses it to produce a result, and then sends the result
back to the client. The client displays the result on the console. For ex: The data sent from the
client is the radius of a circle, and the result produced by the server is the area of the circle.
(Use java.net)

Week-10:

a) Write a java program that simulates a traffic light. The program lets the user select one of
three lights: red, yellow or green. When a radio button is selected, the light is turned on, and
only one light can be on at a time No light is on when the program starts.

b) Write a Java program that allows the user to draw lines, rectangles and ovals.

Week-11:

a) Write a java program to create an abstract class named Shape that contains an empty
method named number of Sides ( ).Provide three classes named Trapezoid, Triangle
and Hexagon such that each one of the classes extends the class Shape. Each one of the
classes contains.

b) Create a table which should contain at least the following fields: name, password, email,id, phone number. Write a java program to connect to the database (Ex: MS,Access) and extract data from the tables and display them

Week-12:

a) Write an applet that computes the payment of a loan, by taking the amount of the loan, the interest rate and the number of month's values in the text fields. it takes one parameter from the browser: monthly rate as a checkbox ,if it is true, the interest is calculated per month otherwise the interest is calculated per annual.

b) Suppose that a table named Table.txt is stored in a text file. The first line in the file is the header, and the remaining lines correspond to rows in the table. The elements are separated by commas. Write a java program to display the table using Jtable component

Week-13:

Write a Java program that implements basic operations of list collections .

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C01	-	2	-	2	-	-	-	-	-	-	-	-	-	-
C02	-	2	-	2	2	-	-	-	-	-	-	-	1	2
C03	3	2	2	-	-	-	-	-	3	-	3	-	1	2
C04	3		2	-	2	-	-	-	-	-	2	-	-	2

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II B.Tech - I Semester: Common to EEE, ECE, CSE & IT

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	0	0	2	1

Code: 17AHS17   TECHNICAL WRITING AND CONTENT DEVELOPMENT LAB

Outcomes:
1. The students will use English fluently in communication by following LSRW.
2. The students will develop the art of oral presentation to develop leadership qualities.
3. The students will assimilate the importance of English in the modern world to compete with the career in the challenging world.
4. The students will strengthen the required skills to be employable.

UNIT – I
NOTE MAKING & NOTE TAKING: Importance of Note Making and Note Taking-Techniques of note making and note taking, practice in Note Writing.

UNIT – II
CONTENT DEVELOPMENT & PRESENTATIONS : Impromptu speech development on a given topic, public speaking, Expansion of proverbs and sayings- Importance of presentations- developing and organizing the presentations- Verbal and visual support in presentations-Style- using body language –effective presentation.

UNIT – III
INTERVIEWS: Types of interview-Pre interview planning-Projecting a positive image-Frequently asked questions

UNIT – IV
REPORT WRITING: Business and Technical Reports- Technical Report writing-project, industrial, Types of Reports- formats of reports- E-mail drafting.

UNIT – V
INFORMATION TRANSFER: Importance – Data Interpretation - Text to data & Data to text.

MINIMUM REQUIREMENT FOR TWCD LAB:
1) Computer aided language lab for 70 students, 70 systems – one master console software for self-study.
2) T.V, digital stereo – audio – visual system.
3) Computer laboratory with LAN Connectivity of minimum 70 multimedia systems with the following configuration.
a) Intel Pentium® D 3.00GHZ
b) RAM-1GB minimum
c) Hard disk – 160GB
d) Headphones of durable quality.

Prescribed Software – Globarena

Suggested Software:

0. K-Van Advanced Communication Skills.
1. Lingua TOEFL CBT Insider, by Dreamtech.
2. Cambridge Advanced Learners' English Dictionary with CD.
3. Oxford Advanced Learner's Compass, 8^{th} Edition.

Reference Books:

1. Meenakshi Raman – Technical Communication,2/e, Oxford University Press, New Delhi.
2. K.R. Lakshminarayanan- Advanced English Communication, SCITECH Publications (india) Pvt. Ltd. May-2010.
3. M. Ashraf Rizvi, Effective Technical Communication- MC Graw Hill Publications-2014.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C01	2	3					2		2	3	2	3		
C02	2	2					2		2	2	2	3		
C03	3	2					3		3	2		3		
C04	3	3					3		2	2	2	2		

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

Code : 17ACS10   **Database Management Systems Lab**

Outcomes:

At the end of the course the student will be able to:

1. Create, Modify, and manipulate the database objects.
2. Retrieve the data from the database server.
3. Perform database operations in a procedural manner using pl/sql
4. Develop Programs using BEFORE and AFTER Triggers.

LIST OF EXPERIMENTS

1. Creation, altering and dropping of tables and inserting rows into a table (use constraints while creating

    tables) examples using SELECT command.

2. Queries (along with sub Queries) using ANY, ALL, IN, EXISTS, NOT EXISTS, UNION,

     INTERSECT, EXCEPT operators.. Example:, Select the roll number and name of the student who

     secured fourth rank in the class.

3. Using Aggregate functions (COUNT, SUM, AVG, MAX and MIN), GROUP BY,

     HAVING ,Creation and dropping of Views.

4.Queries using Conversion functions (to_char, to_number and to_date), string functions

  (Concatenation, lpad, rpad, ltrim, rtrim, lower, upper, initcap, length, substr and instr), date

   functions (Sysdate, next_day, add_months, last_day, months_between, least, greatest,

   trunc, round, to_char, to_date)

5. i) Creation of simple PL/SQL program which includes declaration section, executable

     section and exception –handling section (Ex. Student marks can be selected from the table

     and printed for those who secured first class and an exception can be raised if no records

     were found)

   ii) Implement COMMIT, ROLLBACK and SAVEPOINT in PL/SQL block.

6. Develop a program that includes the features NESTED IF, CASE and CASE expression.

7. Program development using WHILE LOOPS, numeric FOR LOOPS, nested loops using

     ERROR Handling, BUILT –IN Exceptions, USE defined Exceptions.

8. Program development using a creation of procedures, passing parameters IN and OUT of

     PROCEDURES.

9. Program development using the creation of stored functions, invoke functions in SQL

     Statements and write complex functions.

10. Program development using creation of package specification, package bodies, private

objects, package variables and cursors and calling stored packages.

11. Develop programs using features parameters in a CURSOR, FOR UPDATE CURSOR, WHERE CURRENT of clause and CURSOR variables.

12. Develop Programs using BEFORE and AFTER Triggers, Row and Statement Triggers and INSTEAD OF Triggers.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C01	3	2	-	1	-	-	-	-	-	-	-	-	3	3
C02	-	2	-	1	-	-	-	-	-	-	-	-	-	2
C03	3	2	2	-	-	-	-	-	-	-	-	-	3	1
C04	3		2	-	-	-	-	-	-	-	-	-	3	2

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II – B.Tech I Semester: EEE, ECE, CSE & IT

                         L T P C
                         3 - - -

Code: 17AHS18   **ENGLISH FOR COMMUNICATION – II**

Outcomes:

1. The students will enrich their communication skills both in academic and social area.
2. The students will master LSRW skills.
3. The students will become proficient in English language and make use of it to be good in his subject.
4. The students will gain employability skills.

UNIT – I
COMMUNICATION: Definition, difference between verbal and non-verbal, process of communication, Importance and need for communication-Types of communication-Barriers of communication.

UNIT –II
WORD FORMATION: Ways of forming words, Root Words- homonyms, homophones, homographs - words often confused Synonyms & Antonyms, - one word substitutions- common errors.

UNIT –III
TELEPHONIC COMMUNICATION- Receiving calls - leaving messages- useful phrases- asking for and giving information- fixation and cancellation of appointment - Telephonic interviews

UNIT –IV
READING COMPREHENSION- Techniques for good comprehension- Reading for specific details and Information- Skimming-Scanning- measures in Intensive Reading- extensive reading-

UNIT –V
WRITTEN COMMUNICATION- Essay Writing- Paragraph Writing- Social, Political and Economic problems.

Text Book:

1. M Ashraf Rizvi, Effective Technical Communication, Mc Graw Hill Education (India) Private limited, 2014.

Reference Books:

1. Communication SKILLS, Sanjay Kumar & Pushpalatha Oxford Universityy Press.2012.
2. A Course in Communication Skills- Kiranmai Dutt & co. Foundation Books, 2012.
3. Meenakshi Raman – Technical Communication,2/e, Oxford University Press, New

Delhi.
4.History of English Language /F T Wood
5.English Grammar and composition David Green.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C01	3	2	-	-	-	2	-	-	-	3	-	-
C02	3	2	-	-	-	3	-	-	-	3	-	-
C03	3	3	-	-	-	3	-	-	-	3	-	-
C04	2	2	-	-	-	3	-	-	-	3	-	-

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II B.Tech I Semester -CSE   -   2   -   -

Code: 17AME64   **Introduction to Engineering Projects**

COURSE OUTCOMES: At the end of the course, the students will develop ability to
1. Define various disciplines technology and engineering challenges.
2. Judge the responsibilities as professional engineer in solving the societal problems.
3. Identify new opportunities to formulate and solve engineering problems.
4. Create personal skills and attributes at critical thinking.
5. Predict the importance of oral, written and academic skills.
6. Adopt social context of engineering practice.
7. Apply engineering reasoning to problem solving.
8. Integrate working with multi-disciplinary teams and build team work skills.

UNIT – I
Engineering Process: A brief history of engineering and technology, engineering as a profession, science Vs engineering, stages of design – from the world of imagination to world of objects
Assignment: Report on an identified technological evolution and factor s driving technological evolution.

UNIT - II
Opportunity Identification: Opportunity Identification from inspiration – an act of creative awareness, how to find inspiration, Brainstorming method for identifying opportunities. Methods of evaluating opportunities.
Assignment: Identify new potential opportunities based on the customer pain points and evaluate them to identify real opportunities.

UNIT – III
Conceptualization: Methods for generating ideas to solve the customer pain points including brainstorming, concept maps, and SCAMPER.
Assignment: Application of idea generation methods to improve an existing product

UNIT – IV
Skill Development: Sketching, Prototyping Communication. Interaction with peers,demonstration of projects developed by senior students and alumni.

UNIT - V
Project Work: A open-ended design project executed from opportunity to prototype. Culminating with a presentation, model, display and report.

TEXT BOOKS:
1. Karl Aspelund, "The Design Process –Fairchild books", Bloomsbury Publishing Inc.
2. ND Bhatt, "Engineering Drawing, Plane and Solid Geometry", Charotar Publishing House Pvt. Ltd., Publishers of Engineering Text Books.

REFERENCE BOOKS:
1. Paul H Wright, "Introduction to Engineering", John Wiley and Sons, Inc.
2. Saeed Moaveni, "Engineering Fundamentals: an Introduction to Engineering", Cengage Learning, printed in USA.
3. Reymond B Landis, "Studying Engineering: A Road Map to rewarding career", Discovery press.

E-BOOKS:
1. Robin Mckenzie and Robin Mckenzie, "Product Design and Engineering".
2. Idris Mootee, "Design Thinking for strategic Innovation", Wiley publication.
3. Carl Liu, "Innovative product design practice".

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C01	3	2	2										1	1
C02	3	3	3										2	2
C03	3	3	3										2	2
C04	2	3	3										2	2
C05	3	3	3										2	2
CO6	3	2	3										2	2
CO7	3	3	3										2	2
CO8	2	3	3										2	2

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			L	T	P	C
II B.Tech II Semester- CSE			3	1	-	3

Code: 17ACS11 **Programming in Python**

Outcomes:
At the end of the subject, students will be able to:
1. Design simple Python programs for solving problems.
2. Analyse a Python program into functions.
3. Represent compound data using Python lists, tuples, and dictionaries.
4. Present data from/to files in Python Programs.

UNIT-I
Introduction:
Python Introduction, installation of python in windows, Running python, Arithmetic operators, Values and types, Formal and natural languages.

Variables, Expressions and Statements: Assignment statements, variable names, Expressions and statements, Script mode, Order of operations, String operations, Comments.

UNIT-II
Functions: Function calls, Math functions, composition, adding new functions, definitions and uses, flow of execution, Parameters and arguments, variables and parameters are local, Stack diagrams.

Fruitful Functions: return values, Incremental development, composition, Boolean functions.

Case study: The Turtle module, simple repetition, Encapsulation, Generalization, Interface design, Refactoring.

UNIT-III
Conditionals and recursion: Floor division and modulus, Boolean expressions, logical operators, conditional execution, alternative execution, chained conditionals, nested conditionals, Recursion, Stack diagrams for recursion functions, infinite recursion.

Iterations: Reassignment, updating values, the while statement, break, square roots.

Strings: A string sequence, len, traversal with a for loop, string slices, strings are immutable, searching, looping and counting, string methods, the in operator, string comparison.

UNIT-IV
Data Structures: Lists , Operations, Slicing, Methods; Tuples, Sets, Dictionaries, Comparisons.

Files: Persistence, reading and writing, format operator, filenames and paths, catching exceptions, databases, pipes, writing modules.

UNIT-V
Classes and Objects, Classes and functions, Classes and methods, Inheritance.

TEXT BOOKS:

1. Allen B. Downey, ``Think Python: How to Think Like a Computer Scientist'', 2nd edition, Updated for Python 3, Shroff O'Reilly Publishers, 2016 (http://greenteapress.com/wp/think,python/)

2. John V Guttag, ―Introduction to Computation and Programming Using Python'', Revised and expanded Edition, MIT Press , 2013

REFERENCE BOOKS:

1. "Python in easy steps In Easy Steps", Mike MC Grath, illustrated edition, In easy steps 2013 publishers.
2. Guido van Rossum and Fred L. Drake Jr, ―An Introduction to Python – Revised and updated for Python 3.2, Network Theory Ltd., 2011.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C01	-	-	-	1	-	-	-	-	-	-	-	-	3	2
C02	3	2	-	3	2	-	-	-	-	-	-	-	3	2
C03	3	2	-	2	1	-	-	-	-	-	-	2	3	2
C04	3	2	-	-	3	-	-	-	-	-	-	2	-	2

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	L	T	P	C

II B.Tech II Semester-CSE   **3**   **-**   **-**   **3**

Code: 17ACS12   **COMPUTER ORGANIZATION**

Outcomes:

At the end of the course the student will be able to:

1. Describe computer architecture and organization, computer arithmetic and CPU design.
2. Identify merits and pitfalls in computer performance measurements.
3. Explain memory hierarchy and its impact on computer cost/ performance.
4. Describe the advantages of instruction level parallelism and pipelining for high performance processor design.

UNIT-I

STRUCTURE OF COMPUTERS: Computer types, functional units, basic operational concepts, Von Neumann architecture, bus structures, software, performance, multiprocessors and multicomputer, data representation, fixed and floating point and error detecting codes.

UNIT- II

REGISTER TRANSFER AND MICRO, OPERATIONS: Register transfer language, register transfer, arithmetic micro-operations, logic micro-operations, shift micro operations, arithmetic logic shift unit, computer registers, computer instructions, instruction cycle, instruction formats, addressing modes, data transfer and manipulation instructions.

UNIT- III

MICRO,PROGRAMMED CONTROL: Control memory, address sequencing, micro,program example, and design of control unit.

COMPUTER ARITHMETIC: Addition and subtraction, multiplication and division algorithms, floating,point arithmetic operations.

UNIT- IV

THE MEMORY SYSTEM: Basic concepts, semiconductor RAM, types of read , only memory (ROM), cache memory, virtual memory, secondary storage, RAID, direct memory access.

INPUT/OUTPUT ORGANIZATION: Accessing I/O Devices, Interrupts, Direct Memory Access, Modes of transfer, Peripheral devices.

UNIT-V

PIPELINING: Basic Concepts, Parallel processing, Pipelining, Arithmetic pipelining, Instruction pipelining, RISC pipelining, Data Hazards, Instruction hazards, Vector processing, Array processors, Characteristics of multiprocessors, interconnection structures, inter processor communication and synchronization.

TEXT BOOKS:

1. M. Moris Mano, *Computer System Architecture*, 3rdedition,PHI,India, 2006.
2. Carl Hamacher, ZvonksVranesic, SafeaZaky, *Computer Organization*, 5th edition, McGraw Hill, New Delhi,India,2010.

REFERENCE BOOKS:
1. William Stallings , *Computer Organization and Architecture,* designing for performance, 8th edition, Prentice Hall, NewJersy, 2010.
2. Andrew S. Tanenbaum, *Structured Computer Organization*, 5th edition, Pearson Education Inc, NewJersy, 2006.
3. Sivarama P. Dandamudi, *Fundamentals of Computer Organization and Design*, Springer Int. Edition,USA, 2003.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C01	3	3	-	-	-	-	-	-	-	-	-	-		2
C02	-	3	-	1	-	-	-	-	-	-	-	-	2	1
C03	3	-	2	1	-	-	-	-	-	1	-	-	2	3
C04	3	3	2	1	-	-	-	-	-	1	-	-	2	-

SRI VENKATESWARA COLLEGE OF ENGINEERING AND TECHNOLOGY
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II B.Tech II Semester-CSE   **3**   **-**   **-**   **3**

Code: 17ACS13   **OPERATING SYSTEMS**

Outcomes:
1. Define key mechanisms in design of operating systems modules
2. Demonstrate process management, concurrent processes and threads, memory management virtual memory concepts & deadlocks.
3. Compare performance of processor scheduling algorithms
4. Develop algorithmic solutions to process synchronization problems

UNIT-I
INTRODUCTION: Operating Systems Overview: Operating systems functions, Overview of computer operating systems, protection and security, distributed systems, special purpose systems, operating systems structures: operating system services and systems calls, system programs, operating system structure, operating systems generation.

UNIT-II
CPU Scheduling: Process concepts, threads, scheduling, criteria, algorithms, and their evaluation; thread scheduling.

UNIT –III
PROCESS SYNCHRONIZATION: Concurrency: Process synchronization, the critical,section problem, Peterson's Solution, synchronization Hardware, semaphores, classic problems of synchronization, monitors, Synchronization examples, atomic transactions.
Principles of deadlock: system model, deadlock characterization, deadlock prevention, detection and avoidance, recovery form deadlock.

UNIT- IV
MEMORY MANAGEMENT STRATEGIES: Memory Management: Swapping, contiguous memory allocation, paging, structure of the page table, segmentation, virtual memory, demand paging, page replacement, algorithms, Allocation of frames,Thrashing case studies UNIX, Linux, Windows

UNIT -V
FILE SYSTEM: File system Interface: The concept of a file, Access Methods, Directory structure, File system mounting, File sharing, protection. File System implementation: File system structure, file system implementation, directory implementation, allocation methods, free,space management, efficiency and performance, case studies.
Mass,storage structure: overview of Mass,storage structure, Disk structure, disk attachment, disk scheduling,

Text Book:

1. Operating System Concepts, Abraham Silberchatz, Peter B. Galvin, Greg Gagne, Eighth edition, John Wiley, 2009.

References Books:

1. Operating Systems: Internals and Design Principles, Stallings, Sixth Edition, Pearson Education, 2009.
2. Modern Operating Systems, Andrew S Tanenbaum, Second Edition.2009

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C01	3	2	-	-	-	-	-	-	-	-	-	-	-	-
C02	3	2	-	1	-	-	-	-	-	-	-	-	3	1
C03	-	-	1	1	-	-	-	-	-	-	-	-	3	2
C04	-	2	1	1	-	-	-	-	-	-	-	-	-	3

SRI VENKATESWARA COLLEGE OF ENGINEERING AND TECHNOLOGY
(AUTONOMOUS)

	L	T	P	C

II B.Tech II Semester - CSE　　　　　　　　　　　　　　**3　1　-　3**

Code: 17ACS14　　　　　**Design & Analysis of Algorithms**

Outcomes:

At the end of the course the student will be able to:

1. Analyze time and space complexity
2. Identify algorithm design methodology to solve problems.
3. Design algorithms for network flows
4. Distinguish between P and NP classes of problems

UNIT-I
Basics of Algorithms and Mathematics:

What is an algorithm?, Mathematics for Algorithmic Sets, Functions and Relations, Vectors and Matrices, Linear Inequalities and Linear Equations.

Analysis of Algorithm:

The efficient algorithm, Average and worst case analysis, Elementary operation, Asymptotic Notation, Analyzing control statement, Amortized analysis, Sorting Algorithm, Binary Tree Search.

UNIT-II
Divide and Conquer Algorithm:

Introduction, Multiplying large Integers Problem, Binary Search, Sorting (Merge Sort, Quick Sort), Matrix Multiplication.

Greedy Algorithm

General Characteristics, Problem solving , Activity selection problem, Elements of Greedy Strategy, Minimum Spanning trees, Graphs: Shortest paths, The Knapsack Problem, Job Scheduling Problem.

UNIT-III
Dynamic Programming:

Introduction, The Principle of Optimality, Problem Solving–Calculating the Binomial Coefficient, Making Change Problem, Assembly Line,Scheduling, Knapsack problem, Shortest path, Matrix chain multiplication, Longest Common Subsequence.

UNIT-IV
Exploring Graphs:

Introduction, Traversing Trees – Preconditioning, Depth First Search , Undirected Graph, Directed Graph, Breath First Search, Backtracking – General Template, The Knapsack Problem, The Eight queens problem.

UNIT-V
String Matching:

Introduction, The naive string matching algorithm, The Rabin,Karp algorithm, String Matching with finite automata.

Introduction to NP,Completeness:
The class P and NP, Polynomial reduction, NP, Completeness Problem, NP,Hard Problems.

Text Books:

1. "Fundamentals of Computer Algorithms", E. Horowitz, S. Sahani and S.Rajasekran,
   Galgotia Publication, 2008.
2. Introduction to Algorithms, Third Edition, Thomas H. Cormen, Charles E. Leiserson, Ronald L.
   Rivest and Clifford Stein, PHI, 2009.

Reference Books:

1. Design and Analysis of Algorithms, Parag Himanshu Dave and Himanshu Bhalachandra Dave,
   Pearson, 2009.
2. Fundamental of Algorithms by Gills Brassard, Paul Bratley, PHI, 1996.
3. Introduction to Design and Analysis of Algorithms, Anany Levitin, Pearson, 2011.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C01	3	-	-	2	-	-	-	-	-	-	-	-	3	-
C02	3	-	1	3	3	-	-	-	2	-	-	-	3	-
C03	3	2	1	1	3	-	-	-	2	-	1	-	-	3
C04	-	2	1	2	3	-	-	-	-	-	-	2	3	3

SRI VENKATESWARA COLLEGE OF ENGINEERING AND TECHNOLOGY
(AUTONOMOUS)

II B.Tech - II Semester (Common to CSE & IT)   **L   T   P   C**
                                                          3   1   0   3

Code: 17AHS23   PROBABILITY DISTRIBUTIONS & STATISTICAL METHODS

Outcomes:
After completion of the course the student will be able to
1. apply probability distributions to real life problems.
2. choose decisions in the case of uncertainty.
3. apply sampling methods in the day to day practical life to assess the quality of commodities .
4. draw inferences about a population parameters using different distributions .
5. develop skills to minimize the costs of offering facilities and cost of waiting time by applying queuing theory.

UNIT-I

PROBABILITY DISTRIBUTIONS: Introduction to random variables. Discrete and Continuous random variables – Probability mass function – Probability density function - properties. Binomial distribution – Poisson distribution – Uniform distribution - Normal distribution – related properties.

UNIT-II

SAMPLING DISTRIBUTIONS: Populations and Samples – Sampling distributions of mean (known and unknown), sums and difference. Point estimation – Interval estimation – Bayesian estimation.

UNIT-III

TESTING OF HYPOTHESIS: Type I error and Type II errors, One tail and two tail tests, Hypothesis concerning one and two means – Hypothesis concerning one and two proportions.

UNIT-IV

TESTING OF SIGNIFICANCE: Student- t-test, F-test, Chi-square **[χ^2]** test**:** χ^2 test for goodness of fit – the analysis of RxC tables.
ANALYSIS OF VARIANCE - One way and two way classifications.

UNIT-V

STATISTICAL QUALITY CONTROL: Introduction to Quality Control, Construction of $\bar{X}$, Range chart, C - chart and P charts.
QUEUING THEORY: Introduction - Pure Birth and Death process- M/M/1 Model – Problems on M/M/1 Model.

Text Books:
1. Miller and John Freund. E, Probability & Statistics for Engineers, New Delhi, Pearson Education, 2014.

2. Iyengar. T.K.V., Krishna Gandhi B., Probability & Statistics, New Delhi, S. Chand & Company, 2014.

3. Shahnaz Bathul, A text book of Probability & Statistics, Vijayawada, V.G.S. Books links, 2010.

References:

1. S.C. Gupta, V.K. Kapoor, Fundamentals of Mathematical Statistics, Sultan chand publications.2014

2. Arnold O Allen, Probability & Statistics, Academic Press.2014.

3. Ahmed Waheedullah, Ahmed Mohiuddin. M, Sulthan Ali, Probability & Statistics, Hyd, Hi-tech Publishers, 2006.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C01	3	3												
C02	3	3		1										
C03	3	2												
C04	3	2												
C05	3	2												

SRI VENKATESWARA COLLEGE OF ENGINEERING AND TECHNOLOGY
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	L	T	P	C

II B.Tech II Semester -CSE   3   -   -   3

Code : 17ACS15   **Free And Open Source Software**

Outcomes:

At the end of the course the student will be able to:

1. Use Unix environment for executing internal and external commands.
2. Design shell environment for concatenating files and displaying beginning and end of the files.
3. Develop shell programs in UNIX.
4. Explain Korn Shell and develop Korn shell programming.
5. Use the system calls for file management

UNIT-I
INTRODUCTION

The UNIX Architecture, Features of UNIX, locating commands, Internal and External Commands, Command Structure.

GENERAL-PURPOSE UTILITIES: cal, date, echo, printf, bc, script, passwd, PATH, who,tty uname, stty.

HANDLING FILES: The File System, pwd, Absolute pathnames, cd, Relative pathnames, mkdir, rmdir, cat, cp, rm, mv, gzip, tar, zip, df, du, mount, umount, The vi editor

UNIT II
File attributes:

Listing files(ls),chmod, directory permissions,, umask, file ownership, chown and chgrp, file modification and access times, touch, file system and inodes, Ln, Symbolic links, find.

NETWORKING COMMANDS: ping, telnet, ftp, finger, arp, rlogin.

UNIT- III
INTRODUCTION TO SHELLS:

The shell as command processor, pattern matching, escaping, quoting, Redirections, pipes, tee, command substitution, shell variables,

simple filters: more,wc,od,pr,cmp,diff,comm,head,tail,cut,paste,sort,tr,uniq,nl.

UNIT-IV
FILTERS USING REGULAR EXPRESSIONS: grep: Searching for a pattern, grep options, Regular expressions,egrep and fgrep, sed, line addressing, context addressing, editing Text, substitution.

INTERACTIVE KORN SHELL:

Korn Shell Features, Two Special Files, Variables, Output, Input, Exit Status of a Command, eval Command, Environmental Variables, Options, Startup String Matching:

UNIT- V
KORN SHELL PROGRAMMING:
Basic Script concepts, Expressions, Decisions: Making Selections, Repetition, special Parameters and Variables, changing Positional Parameters.
FILE MANAGEMENT:
File Structures, System Calls for File Management – create, open, close, read, write, lseek, stat, fstat, lstat, chmod, chown

Text Books:
1. Sumitabha Das, "Unix Concepts and Applications", 4thEdition. TMH, 2006.
2. Behrouz A. Forouzan, Richard F. Gilbery, "Unix and shell Programming", 1stEdition, Cengage Learning India 2003.
Reference Books:
1. Graham Glass, King Ables, "Unix for programmers and users", 3rd Edition, Pearson Education, 2009.
2. N.B Venkateswarlu, "Advanced Unix programming", 2ndEdition, BS Publications, 2010.
3. Yashwanth Kanitkar,"Unix Shell programming", 1stEdition, BPB Publisher, 2010.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C01	3	-	-	-	1	-	-	-				-	-	-
C02	3	-	1	-	-	-	-	-				-	-	-
C03	3	-	3	1	1	-	-	-				-	3	-
C04	-	3	2	2	1	-	-	-				-	-	3
C05	-	3	-	3	1	-	-	-				-	3	3

SRI VENKATESWARA COLLEGE OF ENGINEERING AND TECHNOLOGY
(AUTONOMOUS)

		L	T	P	C
II B.Tech II Semester -CSE		-	-	2	1

Code : 17ACS16   **Programming in Python Lab**

Outcomes:

 Upon completion of the course, students will be able to:

1. Implement Python programs with conditionals and loops.
2. Develop Python programs step,wise by defining functions and calling them.
3. Use Python strings, lists, dictionaries for representing compound data.
4. relate data from/to files in Python.

LIST OF EXPERIMENTS

1. Installation and configure Python in windows.
2. Write a Python program to compute the GCD of two numbers.
3. Write a Python program to find the square root of a number (Newton's method).
4. Write a Python program to implement

      a) Linear search and   b) Binary search using functions.

5. Develop a Python program that implements the Turtle module.
6. Write a Python program to implement

      a) Insertion sort and   b) selection sort

7. Write a Python program to perform matrix addition and multiplication.
8. Write a Python program that takes command line arguments (word count).
9. Write a Python program using string slices and methods.
10. Implement a Python program using Lists and perform various operations.
11. Write a Python program to implement using Dictionaries.
12. a) Write a Python program to read a file line by line store it into an array.

    b) Write a Python program to find the most frequent words in a text read from a file.

13. Write a Python program to demonstrate inheritance.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C01	3	-	-	-	-	-	-	-	-	-	3	-	-	3
C02	3	3	3	1	-	-	-	-	-	-	1	2	3	-
C03	3	3	3	2	3	-	-	-	-	-	2	1	-	3
C04	-	3	-	3	3	-	-	-	-	-	-	3	3	3

SRI VENKATESWARA COLLEGE OF ENGINEERING AND TECHNOLOGY
(AUTONOMOUS)

		L	T	P	C
II B.Tech II Semester -CSE		-	-	3	1.5

Code : 17ACS17   **Operating Systems Lab**

Outcomes:

Upon the completion of Operating Systems practical course, the student will be able to:

1. Analyze and simulate CPU Scheduling Algorithms like FCFS, Round Robin, SJF, and Priority.
2. Implement memory management schemes and page replacement schemes.
3. Simulate file allocation and organization techniques.
4. Define concepts of deadlock in operating systems and implement them in multiprogramming system.

LIST OF EXPERIMENTS

1. Write a C program to simulate the following non preemptive CPU scheduling algorithms to find turnaround time and waiting time.

    a) FCFS   b) SJF   c) Round Robin (pre,emptive)   d) Priority

2. Write a C program to simulate producer,consumer problem using semaphores.
3. Write a C program to simulate the concept of Dining,Philosophers problem.
4. Write a C program to simulate the following file allocation strategies.

     a) Sequential   b) Indexed   c) Linked

5. (a) Write a C program to simulate the MVT and MFT memory management techniques.

     (b) Write a C program to simulate the following contiguous memory allocation techniques

       i) Worst,fit   ii) Best,fit   iii) First ,fit

6. Write a C program to simulate the following file organization techniques

      a) Single level directory   b) Two level directory   c) Hierarchical

7. Write a C program to simulate Bankers algorithm for the purpose of deadlock avoidance.
8. Write a c program to Implement an Algorithm for Dead Lock Detection
9. Write a C program to simulate paging technique of memory management.
10. Write a C program to simulate page replacement algorithms

      a) FIFO   b) LRU   c) LFU

11. Write a C program to simulate disk scheduling algorithms

      a) FCFS   b) SCAN   c) C,SCAN

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C01	3	1	-	-	-	-	-	-	-	-	-	-	3	-
C02	3	3	2	1	-	-	-	-	-	-	-	-	-	2
C03	3	2	1	1	-	-	-	-	-	-	-	-	-	3
C04	-	-	3	1	-	-	-	-	-	-	-	-	3	1

SRI VENKATESWARA COLLEGE OF ENGINEERING AND TECHNOLOGY (AUTONOMOUS)

	L	T	P	C
II B.Tech II Semester -CSE	-	-	3	1.5

Code : 17ACS18   Free and open Source Software Lab

Outcomes:
1. implement various commands in Unix Environment
2. implement or simulate shell scrip to various commands.
3. Define role of process management in an operating system.
4. Demonstrate security measures at file and directory levels.

LIST OF EXPERIMENTS

Exercise-1
Create two files source.txt and dest.txt using vi editor which contains some text and practice the following commands on that files,
Cal, script ,date,who,tty, clear, ps,cat, echo,printf, uname,du,df,wc ,mkdir, rmdir, cp, mv,rm, ln, comm, cmp, diff ,chmod,chown.

Exercise-2
Create two files source.txt and dest.txt using vi editor which contains some text and practice the following commands on that files head , tail, sort, cut, paste, join, tee ,nl, uniq,

Exercise-3
1. Write a shell script that displays a list of all the files in the current directory to which the user has read, write and execute permissions.
2. Write a shell script to list all of the directory files in a directory.
3. Write a shell script to find factorial of a given integer

Exercise -4:
Create two files source.txt and dest.txt using vi editor which contains some text and practice the following commands on that files umask , pg, unlink, find, **grep, egrep, fgrep**,

Exercise-5

Write a C/C++ program that creates a zombie and then calls system to execute the ps command to verify that the process is zombie

Exercise-6
Write a shell script that displays a list of all the files in the current directory to which the user has read, write and execute permissions

Exercise-7
a) Write a program to illustrate fork () function.
b) Write a program to create a chain of Processes.

Exercise-8
Create two files source.txt and dest.txt using vi editor which contains some text and practice the following SED command in unix supports regular expression which allows it perform complex pattern matching

       1. Replacing or substituting string
       2. Replacing the nth occurrence of a pattern in a line
       3. Replacing all the occurrence of the pattern in a line :
       4. Replacing from nth occurrence to all occurrences in a line :
       5. Parenthesize first character of each word :
       6. Replacing string on a specific line number :
       7. Duplicating the replaced line with /p flag :
       8. Printing only the replaced lines :

Exercise-9
write a program to count number of lines,words,characters in a given file
Exercise-10
 a) Write a C Program to display Environment variables.
 b) Write a C Program to implement Different types of exec functions

Exercise-11
Write a shell script to reads one command line argument and checks whether it is file or directory.

Exercise-12
Write a shell script to evaluate arithmetic operations.

Text Book:
1. Sumitabha Das, "Your Unix The Ultimate Guide", Tata McGraw Hill, 2007.

Reference Books:
1. B.A. Forouzan & R.F. Giberg, "Unix and Shell Programming," Thomson Learning 2003.
2. Richard Stevens, "Advanced UNIX Programming", 2ed, Pearson Education 2004.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C01	3	-	-	-	-	-	-	-	-	-	-	-	-	3
C02	3	-	1	1	1	-	-	-	-	-	-	-	3	2
C03	-	3	3	2	1	-	-	-	-	-	-	-	3	1
C04	-	3	2	3	1	-	-	-	-	-	-	-	3	-

SRI VENKATESWARA COLLEGE OF ENGINEERING & TECHNOLOGY (AUTONOMOUS)

II B. Tech - II Semester: EEE, ECE, CSE & IT   **L   T   P   C**

                                                        3   0   0   -

17AHS19 Quantitative Aptitude and Reasoning –II
(Audit Course –II)

Outcomes:

After completion of the course the student will be able to
1. Strengthen their ability to meet the challenges in solving real life problems.
2. The student will preserve maturity of the mind in solving linguistic problems.
3. Develop the thinking ability and apply Quadratic equations.
4. Apply the Analytical Reasoning puzzles to solve linear and circular arrangements

Syllabus for Quantitative Aptitude

Competency 1:

Area : Formulas for Areas - Problems on Areas, **Volumes & Surface Areas :** Problems on   volumes - Problems on Surface Areas, **Races & Games of Skill , Calendars :** Definition of a Leap Year - Finding the number of Odd days - Framing the year code for centuries - Finding the day of any random calendar date , **Clocks :** Finding the angle when the time is given - Finding the time when the angle is known - Relation between Angle, Minutes and Hours - Exceptional cases in clocks , **Stocks & Shares, Permutation and Combinations:** Definition of permutation - Definition of Combinations - Problems on Combinations.

Competency 2:

Probability: Definition of Probability - Problems on coins - Problems on dice - Problems on Deck of cards - Problems on Years. **True Discount, Banker's Discount, Heights & Distances, Odd man out & Series:** Problems on number Odd man out - Problems on letter Odd man out - Problems on verbal Odd man out. **Data Interpretation:** Problems on tabular form - Problems on Line Graphs - Problems on Bar Graphs - Problems on Pie Charts.

Syllabus for Reasoning

Competency 3:

Deductions: Finding the conclusions using Venn diagram method - Finding the conclusions using Venn diagram method - Finding the conclusions using syllogism method. **Connectives:** Definition of a simple statement - Definition of compound statement - Finding the Implications for compound statements - Finding the Negations for compound statements.

Competency 4:

Analytical Reasoning puzzles: Problems on Linear arrangement - Problems on Circular arrangement - Problems on Double line-up - Problems on Selections - Problems on

Comparisons.

Competency 5:

Blood relations: Defining the various relations among the members of a family - Solving Blood Relation puzzles - Solving the problems on Blood Relations using symbols and notations.

Text Books:

1. GL Barrons, Tata Mc Graw Hills, 'Thorpe's Verbal reasoning', LSAT Materials. 2015.
2. R S Agarwal, 'Quantitative Aptitude' S. Chand Company Ltd. 2018.
3. R S Agarwal, 'A Modern approach to Logical reasoning', S chand Company Ltd. 2017.

Reference Books:

1. Abhjit Guha 'Quantitative Aptitude' Tata Mc Graw Hills, 4[th] Edition, 2011.
2. G.L BARRONS 'Quantitative Aptitude'. Tata Mc Graw Hills.

L	T	P	C
3	-	0	-

17AHS20   LEGAL SCIENCES
(Audit Course –II)

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

1. Apply comparative public laws and human rights.

2. Use appropriate Principles of corporate law.

3. Analyse law with scientific methods.

UNIT-I
CONCEPT OF LEGAL SCIENCE: Fundamentals of legal science- law systems in India, comparative public law-law and justice in a globalizing world-Impact of the human rights instruments on domestic law.

UNIT-II
TECHNOLOGY & LEGAL SYSTEMS: Principles of corporate law conjunction-temporal, subordinate clauses complex sentences-intellectual property rights- contract law- cyber law.

UNIT-III
CONSTITUTION AND ADMINISTRATIVE LAW: Minorities law-human rights-international and national sphere-media law-Health law-globalization vis-à-vis human rights-significance of human rights.

UNIT-IV
HUMAN RIGHTS INTERNATIONAL AND NATIONAL SPHERE:
Human rights with special reference to right to development-rights of disadvantaged and vulnerable groups-critical analysis-cultural relativism and human rights-human rights in the Indian sphere-an over view-constitution and the analysis of preamble-social action litigation and the role of Indian judiciary-critical examination of the human rights council and human rights commission-treaty mechanism with respect to covenants ICESCR and ICCPR-convention on the elimination of discrimination against women and child rights convention.

UNIT-V
SCIENTIFIC METHODOLOGY IN LEGAL SYSTEMS: The science of research and scientific methodology - analysis of law with scientific methods-scientific approach to socio legal problems, interrelation between speculation-fact and theory building fallacies of scientific methodology with reference to socio legal research-inter-disciplinary research and legal research models-arm chair research vis-a-vis empirical research-legal research-common law and civil law legal systems.

Text Books:
1. Robert Watt, "Concise book on Legal Research", Abe Books Publishers, 1ˢᵗ Edition, 2015.
2. Ram Ahuja, "Research Method", News Way Publishers, 1ˢᵗ Edition, 2012.
3. Goode, Hatt, "Research Methodology", Eastern Limited Publication, 1ˢᵗ Edition reprinted, 2006.

Reference Books:

1. Somekh, C. Lewin, "Research Methods", Vistaar Publications, 1st Edition, 2005.
2. Bhandarkar, "Research Methods, Research Styles and Research Strategies", Wilkinson Publishers, 1st Edition, 2009.

SRI VENKATESWARA COLLEGE OF ENGINEERING AND TECHNOLOGY
(AUTONOMOUS)

II B.Tech – II Semester: EEE, ECE, CSE & IT   **L   T   P   C**
                                                          3   -   0   -
17AHS21   GENDER SENSITIVITY
(Audit Course –II)

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

1. explain basic concepts relating to gender and to provide logical understanding of gender roles.

2. Analyze present various perspective of body and discourse on power relationship.

3. Develop cultural construction of masculinity and femininity

UNIT-I
INTRODUCTION: Sex and gender; types of gender, gender roles and gender division of labour, gender stereotyping and gender discrimination-the other and objectification, male gaze and objectivity

UNIT-II
GENDER PERSPECTIVES OF BODY: Biological-phenomenological and socio-cultural perspectives of body, body as a site and articulation of power relations- cultural meaning of female body and women's lived experiences -gender and sexual culture.

UNIT-III
SOCIAL CONSTRUCTION OF FEMININITY: Bio-social perspective of gender, gender as attributional fact, essentialism in the construction of femininity, challenging cultural notions of femininity.
Butler, Douglas, Faucault and Haraway, images of women in sports, arts, entertainment and fashion industry, media and feminine identities.

UNIT-IV
SOCIAL CONSTRUCTION OF MASCULINITY: Definition and understanding of masculinities, sociology of masculinity, social organization of masculinity and privileged position of masculinity, politics of masculinity and power, media and masculine identities.

UNIT-V
WOMEN'S STUDIES AND GENDER STUDIES: Evolution and scope of women's studies, from women's studies to gender studies: A paradigm shift, women's studies vs. gender studies, workshop, gender sensitization through gender related.

Text Books:
1. Women's studies in India by Mary E. John : A Reader Publisher, Penguin Books.

2. Gender Studies by Sujata Sen – Pearson Educatio publisher – 2012.

Reference Books:

1. Alolajis. Mustapha, Sara Mils, "Gender Representation in Learning Materials", Pearson Publications, 1st Edition 2015.

2. Gender, "How Gender Inequality Persists in the Modern World", Oxford University Press, Reprinted Edition, 2011.
3. William M Johnson, "Recent Reference Books in Religion", Duke University Publications, Reprinted Edition, 2014.

SRI VENKATESWARA COLLEGE OF ENGINEERING AND TECHNOLOGY
(AUTONOMOUS)

II B.Tech – II Semester EEE, ECE, CSE & IT   **L   T   P   C**

                                                        3   -   0   -

17AHS22   FRENCH LANGUAGE
(Audit Course –II)

Outcomes:

After completion of the course the student will be able to

1. Acquire language skills
2. Communicate in French which is the second most commonly used language worldwide.

UNIT-I

INTRODUCTION & PRESENTATION: Conversation, Introduction, Grammar verb "appeller", Alphabets & Accents Culture, Formal & Informal – Use of 'tu' and 'vous', Map of France: Geographical & Administrative Greeting & Taking leave, presenting oneself, someone to someone, Asking & giving identity Grammar- Definite articles (le,la,les, l'),Pronouns-Verb 'avoir' and 'etre', Negatives (ne ~ pas) Days of the week, Months of the year, Numbers, Nationality, Profession, Making a visiting Card Salutations & Taking leave, Gestures & Handshakes.

UNIT-II

RENDEZVOUS: Conversation, Approaching someone, Tele conversation, Give direction to places, Buying a train ticket. Grammar-Verbs "aller", "partir", "venir", "prendre", Definite & Indefinite Articles, Numbers the formula to write a post card, Culture, Life in France.

UNIT-III

AGENDA & INVITATION: Conversation, Time, Fixing a meeting, Grammar-Pronoun 'on', Expression of quantity with partitif article. Possessive Adjectives, verbs "finir" and "faire", Alimentation, Moments of the day, from morning to night. Culture, Punctuality, Good moments of the day, Inviting someone, Accepting & Refusing Invitations, Family tree, Describing a house- interior, Grammar-Passe Compose, Verbs "savoir", "vouloir" , "pouvoir", Future Proche, Pronom Tonique Consists of exercises and images to be used in the class by the students.

UNIT-IV

VACATION & SHOPPING:

Describing an event in Past tense, Reservations at a Hotel, Describing a person – Physical & Moral, Expressing opinion, Grammar- Imparfait & Passe Compose, Indication of time – Depuis, pendant, Gestures – Polite & Impolite, A French vacation, Culture, Making a purchase, Choosing & Paying, Trying a dress on, Talking about weather, Understanding a Weather Bulletin, Grammar-Adjectives, Comparison, Dress & weather, Dialogue between a client and an employee of a store, Culture, Money in everyday life in France- Parking ticket / telephone card.

UNIT-V

ITINERARY, EXCURSION & WEEKEND: Asking for way / direction, Giving directions, Giving order / advice / prohibition, Numbers – ordinal Verbs of Movement, Reservation at a

restaurant, Taking an order / Asking for bill(Restaurant)Expression of Quantity, Alimentation – portions, Shopping list (portions),Making Suggestion & Proposal, Going for an outing, Acceptance & Refusal of an invitation, Giving arguments / favour & against, Subjonctif-Il faut, pour que Invitation – Refusal or acceptance, A French Weekend.

Text Books:
1. CAMPUS 1 Methode de Francais, Jacques Pecheur et Jacky Girardet, CLE International Paris 2002.
2. La France de toujours, Nelly Mauchamp; CLE international.
3. Sans Frontireres - Vols. 1, 2, & 3 – Hachette.

Reference Books:

3. Declic 1; Jacques Balnc, Jean-Michel Cartier, Pierre Lederlion; CLE International.
4. Nouveau Sans Frontieres – Vols. 1, 2 & 3.
5. Cours de langue et de civilisation Francaise – Hachette.

SRI VENKATESWARA COLLEGE OF ENGINEERING AND TECHNOLOGY (AUTONOMOUS)

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II B.Tech II Semester -CSE   -   2   -   -

Code : 17AME65   **Engineering Projects in Community Services**

COURSE OUTCOMES: At the end student will be able to
1.Apply disciplinary knowledge to real and possibly ill-defined problems.
2.Collaborate with people from other disciplines and develop an appreciation for cross-disciplinary contributions in design.
3.Develop the broad set of skills needed to be successful in the changing global workplace and world.
4.Identify the customer requirements and community demands.
5.Design the products useful for the community service.
6.Communicate effectively with widely varying backgrounds.
7.Provide significant service to the community while learning; gain an understanding of the role that engineering (and their discipline) can play in society.
8.implement engineering and social ethics.

UNIT - I
Project Survey and Identification: Introduction to Epics, importance of multi disciplinary projects, rural area Survey (societal issues), interaction with NGOs, Idea Generation and Group Discussions. Identification of objectives and outcome deliverables of the project and need of the community partner.

UNIT – II
Project Initiation and Specification: Market Survey (similar products), Customer Requirements, Design Constraints, Engineering Specifications of the product, Design Skill development Sessions - Different kinds of design thinking and its challenges, overall understanding of design processes.

UNIT – III
Design Skill Development for Implementation: Basics of design process, Concept Design Process, problem solving and Mathematical Analysis, Concept Testing, Design fixation, Design start- to- finish process, proposed methodology, and prototype Design activity.

UNIT – IV
Project Design for Deployment: code of ethics, Create Prototype, model refinement, product development, testing with Customer, Design documentation, identifying delivery phases of the design process and model demonstration.

UNIT – V
Project Review and Delivery: Effective delivery, Design review Presentations, Making Projects User-Ready, feedback from community partners, and extension of the product for consultancy work.

TEXT BOOKS:
1.How to Conduct Surveys: A Step-by-Step Guide, Fink, Arlene. 1998. Sage Publications
2.Examples of good practice in Special Needs Education & Community-Based Programs, UNESCO PRESS
3.Project Management , Gary R. Heerkens, McGraw-Hill
4.Engineering Design-A Systematic Approach, Gerhard Pahl, Wolfgang Beitz, Jörg Feldhusen, Karl-Heinrich Grote ,ISBN: 978-1-84628-318-5 (Print) 978-1-84628-319-2

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C01	2	2	2										2	2
C02	2	1	2										2	2
C03	1	2	1										2	1
C04	2	2	2										1	2
C05	2	1	2										2	2

SRI VENKATESWARA COLLEGE OF ENGINEERING AND TECHNOLOGY (AUTONOMOUS)

	L	**T**	**P**	**C**

III B.Tech I Semester-CSE   **3**   **1**   **-**   **3**

Code : 17ACS19   **Theory of Computation**

Outcomes:

At the end of the course the student will be able to:

1. explain formal machines, languages and computations.
2. Design finite state machines for acceptance of strings.
3. Design context free grammars for formal languages.
4. Develop pushdown automata accepting strings.

UNIT-I

Fundamentals : Strings, Alphabet, Language, Operations, Finite State Machine, Definitions, Finite Automaton Model, Acceptance of Strings, Deterministic Finite Automaton and Non Deterministic Finite Automaton, Transition Diagrams and Language Recognizers.

Finite Automata: NFA with Epsilon,transitions , Significance, Acceptance of Languages, Conversions and Equivalence: Equivalence between NFA with and without Epsilon,transitions, NFA to DFA conversion, Equivalence and Minimization of Automata, Finite Automata with Output,Moore and Mealay machines.

UNIT-II

Regular Expressions: The Operators of Regular Expressions, Building Regular Expressions, Precedence of Regular Expression Operators, Finite Automata and Regular Expressions, Converting DFA's to Regular Expressions by Eliminating States, Converting Regular Expressions to Automata, Applications of Regular Expressions, Algebraic Laws for Regular Expressions, Proving Languages Not to be Regular, Closure Properties of Regular Languages.

UNIT-III

Context Free Grammars: Regular Grammars,Right Linear and Left Linear Grammars, Derivations Using a Grammar, Leftmost and Rightmost Derivations, The Language of a Grammar, Sentential Forms, Parse Tress, Constructing Parse Trees, Applications of Context,Free Grammars, Chomsky Normal form, Greiback Normal form, Pumping Lemma for Context Free Languages, Ambiguous Grammars, Removing Ambiguity From Grammars.

UNIT -IV

Push Down Automata: Push Down Automata, Definition, Model, A Graphical Notation for PDA's, Instantaneous Descriptions of a PDA, The Languages of a PDA, Acceptance of CFL by Final State and Acceptance by Empty State and their Equivalence. Equivalence of PDA's and CFG's, Introduction to DCFL and DPDA.

Turing Machine : Turing Machine, Definition, Model, Design of TM, Computable Functions, Notation for the Turing Machine, Instantaneous Descriptions for the Turing Machines, Transition Diagrams for Turing Machines, The Language of a Turing Machine, Recursively Enumerable Languages, Church's hypothesis, Types of Turing Machines (Proofs not required).

UNIT- V

Computability Theory : Chomsky Hierarchy of Languages, Linear Bounded Automata and Context Sensitive Language, LR(0) grammar, Post Correspondance problem, An Undecidable Problem That is RE, Complements of Recursive and Recursively Enumerable Languages, Turing Reducibility, The Universal Language, Undecidability of the Universal Language.

TEXT BOOKS:

1. Introduction to Automata Theory, languages and Computation, 2nd Edition, John E. Hopcroft,

    Rajeev Motwani, Jeffrey D Ullman ,Pearson, 2008.

2. Introduction to Theory of Computation, 3rd Edition, Michael Sipser, Thomson Course
    Technology, 2012.

REFERENCE BOOKS:

1. Introduction to Computer Theory, Daniel I.A. Cohen, John Wiley, 2007.

2. Theory of Computer Science: Automata, Languages and Computation, K L P Mishra and
    N Chandrasekharan, 2006.

3. Introduction to languages and the Theory of Computation, John C Martin, TMH, 2007.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C01	3	3		1	-	-	-	-	-	-	-	-	3	-
C02	3	2	2	-	-	-	-	-	-	-	-	-	3	1
C03	3	1	3	2	1	-	-	-	-	-	-	-	-	2
C04	-	-	1	3	1	-	-	-	-	-	-	-	-	3

SRI VENKATESWARA COLLEGE OF ENGINEERING AND TECHNOLOGY
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III B.Tech I Semester -CSE   3   -   -   3

Code : 17ACS20   **Software Engineering**

Outcomes:

Successful completion of this course, students should be able to

1. Identify and evaluate the scope and necessity of software engineering and life cycle models
2. Apply requirement and design engineering concepts.
3. Design the product and process metrics in software quality towards application in software projects.
4. Identify the necessity of risk management in software quality assurance.

UNIT-I

INTRODUCTION TO SOFTWARE ENGINEERING: The evolving role of software, software Myths. A Generic View of Process: Software Engineering, A layered Technology, A process framework, The Capability Maturity Model Integration (CMMI).Process Models: The waterfall model, Incremental process model, Evolutionary process models, SCRUM Model, The Unified process.

SOFTWARE REQUIREMENTS: Functional and non functional requirements, user requirements, system requirements, Interface specification, the software requirements document.

UNIT-II

REQUIREMENTS ENGINEERING PROCESS: Requirements Engineering Tasks, Feasibility studies, Requirements elicitation and analysis, Requirements validation, Requirements management. System Models: Context models, Behavioral models, Data models, Object models, structured methods. **DESIGN ENGINEERING:** Design process and Design quality, Design Concepts, The Design Model.

CREATING AN ARCHITECTURAL DESIGN: Software Architecture, Data Design, Architectural Styles and patterns.

UNIT-III

PERFORMING USER INTERFACE DESIGN: The Golden Rules, User Interface Analysis and Design, Design Evolution.

TESTING STRATEGIES: A strategic Approach to Software Testing, Test strategies for conventional software, Black,Box and White Box Testing, Validation Testing, System Testing.

UNIT –IV PRODUCT METRICS: Software Quality, Metrics for Analysis Model, Metrics for Design Model, Metrics for Source Code, Metrics for Testing, Metrics for Maintenance.

METRICS FOR PROCESS AND PROJECTS: Software Measurement, Metrics for Software Quality.

UNIT-V RISK MANAGEMENT: Software Risks, Risk Identification, Risk Projection, Risk Refinement, RMMM, RMMM plan.

QUALITY MANAGEMENT: Quality concepts, Software Quality Assurance, Software Reviews, Formal Technical Reviews, Statistical software quality assurance, The ISO 9000 quality standards.

Text Books:

1. Software Engineering, A practitioner's Approach,6th Edition,Roger S. Pressman, McGrawHill International Edition, 2005.
2. Software Engineering, 7th edition, Sommerville, Pearson education, 2004.

Reference Books:

1. Software Engineering, K.K.Agarwal&Yogesh Singh, New Age International Publishers, 2008.
2. Software Engineering an Engineering approach, James F.Peters, WitoldPedrycz, 1999.
3. Software Engineering principles and practice, Waman S Jawadekar, The McGraw,Hill companies, 2004.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C01	3	-	-	-	-	-	-	-	-	-	-	-	3	-
C02	-	2	3	2	-	-	-	-	-	-	-	-	-	2
C03	3	3	3	1	1	-	-	-	-	-	-	-	3	2
C04	3	1	2	3	1	-	-	-	-	-	-	-	3	2

SRI VENKATESWARA COLLEGE OF ENGINEERING AND TECHNOLOGY (AUTONOMOUS)

		L	T	P	C
III B.Tech I Semester -CSE		3	1	-	3

Code : 17ACS21   **Computer Networks**

Outcomes:

After completing this course the student will be able to:

1. Describe various components and topologies of computer networks
2. Use the network reference model layered structure for real time applications.
3. Implement various routing protocols from different layers.
4. Design, implement and test an efficient algorithmic solution for the give problem
5. Analyze network security mechanics and other issues in the application layer

UNIT- 1

Introduction: Uses of Computer Networks, Network Hardware, Network Topologies, Network Software, References Models. Examples of Networks: Internet, ARPANET, Third Generation Mobile Phone Networks.

The Data Link Layer: Data link Layer Design Issues, Error Detection and Correction,Elementary Data Link Protocols, and Sliding Window Protocols.

UNIT-II

The Medium Access Control Sublayer: Channel allocation Problem, MultipleAccess Protocols, Ethernet, Ethernet Cabling, Ethernet MAC Sublayer Protocol. Binary Exponential Back off Algorithm, Ethernet Performance, Wireless LANs, the 802.11 Protocol Stack, Physical Layer, MAC Sublayer Protocol, 802.11 Frame Structure, Broad Band Wireless.

UNIT-III

The Network Layer: Network Layer Design Issues, Routing Algorithms, Congestion Control Algorithms, Internetworking, Network Layer in the Internet.

UNIT-IV

The Transport Layer: Transport Service, Elements of Transport Protocols, Internet Transport Protocols: UDP, Internet Transport Protocols: TCP.

UNIT-V

The Application Layer: DNS, Domain Name System, Electronic Mail. World Wide web, **Network Security:** Cryptography, Symmetric,Key Algorithms, Public,Key Algorithms.

TEXT BOOK:

1. Computer Networks, Fifth Edition, Andrew S. Tanenbaum, David J Wetherall PearsonEducation, 2011.

REFERENCE BOOKS:

1. Computer Communications and Networking Technologies, Michael A. Gallo, William M. Hancock, Cengage Learning,2001.
2. Data Communications and Networking, Fifth Edition, Behrouz A. Forouzan, TataMcGraw Hill,2012.
3. Computer Networking: A Top,Down Approach Featuring the Internet, Six Edition,James F.Kurose, K.W.Ross, Pearson Education,2013
4. http://nptel.ac.in/courses/106105081/1.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C01	3	-	-	-	-	-	-	-	-	-	-	-	2	-
C02	3	3	1	-	-	-	-	-	-	-	2	-	2	-
C03	3	2	3	-	1	-	-	-	-	-	2	3	2	-
C04	-	1	2	1	1	-	-	-	-	-	-	2	-	1
C05	-	-	-	1	1	-	-	-	-	-	-	1	-	1

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	L	T	P	C

III B.Tech I Semester -CSE   3   1   -   3

Code : 17ACS22   Data ware Housing and Data Mining

Outcomes:

At the end of this course, students should be able to:

1. Acquire a thorough knowledge in Data Warehousing architecture and implementation.
2. Apply data prepressing techniques using modern tools.
3. Create association rule for mining the data in real time.
4. Design and deploy appropriate classification and cluster high dimensional data for better organization of data.
5. Evaluate various mining techniques on complex data objects.

UNIT-I

Data Warehousing and Business Analysis: , Data warehousing Components –Building a Data warehouse –Data Warehouse Architecture – DBMS Schemas for Decision Support – Data Extraction, Cleanup, and Transformation Tools –Metadata – reporting – Query tools and Applications – Online Analytical Processing (OLAP) – OLAP and Multidimensional Data Analysis,ETL(Extract-Transform-Load).

UNIT-II

Data Mining: , Data Mining Functionalities – Data Preprocessing – Data Cleaning – Data Integration and Transformation – Data Reduction – Data Discretization and Concept Hierarchy Generation, Architecture Of a Typical Data Mining Systems, Classification of Data Mining Systems.

Association Rule Mining: , Efficient and Scalable Frequent Item set Mining Methods – Mining Various Kinds of Association Rules – Association Mining to Correlation Analysis – Constraint,Based Association Mining.

UNIT-III

Classification and Prediction: , Issues Regarding Classification and Prediction – Classification by Decision Tree Introduction – Bayesian Classification – Rule Based Classification – Classification by Back propagation – Support Vector Machines – Associative Classification – Lazy Learners – Other Classification Methods – Prediction – Accuracy and Error Measures – Evaluating the Accuracy of a Classifier or Predictor – Ensemble Methods – Model Section.

UNIT-IV

Cluster Analysis: , Types of Data in Cluster Analysis – A Categorization of Major Clustering

Methods – Partitioning Methods – Hierarchical methods – Density,Based Methods – Grid,Based Methods – Model,Based Clustering Methods – Clustering High,Dimensional Data – Constraint,Based Cluster Analysis – Outlier Analysis.

UNIT-V
Mining Object, Spatial, Multimedia, Text and Web Data:
Multidimensional Analysis and Descriptive Mining of Complex Data Objects – Spatial Data Mining – Multimedia Data Mining – Text Mining – Mining the World Wide Web.

Text Book
1. Jiawei Han, Micheline Kamber and Jian Pei"Data Mining Concepts and Techniques", Third Edition, Elsevier, 2011.

Reference Books
1. Alex Berson and Stephen J. Smith "Data Warehousing, Data Mining & OLAP", Tata McGraw – Hill Edition, Tenth Reprint 2007.
2. K.P. Soman, Shyam Diwakar and V. Ajay "Insight into Data mining Theory and Practice", Easter Economy Edition, Prentice Hall of India, 2006.
3. G. K. Gupta "Introduction to Data Mining with Case Studies", Easter Economy Edition, Prentice Hall of India, 2006.
4. Pang,Ning Tan, Michael Steinbach and Vipin Kumar "Introduction to Data Mining", Pearson Education, 2007.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C01	2	-	-	-	-	-	-	-	-	-	-	-	-	2
C02	1	2	3	-	-	-	-	-	-	-	-	-	3	2
C03	3	2	3	1	-	-	-	-	-	-	-	-	3	-
C04	-	2	3	1	1	-	-	-	-	-	-	-	3	-
C05	-	-	-	1	1	-	-	-	-	-	-	-	-	2

SRI VENKATESWARA COLLEGE OF ENGINEERING AND TECHNOLOGY (AUTONOMOUS)

	L	T	P	C
III B.Tech I Semester -CSE	3	-	-	3

Code : 17AEC29　　　　**Microprocessors & Interfacing**

Outcomes:

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

1. define architecture and programming of any other microprocessor or microcontroller.
2. relate interface various peripherals.
3. List special features of latest microprocessors.
4. develop VLSI, Embedded systems, Industrial and real time application.
5. Use the built- in devices of 8051 Microcontroller in any application.

UNIT-I

8086 MICROPROCESSOR

History of Microprocessors, Memory Segmentation, 8086 Microprocessor: Architecture, special functions of general purpose registers, flag register and functions of flags, addressing modes and instruction set of 8086.

ASSEMBLY LANGUAGE PROGRAMING

Assembler directives, procedures and macros. Assembly language programs (8086) for addition, subtraction, multiplication, division, sorting, searching, Evaluation of arithmetic expressions.

UNIT-II:

INTERFACING MEMORY AND DMA CONTROLLER

Pin diagram of 8086-Minimum mode and maximum mode of operation. Timing diagram. Memory Interfacing to 8086 (Static RAM & EPROM). Need for DMA. DMA data transfer Method and 8257 DMA Controller.

INTERFACING I/O PORTS AND APPLICATIONS

Keyboard display controller (8279) and interfacing to 8086,PPI 8255 – various modes of operation and interfacing to 8086, , Stepper Motor interfacing.

UNIT-III

INTERRUPTS: Interrupt structure of 8086. Vector interrupt table. Interrupt service routines. Introduction to DOS and BIOS interrupts. 8259 PIC Architecture and interfacing cascading of interrupt controller and its importance.

SERIAL DATA TRANSFER: Asynchronous and Synchronous Serial Data Transfer schemes. 8251 USART architecture.

UNIT-IV **ADVANCED MICROPROCESSORS:** Introduction to 80286, Salient Features of 80386, Real and Protected Mode Segmentation & Paging, Salient Features of Pentium, Branch Prediction and Overview of RISC Processors.

UNIT-V:

8051 MICROCONTROLLER:

8051 Microcontroller Architecture, Register set of 8051, Memory organization, Addressing modes and Instruction set, simple programs. Interrupt Structure of 8051, Timer modes, Serial Port Operation.

TEXT BOOKS:

1. *Advanced Microprocessor and Peripherals*, A.K.Ray and K.M.Bhurchandi, TMH, 2000.
2. *Micro Controllers*, Deshmukh, Tata McGraw Hill Edition,2005.

REFERENCES:

1. *Micro Processors & Interfacing*, Douglas V. Hall, 2007.
2. The 8088 and 8086 Micro Processors Walter, A.Triebel & Avtar Singh, 4th Edition – PHI, 2003.
3. *Micro Computer System 8086/8088 Family Architecture, Programming and Design*, Liu and G.A. Gibson, 2nd Edition, PHI, 1987.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C01	3	2	2	2	2	-	-	-	-	-	-	-	3	2
C02	3	2	2	2	1	-	-	-	-	-	-	-	2	2
C03	3	2	2	3	3	-	-	-	-	-	-	-	3	3
C04	3	2	2	2	1	-	-	-	-	-	-	-	3	3
C05	3	2	2	2	2	-	-	-	-	-	-	-	2	2

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(AUTONOMOUS)

	L	T	P	C

III B.Tech I Semester -CSE   3   -   -   3
Code : 17ACS23   **Computer Graphics**
(Professional Elective-I)

Outcomes:
At the end of the course the student will be able to:
1. Demonstrate different computer graphics applications.
2. Design algorithms to render different geometric shapes like line, circle, and   ellipse.
3 Analyze the issues in projecting graphical objects and identify solutions
4. Compare different 2D, 3D viewing and clipping techniques and Analyze the issues in
   projecting graphical objects and identify solutions
5. Develop solutions to problems related to computer graphics and animations by creating,
   rendering and projecting the Graphical objects

UNIT-I
Introduction: Basic concepts, Application areas of Computer Graphics, overview of graphics systems , video,display devices, raster,scan systems, random scan systems , graphics monitors and work stations and input devices, graphics standards.

UNIT-II
Output primitives: Points and lines, line drawing algorithms – DDA, Bresenham's, mid, point circle and ellipse algorithms, Filled area primitives , Scan line polygon fill algorithm, inside,outside tests, boundary,fill and flood,fill algorithms.

UNIT-III
2,D geometrical transforms: Translation, scaling, rotation, reflection and shear transformations, matrix representations and homogeneous coordinates, composite transforms, transformations between coordinate systems.
2,D viewing: The viewing pipeline,, window to view, port coordinate transformation, viewing functions, Cohen,Sutherland line clipping algorithms, Sutherland –Hodgeman polygon clipping algorithm.

UNIT-IV:
Three Dimensional Concepts: 3,D Display method, 3,D object representation: Polygon surfaces, Curved lines and surfaces, quadric surfaces, spline representation, Bezier curve and B,spline curves,Beizer and B,spline surfaces, Hermite curve.
3,D Geometric transformations: Translation, rotation, scaling, reflection and shear transformations, composite transformations.

UNIT-V

3,D Viewing: Viewing pipeline, viewing coordinates, projections, clipping.

Computer animation: Animation: Introduction, Historical background, Uses of animation, Principles of Animation, Design of animation sequence,Computer based animation, Raster animations, motion specifications, Rendering algorithms, Animation file formats, animation software.

TEXT BOOKS:

1. Donald Hearn and M.Pauline Baker,"*Computer Graphics C version"*,2nd edition, , Pearson Education,1997.
2. Foley, VanDam, Feiner and Hughes ,"*Computer Graphics Principles & practice*", second edition in C, Pearson Education,1995.

REFERENCE BOOKS:

1. Steven Harrington,"*Computer Graphics*", TMH,1983
2. Zhigandxiang, Roy Plastock ,"*Computer Graphics Second edition*", Schaum's outlines, Tata Mc, Graw hill edition,2000.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C01	3	-	-	1	-	-	-	-	-	-	-	-	2	-
C02	3	1	1	1	1	-	-	-	-	-	-	-	2	1
C03	-	3	3	1	1	-	-	-	-	-	-	-	1	2
C04	-	2	2	1	1	-	-	-	-	-	-	-	3	3
C05	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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		L	T	P	C
III B.Tech I Semester -CSE		3	-	-	3

Code : 17ACS24   Principles of Programming Languages
(Professional Elective-I)

Outcomes:
At the end of the course, students will be able to:
1. Select appropriate programming language for problem solving.
2. Design new programming language constructs.
3. Compare the features of subprograms.
4. Implement the concepts of concurrency, Exception handling and Logic programming.
5. Identify the constructs in Functional Programming and Scripting languages and choose the necessary constructs in new programming languages.

UNIT- I
Preliminary Concepts: Reasons for studying, concepts of programming languages, Programming domains, Language Evaluation Criteria, influences on Language design, Language categories. Influences on Language design, Language categories, Language design Trade,offs, Implementation methods, Programming environments.
Syntax and Semantics: Introduction, General problem of describing syntax, Formal methods of describing syntax, describing the meaning of programs – Denotational semantics and axiomatic semantics for common programming language features.

UNIT- II
Variables, Data types, Expressions and Control Structures: Introduction to Programming concepts: Names, Variables, The concept of binding, Type checking, Strong typing, Type compatibility, Scope, Scope and lifetime, Referencing environments, Named constants
Data types: Introduction, primitive, Character string, user defined ordinal, array, associative array, record, union, pointer and reference types

Expressions: Arithmetic relational and Boolean expressions, Type conversions, Short circuit evaluation, Assignment Statements, Mixed,mode arithmetic. Control Structures –Selection, Iterative, Unconditional branching, guarded commands.

UNIT-III
Subprograms: Fundamentals of sub,programs, Design issues of subprograms, Local referencing environments, Parameter passing methods, Generic sub,programs: Generic functions in C++, Generic methods in Java, Design issues for functions, Co,routines, General semantics of Calls and Returns, Design issues for functions in LISP,PERL .

UNIT- IV
Concurrency: Subprogram level concurrency, semaphores, monitors, message passing, Java

threads, C# threads.

Exception handling: Exceptions, exception Propagation, Exception handler in Java. **Logic Programming Language:** Introduction and overview of logic programming, basic elements of prolog, application of logic programming.

UNIT- V

Functional Programming Languages: Introduction, fundamentals of FPL, LISP, ML, Haskell, application of Functional Programming Languages and comparison of functional and imperative Languages.

Scripting Language: Pragmatics, Key Concepts, Case Study: Python – Values and Types, Variables, Storage and Control, Bindings and Scope, Procedural Abstraction, Data Abstraction, Separate Compilation, Module Library.

TEXT BOOKS:

1. Robert W. Sebesta, Concepts of Programming Languages, Eighth Edition, Pearson Education,
   2008/2010.
2. D. A. Watt, Programming Language Design Concepts, Wiley Dreamtech, rp,2007.
3. John C. Mitchell, Concepts in Programming Languages, Cambridge University Press, 2003.

REFERENCE BOOKS:

1. A.B. Tucker, R.E. Noonan , Programming Languages, Second Edition,TMH.
2. K. C.Louden,Programming Languages, Second Edition, Thomson, 2003.
3. W.F. Clocksin and C.S.Mellish,Programming in Prolog, Fifth Edition, Springer.
4. M.Lutz,Programming Python, Third Edition, O'reilly, SPD, rp,2007.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C01	3	2	2	3	2								2	2
C02	3	1	2	2	3								1	1
C03	2	2	1	3	3								2	2
C04	3	1	2	2	1								2	1
C05	3	2	1	2	2								2	2

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III B.Tech I Semester -CSE   3   -   -   3

Code : 17ACS25   Distributed Operating Systems
(Professional Elective-I)

Outcomes:
1. Explain issues of terms of scheduling for user level processes/threads.
2. Use concepts of deadlock in operating systems and how they can be managed / avoided. Design and implement network computational techniques using distributed operating system.
3. Classify the types of security problems faced by operating systems and how to minimize these problems.
4. Explain organization and synchronization of distributed operating systems.
5. Apply the knowledge of communication in distributed systems and how it can be used in remote procedure calls, remote objects and message, oriented communication.

UNIT- I
Introduction to Distributed Systems: What is a Distributed System? Goals, Hardware concepts, software concepts, design issues.

UNIT- II
Communication in Distributed Systems, Layered Protocols, and ATM networks, the client – server model, remote procedure call, group communication.

UNIT-III
Synchronization in Distributed System: Clock synchronization, mutual exclusion, election algorithms, atomic transactions, deadlocks in distributed systems.

UNIT- IV
 Process and processors in Distributed System:
Threads, system models, processors allocation, scheduling in distributed system, fault tolerance, real time distributed system

Distributed File Systems: Distributed file system design, distributed file system implementation, trends in distributed file system.

UNIT -V
 Distributed Shared Memory: Introduction, What is Shared memory? Consistency models, page based distributed shared memory, shared –variable distributed shared memory, object

based distributed shared memory.

Text Books:

1. Andrew S. Tanenbanm ,"Distributed Operating Systems", Pearson Education,2007.

REFERENCE BOOKS:

1. Makes Singhal and Niranjan G. Shivaratna ,"Advanced Concepts in Operating Systems",2008,.

2.Modern Operating Systems, Andrew S Tanenbaum, Second Edition.2009

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C01	3	2	2	1	2								2	2
C02	1	1	1	1	2								1	1
C03	1	2	1	2	1								2	1
C04	2	1	2	2	2								2	2
C05	1	2	2	1	2								1	2

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III B.Tech I Semester -CSE	3	-	-	3

Code : 17ACS26   Relational Database management Systems
(Professional Elective-I)

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

1. Select the appropriate high-performance database like parallel and distributed database
2. Represent the data using XML database for better interoperability
3. apply new trends such as: XML in relational databases, spatial data,
   multimedia databases.
4. Design the process and optimize database transactions.

UNIT- I
OBJECT BASED DATABASES: Overview , complex Data Types , Structured Types and Inheritance in SQL , Table Inheritance , Array and Multiset Types in SQL – Object,Identity and Reference Types in SQL , Implementing O,R features , Persistent Programming Languages , Object Relational Mapping , Object Oriented versus Object Relational.

UNIT-II
XML: Motivation , Structure of XML data , XML Document schema , Querying and Transformation , Application Program Interface to XML , Storage of XML data , XML applications.

UNIT-III
Query processing: Overview , Measures of Query Cost , Selection operating , sorting , Join operation ,   Other Operations , Evaluation of Expressions.
Query Optimization: Overview , Transformation of Relational Expressions , Estimating Statistics of Expressing Results , Choice of Evaluation plans , Materialized Views.

UNIT-IV
Parallel Databases: Introduction , I/O Parallelism , Interquery Parallelism – Intraquery Parallelism, Interoperation Parallelism , Query Optimization , Design of Parallel Systems.
Distributed Databases: Homogenous and Heterogeneous Databases , Distributed data storage, Distributed Transactions , Commit Protocols , concurrency Control in Distributed Databases –Availability , Distributed Query Processing , Heterogeneous Distributed Databases , cloud Based Databases , Directory system.

UNIT-V
Advanced Application development: Performance Tuning , Performance Benchmarks , Other Issues in Application Development – Standardization.
Spatial and Temporal Data and Mobility: Motivation, Time in Databases – spatial and

Geographical Data , Multimedia Databases , Mobility and Personal databases.

TEXT BOOKS:
1. Abraham Silberschatz, Henry F. Korth, S. Sudharshan, *"Database System Concepts"*, Fifth Edition, Tata McGraw Hill, 2006.
2. R.Elmasri, S.B.Navathe, Somayajulu, Gupta, "Fundamentals of Database Systems", Pearson Education, Fourth Edition, 2006.

REFERENCE BOOKS:
1. C.J.Date, A.Kannan and S.Swamynathan, "An Introduction to Database Systems", Eighth Edition, Pearson Education, 2006.
2. Raghu Ramakrishnan, Johannes Gehrke, "Database Management Systems", McGraw Hill,Third Edition 2004.
3. Thomas Cannolly and Carolyn Begg, "Database Systems, A Practical Approach to Design, Implementation and Management", Third Edition, Pearson Education, 2007.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C01	3	3	2	2									2	2
C02	3	2	1	1									1	2
C03	2	2	2	2									1	1
C04	3	3	1	2									2	2
C05	3	2	2	1									2	1

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III B.Tech I Semester-CSE   3   -   -   3

Code : 17ACS27   **Advanced Computer Architecture**
                              (Professional Elective-I)

Outcomes:
1. explain parallel processing and the relationship between parallelism and performance
 2. evaluate performance Metrics, Measures and Parallel Processing Applications
3. apply Processors and Memory Hierarchy technologies.
4. define Pipeline Processors Multiprocessor System Interconnects, Cache Coherence

UNIT, I

Parallel Computer Models, The state of computing, multiprocessors and multicomputers, multivector and SIMD Computers, PRAM and VLSI Models, Program and Network Properties: Conditions of Parallelism, Program Partitioning and Scheduling, Program Flow Mechanisms, System Interconnect Architectures

UNIT-II

Principles of scalable performance, Performance metrics and measures, Parallel Processing Applications, Speedup Performance Laws, Scalability Analysis and Approaches,

UNIT-III

Hardware Technologies: Processors and Memory Hierarchy, Advanced Processor Technology, Superscalar and Vector Processors, Memory Hierarchy Technology, Virtual Memory Technology,

UNIT-IV

Bus, Cache, and Shared Memory: Bus Systems, Cache Memory Organizations, Shared Memory Organizations, Sequential and Weak Consistency Models,

UNIT -V

Pipelining and Superscalar techniques, Linear Pipeline Processors, Nonlinear Pipeline Processors,
 Instruction Pipeline Design, Arithmetic Pipeline Design, Superscalar Pipeline Design.
Multiprocessors and Multicomputers: Multiprocessor System Interconnects, Cache Coherence and Synchronization Mechanisms, three Generations of Multicomputers, Message,Passing Mechanisms.

Text Books:

Kai Hwang ,NareshJotwani, "Advanced Computer Architecture, Parallelism, Scalability Programmability" third Edition, Mc Graw Hill Publishing,2008.

Reference Books:

1. Hennessy Patterson, "Computer Architecture, A Quantitative Approach" Fifth Edition, Elsevier,2008.

2.William Stallings , Computer Organization and Architecture, designing for performance, 8th edition, Prentice Hall, NewJersy, 2010.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C01	3	2	1	2									2	2
C02	3	2	1	1									2	1
C03	3	3	2	1									1	2
C04	3	2	1	2									2	2
C05	3	2	2	1									2	1

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	-	-	3	1.5

III B.Tech I Semester -CSE

Code : 17ACS28   **Computer Network Lab**

Outcomes

After completing this course the student will be able to:

1. Implement various routing protocols from different layers.
2. Design, implement and test an efficient algorithmic solution for the give problem
3. Use Network programming concepts in distributed applications.
4. Analyze different networking protocols and its modeling concepts to evaluate network performances.

LIST OF EXPERIMENTS

1. Implementation of the Data Link Layer Framing methods Character Stuffing and Bit stuffing.
2. Implementation of CRC polynomials , CRC 12, CRC 16 and CRC CCIP.
3. Implementation of Sliding Window Protocol Select Repeat ARQ.
4. Implementation of Dijkstra's algorithm for Shortest Path.
5. Implementation Link State Routing algorithm.
6. Program to obtain Routing table for each node using the Distance Vector Routing algorithm of a given subnet.
7. Implementation of encryption & decryption using DES algorithm.
8. Implementation of encryption & decryption mechanisms using RSA algorithm.
9. Design and Analyze the performance of transmission control protocol in different scenario
10. Design and Analyze the performance of a set of local area networks interconnected by switches and hub.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C01	3	-	-	-	-	-	-	-	-	-	-	-	-	1
C02	3	3	1	1	-	-	-	-	-	-	-	-	3	3
C03	3	3	3	3	1	-	-	-	-	-	-	2	3	2
C04	-	-	2	2	1	-	-	-	-	-	-	2	3	-

	L	T	P	C
	-	-	3	1.5

III B.Tech I Semester -CSE
Code: 17AEC34   Microprocessors and Interfacing Lab

LIST OF EXPERIMENTS

Outcomes:

At the end of the course, student will be

1. develop 8086 Assembly Language Programs.
2. Use different peripheral devices.
3. Use keyboard display controller.
4. develop 8051 Assembly Language Programs.
5. Use the built-in devices of 8051 Microcontroller in any application.

*Minimum **Ten** Experiments to be conducted (Minimum **Eight** from Part A and **Two** from Part B)*

Part A

MICROPROCESSORS:

1. ALPs (8086) for addition and subtraction.
2. ALPs (8086) for multiplication and Division.
3. ALPs (8086) for sorting and searching.
4. ALPs (8086) to evaluate arithmetic expressions
5. Logic operations–Shift and rotate–Converting packed BCD to unpacked BCD, BCD to ASCII conversion.
6. String operations – Move block, reverse string, string comparison, Length of string.
7. ALPs (8086) for (i) DOS interrupts (ii) BIOS interrupts
8. ALPs (8086) for square wave and rectangular wave generation using 8255 in I/O mode and BSR mode.
9. Key Board Display Controller (8279)-Write a small program to display a string of characters.
10. Serial communication implementation using USART (8251).
11. Interrupt Controller (8259)-ALP using interrupt request pins of 8259.
12. ALP (8086) for stepper motor control.

Part B

MICRO CONTROLLERS:

1. ALP (8051) to determine the largest and smallest of N bytes.
2. (a) ALP (8051) to multiply a 16-bit number by an 8-bit number.

(b) ALP (8051) to find square root of an 8-bit number.
3. (a) ALP (8051) to determine LCM of two 8- bit numbers.

(b) ALP (8051) to determine GCD of two 8- bit numbers.
4. Timer/Counters (8051) in different modes.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C01	3	3	-	-	-	-	-	-	-	-	-	-	-	-
C02	3	2	-	-	-	-	-	-	3	-	-	-	3	2
C03	-	1	3	2	1	-	-	-		-	-	-	-	-
C04	-	-	3	3	1	-	-	-	-	-	-	-	3	3
C05	-	-	3	1	1	-	-	-	3	-	-	-	3	1

	L	T	P	C
III B.Tech I Semester-CSE	-	-	3	1.5

Code: 17ACS29   Data Ware Housing and Data Mining Lab

Outcomes:

At the end of the course the student will be able to
1.   Analyze data with Weka
2.   Implement the own Classification Data Mining algorithm
3.   Apply weka tools

Description: The business of banks is making loans. Assessing the credit worthiness of an applicant is of crucial importance. You have to develop a system to help a loan officer decide whether the credit of a customer is good, or bad. A bank's business rules regarding loans must consider two opposing factors. On the one hand, a bank wants to make as many loans as possible. Interest on these loans is the banks profit source. On the other hand, a bank cannot afford to make too many bad loans. Too many bad loans could lead to the collapse of the bank. The bank's loan policy must involve a compromise: not too strict, and not too lenient.

To do the assignment, you first and foremost need some knowledge about the world of credit. You can acquire such knowledge in a number of ways.

1. Knowledge Engineering. Find a loan officer who is willing to talk. Interview her and try to represent her knowledge in the form of production rules.

2. Books. Find some training manuals for loan officers or perhaps a suitable textbook on finance. Translate this knowledge from text form to production rule form.

3. Common sense. Imagine yourself as a loan officer and make up reasonable rules which can be used to judge the credit worthiness of a loan applicant.

4. Case histories. Find records of actual cases where competent loan officers correctly judged when, and when not to, approve a loan application. **The German Credit Data**:

Actual historical credit data is not always easy to come by because of confidentiality rules. Here is one such data set, consisting of 1000 actual cases collected in Germany. Credit dataset (original) Excel spreadsheet version of the German credit data (Down load from web).

In spite of the fact that the data is German, you should probably make use of it for this assignment. (Unless you really can consult a real loan officer !)

A few notes on the German dataset

• DM stands for Deutsche Mark, the unit of currency, worth about 90 cents Canadian (but looks and acts like a quarter).

• owns telephone. German phone rates are much higher than in Canada so fewer people own telephones.

• foreign_worker. There are millions of these in Germany (many from Turrkey). It is very hard to get German citizenship if you were not born of German parents.

• There are 20 attributes used in judging a loan applicant. The goal is the classify the applicant into one of two categories, good or bad. **Subtasks : (Turn in your answers to the following tasks)**

1. List all the categorical (or nominal) attributes and the real,valued attributes separately.

2. What attributes do you think might be crucial in making the credit assessment? Come up with some simple rules in plain English using your selected attributes.

3. One type of model that you can create is a Decision Tree , train a Decision Tree using the complete dataset as the training data. Report the model obtained after training.

4. Suppose you use your above model trained on the complete dataset, and classify credit good/bad for each of the examples in the dataset. What % of examples can you classify correctly? (This is also called testing on the training set) Why do you think you cannot get 100 % training accuracy?

5. Is testing on the training set as you did above a good idea? Why or Why not?

6. One approach for solving the problem encountered in the previous question is using cross validation? Describe what cross,validation is briefly. Train a Decistion Tree again using cross,validation and report your results. Does your accuracy increase/decrease? Why?

7. Check to see if the data shows a bias against "foreign workers" (attribute

20),or "personal, status" (attribute 9). One way to do this (perhaps rather simple minded) is to remove these attributes from the dataset and see if the decision tree created in those cases is significantly different from the full dataset case which you have already done. To remove an attribute you can use the preprocess tab in Weka's GUI Explorer. Did removing these attributes have any significant effect? Discuss.

8. Another question might be, do you really need to input so many attributes to get good results? Maybe only a few would do. For example, you could try just having attributes 2, 3, 5, 7, 10, 17 (and 21, the class attribute (naturally)). Try out some combinations. (You had removed two attributes in problem 7. Remember to reload the Arff data file to get all the attributes initially before you start selecting the ones you want.)

9. Sometimes, the cost of rejecting an applicant who actually has a good credit (case 1) might be higher than accepting an applicant who has bad credit (case 2). Instead of counting the misclassifications equally in both cases, give a higher cost to the first case (say cost 5) and lower cost to the second case. You can do this by using a cost matrix in Weka. Train your Decision Tree again and report the Decision Tree and cross,validation results. Are they significantly different from results obtained in problem 6 (using equal cost)?

10. Do you think it is a good idea to prefer simple decision trees instead of having long complex decision trees? How does the complexity of a Decision Tree relate to the bias of the model?

11. You can make your Decision Trees simpler by pruning the nodes. One approach is to use Reduced Error Pruning , Explain this idea briefly. Try reduced error pruning for training your Decision Trees using cross,validation (you can do this in Weka) and report the Decision Tree you obtain? Also, report your accuracy using the pruned model. Does your accuracy increase?

12. (Extra Credit): How can you convert a Decision Tree into "if,then,else rules". Make up your own small Decision Tree consisting of 2,3 levels and convert it into a set of rules. There also exist different classifiers that output the model in the form of rules , one such classifier in Weka is rules.PART, train this model and report the set of rules obtained. Sometimes just one attribute can be good enough in making the decision, yes, just one ! Can you predict what attribute that might be in this dataset? OneR classifier uses a single attribute to make decisions (it chooses the attribute based on minimum error). Report the rule obtained by training a one R classifier. Rank the performance of j48, PART and one R.

13. Derive association rules from the following dataset.

Outlook	Temperature	Humidity	Windy	Play
Sunny	Hot	High	False	No
Sunny	Hot	High	True	No
Overcast	Hot	High	False	Yes
Rainy	Mild	High	False	Yes
Rainy	Cool	Normal	False	Yes
Rainy	Cool	Normal	True	No
Overcast	Cool	Normal	True	Yes
Sunny	Mild	High	False	No
Sunny	Cool	Normal	False	Yes
Rainy	Mild	Normal	False	Yes
Sunny	Mild	Normal	True	Yes
Overcast	Mild	High	True	Yes
Overcast	Hot	Normal	False	Yes
Rainy	Mild	High	True	No

14. Perform Clustering on Weather nominal data set

i. Open Weka and Load the data set editor. Get familiarize with the editor operations.

a. Load the weather. Nominal dataset. Use the filter Weka. Unsupervised, instance. Remove with Values to remove all instances in which the humidity attribute has the value high. To do this, first make the field next to the Choose button show the text Remove with Values. Then click on it to get the Generic Object .Editor window, and figure out how to change the filter settings appropriately.

ii. Choosing k,means clustering algorithm for clustering use the Weather nominal data set (.arff) performs clustering with a Euclidean distance functions and visually inspect the nature of the clusters.

15. Classification: Choosing an appropriate filter for classification use the Weather
   nominal data set (.arff) perform classification and visualize the classification
   tree.
   Task Resources:
   Andrew Moore's Data Mining Tutorials (See tutorials on Decision Trees and Cross Validation)

   - Decision Trees (Source: Tan, MSU)
   - Tom Mitchell's book slides (See slides on Concept Learning and Decision Trees)

- Weka resources:
  1. Introduction to Weka (html version) (download ppt version)
  2. Download Weka
  3. Weka Tutorial
  4. ARFF format
  5. Using Weka from command line

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C01	3	2	-	1	2	-	-	-	-	-	-	-	3	-
C02	3	3	3	2	1	-	-	-	-	-	-	-	3	1
C03	3	1	3	3	3	-	-	-	3	-	-	2	3	1

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III B.Tech II Semester -CSE	3	1	-	3

Code: 17ACS31   **Compiler Design**

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Outcomes:

At the end of the course the student will be able to:

1. explain various phases of a compiler and implement the Lexical Analyzer using Lex tool.
2. Articulate top,down and bottom,up parsers.
3. Perform type checking and choose best storage allocation technique.
4. Analyze various intermediate forms of source programs.
5. Perform code optimization and do code generation of a given programming language.

UNIT-I
Overview of Compilation: The Structure of a Compiler**,** The Science of Building a Compiler, Applications of Compiler Technology, Translation, Interpretation, Bootstrapping, Data Elements and Data Structures in Compilation.
Lexical analyzer: The Role of the Lexical Analyzer, Input Buffering, Specification of Tokens, Recognition of Tokens, LEX, A Language for Specifying Lexical Analyzers.

UNIT -II
Parsing: The Role of the Parser, Context,Free Grammars, Top,Down Parsing, Bottom,Up Parsing, Operator,Precedence Parsing, LR Parsers, Using Ambiguous Grammars, Parser Generators.
Syntax,Directed Translation: Syntax,Directed Definitions, Construction of Syntax Trees, Bottom,Up Evaluation of S,Attributed Definitions, L,Attributed Definitions.

UNIT-III
Type Checking: Type Systems, Specification of a Simple Type Checker, Equivalence of Type Expressions, Type Conversions.
Run,Time Environments: Source Language Issues, Storage Organization, Storage, Allocation Strategies, Access to Nonlocal Names, Parameter Passing, Symbol Tables, Language Facilities for Dynamic Storage Allocation, Dynamic Storage Allocation Techniques.

UNIT- IV
Intermediate Code Generation: Intermediate Languages, Declarations, Assignment Statements, Boolean Expressions, Case Statements, Back patching, Procedure Calls. Intermediate Forms of Source Programs – Abstract Syntax Tree, Polish Notation and Three Address Codes.

UNIT -V

Code Generation: Issues in the Design of a Code Generator, The Target Machine, Run, Time Storage Management, Basic Blocks and Flow Graphs, Next,Use Information, A Simple Code Generator, Register Allocation and Assignment, The DAG Representation of Basic Blocks, Generating Code from DAGs.

Code Optimization: Principle sources of optimization, Peephole Optimization, Optimization of basic blocks Loops in flow graphs, Introduction to global data flow analysis, Code improving transformations.

TEXT BOOKS:

1. Aho, Ravi Sethi, Monica S Lam,Ullman "Compilers Principles Techniques and Tools", 2nd Edition,Pearson, 2007.

REFERENCE BOOKS:

1. Alfred V Aho Jeffrey D Ullman," Principles of Compiler Design" , Addison,Wesley Publ., 1977

2. Kenneth C Louden ,"Compiler Construction: Principles and Practice" , *PWS* Publishing Company,

1997.

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	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C01	**3**	-	-	-	-	-	-	-	-	-	-	**3**	-	-
C02	**3**	**3**	**3**	-	**1**	-	-	-	-	-	-	**2**	**3**	**1**
C03	**3**	**1**	**1**	**3**	-	-	-	-	-	-	-	**1**	**3**	-
C04	-	**2**	**2**	**3**	**2**	-	-	-	-	-	-	**2**	-	**3**
C05	-	-	-	**3**	**3**	-	-	-	-	-	-	-	-	**2**

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III B.Tech II Semester -CSE 3 1 - 3

Code: 17ACS32 **Big Data Analytics**

Outcome:

At the end of the course the student will be able to:

1. Analyze the real time data using Hadoop.
2. Evaluate the performance of Data Model used in big data.
3. Develop applications for Real time Analytics Platform
4. Apply different clustering techniques for forming clusters, analysis of outlier and formation of association.
5. Estimate the performance of a social network.

UNIT I – INTRODUCTION TO BIG DATA

Introduction – distributed file system – Big Data and its importance, Four Vs, Drivers for Big data, Big data analytics, Big data applications. Algorithms using map reduce, Matrix,Vector Multiplication by Map Reduce.

UNIT II – INTRODUCTION HADOOP

Big Data – Apache Hadoop & Hadoop EcoSystem – Moving Data in and out of Hadoop – Understanding inputs and outputs of MapReduce , Data Serialization.

UNIT, III HADOOP ARCHITECTURE

Hadoop Architecture, Hadoop Storage: HDFS, Common Hadoop Shell commands , Anatomy of File Write and Read., NameNode, Secondary NameNode, and DataNode, Hadoop MapReduce paradigm, Map and Reduce tasks, Job, Task trackers , Cluster Setup – SSH & Hadoop Configuration – HDFS Administering –Monitoring & Maintenance.

UNIT,IV HADOOP ECOSYSTEM AND YARN

Hadoop ecosystem components , Schedulers , Fair and Capacity, Hadoop 2.0 New Features, Name Node High Availability, HDFS Federation, MRv2, YARN, Running MRv1 in YARN.

UNIT,V HIVE AND HIVEQL, HBASE

Hive Architecture and Installation, Comparison with Traditional Database, HiveQL , Querying Data , Sorting And Aggregating, Map Reduce Scripts, Joins & Subqueries, HBase concepts, Advanced Usage, Schema Design, Advance Indexing , PIG, Zookeeper , how it helps in monitoring a cluster, HBase uses Zookeeper and how to Build Applications with Zookeeper.

TEXT BOOKS

1. Boris lublinsky, Kevin t. Smith, Alexey Yakubovich, "Professional Hadoop Solutions", Wiley, ISBN: 9788126551071, 2015.
2. Vignesh Prajapati, "Big Data Analytics with R and Haoop", Packet Publishing 2013.

REFERENCE BOOKS:
1. Chris Eaton, Dirk deroos et al. , "Understanding Big data ", McGraw Hill, 2012.
2. Tom White, "HADOOP: The definitive Guide", O Reilly 2012.
3. Tom Plunkett, Brian Macdonald et al, "Oracle Big Data Handbook", Oracle Press, 2014.
4. http://www.bigdatauniversity.com/
5. Jy Liebowitz, "Big Data and Business analytics", CRC press, 2013.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C01	3	3	-	-	-	-	-	-	-	-	-	-	-	3
C02	3	2	-	-	-	-	-	-	-	-	-	-	3	-
C03	-	1	3	1	1	-	-	-	-	-	-	-	-	-
C04	-	-	2	3	1	-	-	-	-	-	-	-	3	1
C05	-	-	1	2	1	-	-	-	-	-	-	-	-	2

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III B.Tech II Semester -CSE   3   -   -   3

Code: 17ACS33   **Cryptography and Network Security**

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Outcomes:

After the completion of this course the student will able to:

1. Apply knowledge of mathematics for analyzing the fundamental cryptography and encryption techniques.
2. Design, implement and Test the Encryption and decryption Algorithms using appropriate modern tools.
3. Evaluate the performance of different Hash algorithm.
4. Produce network security applications for small scale business.
5. Perform secure electronic transaction at network level.

UNIT-I

Overview: Services, Mechanisms and Attack, The OSI Security Architecture: Security Services, and Security Attacks, A model for Network Security.
Classical Encryption Techniques: Symmetric Cipher Model, Substitution Techniques: Caesar Cipher, Mono alphabetic Cipher, Play fair Cipher, Hill Cipher,

UNIT-II

Block Ciphers and the Data Encryption Standard: Simplified DES, Block Cipher Principles,The DES, The Strength of DES, Block Cipher Design Principles, Block Cipher modes of Operation Public Key Cryptography: Principles of Public Key Cryptosystems, The RSA Algorithm, Diffie – Hellman Key Exchange

UNIT-III

Message Authentication and Hash Functions: Authentication Requirements, Authentication Functions, Message Authentication Codes, Hash Functions, Secure of Hash Functions (SHA) and MACs.Hash Algorithms: MD5 Message Digest Algorithm: MD5 Logic, MD5 Compression function, MD4,Whilpool

UNIT-IV

Digital Signatures and Authentication Protocols: Digital Signatures, Authentication MechanismAuthentication Applications: Kerberos: Motivation, Kerberos, And X.509 Authentication Service: Certificates, Authentication Procedures, X.509 Version 3.

UNIT-V

IP Security: IPsec overview, architecture, Authentication Header and Encapsulating security

pay load, combining security associates.
Web Security: web security considerations, secure socket layer and secure electronic truncations.

TEXT BOOK:
William Stallings, "Cryptography and Network Security: Principles and Practices", 4th Edition, Low Price Edition, Pearson Education, 2008.

REFERENCE BOOKS:
1. William Stallings, "Network Security Essentials (Applications and Standards)", 3rd Edition, Pearson Education, 2008.
2.Behrouz A. Forouzan,"Cryptography & Network Security",First
Edition,McGraw,Hill
   Higher Education, 2008

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C01	3	-	-	-	-	-	-	-	-	-	-	-	-	2
C02	3	-	-	-	-	-	-	-	-	-	-	-	3	2
C03	3	2	-	2	-	-	-	-	-	-	-	-	3	-
C04	-	2	-	2	-	-	-	-	-	-	-	-	-	2
C05	-	2	-	2	-	-	-	-	-	-	-	-	3	-

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III B.Tech II Semester -CSE	3	1	-	3

Code: 17ACS34   **Web Technologies**

Outcomes:
1. Analyze and apply the role of languages HTML, DHTML, JavaScript, database access in the working of the web and web applications.
2. Use internal and external cascading style sheets (CSS) to consistently format elements on a page or group of pages.
3. Create XML documents and XML Schemas.
4. Design dynamic web pages using java scripts (client side programming)
5. Create Database connectivity using PHP and Mysql.

UNIT - I
Introduction to Web Technology: Fundamentals of Web: A brief introduction to the Internet, the World Wide Web, Web Browsers, Web Servers, Uniform Resource Locators, Multipurpose Internet Mail Extensions, The Hyper Text Transfer Protocol, Security, The Web Programmers Toolbox.
Introduction to HTML: Origins and evolution of HTML and XHTML, Basic syntax, Standard HTML document structure, Basic text markup, Images, Hypertext Links, Lists, Tables, Forms, Frames, Syntactic differences between HTML and XHTML.

UNIT - II
Cascading Style Sheets : Introduction, Levels of style sheets, Style specification formats, Selector forms, Property value forms, Font properties, List properties, Color, Alignment of text, The Box model, Background images, The< span > and< div > tags, Conflict resolution.
Extensible Markup Language (XML): Standard generalized markup language (SGML), basics of XML, XML parsers, the need for the standard Web Servers: PWS, IIS, Tomcat and Apache.

UNIT - III
JavaScript: Overview of JavaScript, Object orientation and JavaScript, General syntactic characteristics, Primitives, operations, and expressions, Screen output and keyboard input, Control statements, Object creation and modification, Arrays, Functions, Constructor, Pattern matching using regular expressions, Errors in scripts, Examples.

UNIT – IV
Introduction to PHP : Origins and uses of PHP, Overview of PHP, General syntactic characteristics, Primitives, operations, and expressions, output, Control statements, Arrays, Functions, Pattern matching, Form handling ,files, Cookies, Session tracking Database Access through the web
UNIT – V

PHP and Database Access: Basic Database Concepts, Connecting to a MYSQL database, Retrieving and Displaying results, Modifying, Updating and Deleting data. MVC architecture.

TEXT BOOKS:

1. Robert W. Sebesta, Programming the World Wide Web, 4th Edition, Pearson Education, 2008.
2. Beginning PHP and MySQL, 3 rd Edition , Jason Gilmore, Apress Publications,2009.
3. PHP 5 Recipes A problem Solution Approach Lee Babin, Nathan A Good, Frank M.Kromann and Jon Stephens,2008.

REFERENCE BOOKS:

1. M. Deitel, P.J. Deitel, A. B. Goldberg ,Internet& World Wide Web How to H program, 3 rd
   Edition, Pearson Education, 2004.
2. Ellie Quigley, Marko Gargenta,"PHP and MySQL" , Prentice Hall(Pearson),2006.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C01	3	1	-	-	-	-	-	-	-	-	-	-	-	-
C02	3	2	-	-	1	2	2	-	-	2	-	3	3	-
C03	3	3	3	1	-	2	2	-	-	-	-	3	-	1
C04	-	-	3	3	3	-	-	1	-	-	3	-	3	1
C05	-	-	3	2	2	-	-	1	-	2	3	-	3	1

SRI VENKATESWARA COLLEGE OF ENGINEERING AND TECHNOLOGY
(AUTONOMOUS)

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III B.Tech II Semester -CSE	3	-	-	3

Code : 17ACS35   Object Oriented Analysis and Design
                        (Professional Elective-II)

Outcomes:

At the end of the course, students will be able to:
1. Represent the various elements using UML notation
2. Design the specific problem domain using suitable elements.
3. Apply class, object and basic behavioral diagrams to design solutions.
4. Develop solutions to complex problems using behavioral and architecture modeling concepts.

UNIT–I
Introduction to UML: Importance of Modeling, Principles of Modeling, Object Oriented modeling, Conceptual Model of the UML, Architecture, and Software Development Life Cycle.

UNIT – II
Basic Structural Modeling: Classes, Relationships, Common Mechanisms, and Diagrams.
Advanced Structural Modeling: Advanced Classes, Advanced Relationships, Interfaces, Types and Roles, Packages.

UNIT – III
Class & Object Diagrams: Terms and Concepts, Modeling Techniques for Class & Object Diagrams.
Basic Behavioral Modeling,I: Interactions, Interaction Diagrams.
Case Study: Structural Models (Class & Object diagrams) and Basic Behavioral Models (Interaction diagrams) for ATM System

UNIT – IV
Basic Behavioral Modeling,II: Use Cases, Use Case Diagrams, Activity Diagrams.
Advanced Behavioral Modeling: Events and Signals, State Machines, Processes and Threads, Time and Space, State Chart Diagrams.
Case Study: Basic Behavioral Models (Use case & Activity diagrams) and Advanced Behavioral Models (State Chart diagrams) for ATM System

UNIT – V
Architectural Modeling: Component, Deployment, Component Diagrams and Deployment Diagrams.
Case Study: Architectural Modeling Diagrams (Component & Deployment Diagrams) for ATM System, Structural and Behavioral Diagrams for The Unified Library application

Text Books:

1. Grady Booch, James Rumbaugh, Ivar Jacobson, *"The Unified Modeling Language User Guide"*, Pearson Education, 1997.

2. Hans,Erik Eriksson, Magnus Penker, Brian Lyons, David Fado, "UML 2 Toolkit", WILEY, Dreamtech India Pvt. Ltd,2003.

Reference Books:

1. Meilir Page,Jones, "Fundamentals of Object Oriented Design in UML", Pearson Education,1999.

2. Pascal Roques, "Modeling Software Systems Using UML2, WILEY Dreamtech India Pvt. Ltd,

   2004.

3. Atul Kahate, "Object Oriented Analysis & Design", The McGraw,Hill Companies, 2004.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C01	3	-	-	2	-	-	-	-	-	-	-	-	2	-
C02	3	3	3	3	-	-	-	-	-	-	-	-	1	1
C03	3	3	2	2	1	-	-	-	-	-	-	-	-	1
C04	-	3	1	1	1	-	-	-	-	-	-	-	3	1

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III B.Tech II Semester -CSE	3	-	-	3

Code: 17ACS36   Mobile Computing
            (Professional Elective-II)

Outcomes:

At the end of this course the student should be able to:

1. Solve various MAC issues in data link layer and networking principles that support connectivity to cellular networks
    1. Design the protocols for network layer and transport layer in mobile environment.
    2. Develop push and pull based data dissemination techniques and to solve database issues in mobile computing
    3. develop mobile computing environment to address various issues in MANETs.
    4. Use and Evaluate WAP and Bluetooth techniques

UNIT-I

Mobile Computing: Introduction, history, architecture, devices and applications, limitations. Global System for Mobile Communications (Gsm): Mobile services, system architecture, radio interface, protocols, localization and calling, handover, security, and new data services. Medium Access Control: Motivation for a specialized MAC (Hidden and exposed terminals, near and far terminals), SDMA, FDMA, TDMA, CDMA.

UNIT- II

Mobile Network Layer: Mobile IP (goals, assumptions, entities and terminology, IP packet delivery, agent advertisement and discovery, Rrk registration, tunneling and encapsulation, optimizations), dynamic host configuration protocol (DHCP).
Mobile Transport Layer: Traditional TCP, indirect TCP, snooping TCP, mobile TCP, fast retransmit/ fast recovery, transmission /time,out freezing, selective retransmission, and transaction oriented TCP.

UNIT- III

Data Dissemination: Push based mechanisms, pull based mechanisms, hybrid mechanisms, selective tuning (indexing) techniques.
Database Issues: Hoarding techniques, caching invalidation mechanisms, client server computing with adaptation, power,aware and context,aware computing, transactional models, query processing, recovery, and quality of service issues.

UNIT- IV

Mobile Ad hoc Networks (MANETs):
Overview, Properties of a MANET, spectrum of MANET applications, routing and various

routing algorithms, security in MANETs.

UNIT- V
Protocols and Tools:
Wireless Application Protocol,WAP. (Introduction, protocol architecture, and treatment of protocols of all layers), Bluetooth (User scenarios, physical layer, MAC layer, networking, security, link management) and J2ME.

TEXT BOOKS:
1. "Mobile Communications", 2nd Edition, Jochen Schiller, PHI/Pearson Education, 2003.
2. Mobile Computing, 2nd edition, Raj kamal, Oxford University Press, USA, 2007.

REFERENCE BOOKS:
1. "Wireless Communications and Networks", William Stallings, Pearson Education, 2002
2. "Handbook of Wireless Networks and Mobile Computing", Stojmenovic and Cacute, Wiley,
    2002,.
3. "Mobile Computing Principles: Designing and Developing Mobile Applications with UML and
    XML", Reza Behravanfar, Cambridge University Press, October 2004.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C01	2	3	3	2	1	-	-	-	-	-	-	-	3	-
C02	3	3	2	3	-	-	-	-	-	-	-	-	2	3
C03	2	3	2	2	2	-	-	-	-	-	-	-	3	3

	L	T	P	C

III B.Tech II Semester -CSE   3   -   -   3

Code : 17ACS37   **Multimedia Information Systems**
(Professional Elective-II)

OUTCOMES:

1. design issues related to multimedia systems.
2. interpret Multimedia networking concepts
3. list all multimedia components efficiently.
4. Develop Integrated, Collaborative multimedia systems

UNIT- I

MULTIMEDIA ELEMENTS

Introduction ,Definitions ,Applications ,Elements ,Text ,Image/Graphics
Audio ,video ,Animation.

UNIT-II

MULTIMEDIA BASICS

Introduction and definitions ,elements ,Compression ,

Types of compressions ,Lossless, Lossy ,Video compression ,

Image Compression ,Audio compression ,Data and file format

UNIT- III

MULTIMEDIA AUTHORING

Authoring tools ,Inserting media elements on the Web Pages ,Programming audio, Video, Image using Java ,open gl.

UNIT-IV

MULTIMEDIA STORAGE AND MANAGEMENT

Storage and Retrieval and presentation,Synchronization Issues
,Multimedia Operating Systems and Multimedia databases ,Hypertext ,Hypermedia Architectures.

UNIT-V

MULTIMEDIA NETWORKS

Protocol ,QOS Issues ,RTP, RTCP, RTSP, SIP, Multimedia over ATM Networks ,Media on demand –ITV ,STB Broad cast Schemes for VoD Buffer Management ,Multimedia over wireless networks.

TEXT BOOKS:

1.Ralf Steinmetz and Klara,"Multimedia Computing, Communications and
Applications", Pearson Education, 2004.
2.Fred Halsall, "Multimedia Communications,Applications, Networks, Protocols and Standards , Pearson Education, 2007

REFERENCES BOOKS:

1.Ze Nian Li, S. Drew, "Fundamentals of Multimedia" , PHI,2006.
2.K.Andleigh, Kiran Thakrar , Multimedia Systems Design, PHI, 2007.
3.Prabhat K Andleigh, Kiran Thakrar, "Multimedia systems design", PHI, 2007

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C01	2	3	3	2	1	-	-	-	-	-	-	-	3	-
C02	3	3	2	3	-	-	-	-	-	-	-	-	2	3
C03	2	3	2	2	2	-	-	-	-	-	-	-	3	3
C04	3	2	3	1	2								2	2

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III B.Tech II Semester-CSE		3	-	-	3

Code: 17ACS38   Software Architecture
(Professional Elective-II)

Outcomes:

At the end of the course, students should be able to:

1. identify the role of software architecture in the development of an enterprise application system;
2. Recognize major software architectural styles, design patterns, and frameworks.
3. Develop a software architecture using various documentation approaches and architectural description languages

Unit-I
INTRODUCTION

The Architecture Business Cycle: Where do architectures come from? Software processes and the architecture business cycle; What makes a "good" architecture? What software architecture is and what it is not; Other points of view; Architectural patterns, reference models and reference architectures; Importance of software architecture; Architectural structures and views.

Unit-II
ARCHITECTURAL STYLES AND CASE STUDIES

Architectural styles; Pipes and filters; Data abstraction and object,oriented organization; Event,based, implicit invocation; Layered systems; Repositories; Interpreters; Process control; Other familiar architectures; Heterogeneous architectures. Case Studies: Keyword in Context; Instrumentation software; Mobile robotics; Cruise control; Three vignettes in mixed style.

Unit-III
QUALITY

Functionality and architecture; Architecture and quality attributes; System quality attributes; Quality attribute scenarios in practice; Other system quality attributes; Business qualities; Architecture qualities.

Achieving Quality: Introducing tactics; Availability tactics; Modifiability tactics; Performance tactics; Security tactics; Testability tactics; Usability tactics; Relationship of tactics to architectural patterns; Architectural patterns and styles.

Unit-IV
ARCHITECTURAL PATTERNS 1 & 2

Introduction: from mud to structure: Layers, Pipes and Filters, Blackboard.
Distributed Systems: Broker; Interactive Systems: MVC, Presentation,Abstraction,Control.

Unit-V

DESIGNING AND DOCUMENTING SOFTWARE ARCHITECTURE

Architecture in the life cycle**;** designing the architecture; Forming the team structure; Creating a skeletal system. Uses of architectural documentation; Views; choosing the relevant views; Documenting a view; Documentation across views.

Text Books:

1. Mary Shaw,David Garlan: Software Architecture Perspectives on an Emerging Discipline, PHI,1996.
2. Len Bass, Paul Clements, Rick Kazman: Software Architecture in Practice, Pearson,2013.

References Books:

1. "Pattern Oriented Software Architecture" by Frank Buchnan et al, Wiley India,2006.
2. Stephen T. Albin ,"The Art of Software Architecture" ,Wiley,2003.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C01	3	2	2	2	3								2	1
C02	2	3	1	2	2								2	2
C03	3	3	2	3	3								1	1

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	L	T	P	C
III B.Tech II Semester -CSE	3	-	-	3

Code: 17ACS39   Distributed data base
(Professional Elective-II)

Outcomes:

Successful completion of this course, students should be able to:
1. Evaluate the scope and necessity of Distributed Databases.
2. Apply Queries and Aggregate functions.
3. Design Distributed Database Administration and Client/Server Architecture
4. Identify the necessity of protection and Object migration.

UNIT-I

Features of Distributed versus Centralized Databases, Principles of Distributed Databases, Levels of Distribution Transparency, Reference Architecture for Distributed Databases, Types of Data Fragmentation, Integrity Constraints in Distributed Databases.

UNIT–II

Translation of Global Queries to Fragment Queries, Equivalence Transformations for Queries, Transforming Global Queries into Fragment Queries, Distributed Grouping and Aggregate Function Evaluation, Parametric Queries.
Optimization of Access Strategies, A Framework for Query Optimization, Join Queries, General Queries.

UNIT–III

The Management of Distributed Transactions, A Framework for Transaction Management, Supporting Atomicity of Distributed Transactions, Concurrency Control for Distributed Transactions, Architectural Aspects of Distributed Transactions.
Concurrency Control, Foundation of Distributed Concurrency Control, Distributed Deadlocks, Concurrency Control based on Timestamps, Optimistic Methods for Distributed Concurrency Control.

UNIT–IV

Reliability, Basic Concepts, Nonblocking Commitment Protocols, Reliability and concurrency Control, Determining a Consistent View of the Network, Detection and Resolution of Inconsistency, Checkpoints and Cold Restart, Distributed Database Administration, Catalog Management in Distributed Databases, Authorization and Protection
Architectural Issues, Alternative Client/Server Architectures, Cache Consistency Object Management, Object Identifier Management, Object Migration, Distributed Object Storage, Object Query Processing, Query Processing Issues, Query Execution.

UNIT-V

Database Integration, Scheme Translation, Scheme Integration, Query Processing, Query Processing Layers in Distributed Multi,DBMSs, Query Optimization Issues. Transaction Management, Transaction and Computation Model Multidatabase Concurrency Control, Multidatabase Recovery, Object Orientation and Interoperability Object Management Architecture CORBA and Database Interoperability Distributed Component Model COM/OLE and Database Interoperability, PUSH,Based Technologies

TEXT BOOKS:
1. Distributed Database Principles & Systems, Stefano Ceri, Giuseppe
Pelagatti McGraw,Hill, 2017.

References Books:
1. Principles of Distributed Database Systems, Second Edition, **M. Tamer Ozsu and PatrickValduriez, Pearson, 2006.**
2.Distributed Database Management Systems: A Practical Approach, Saeed K. Rahimi, Frank S. Haug,Wiley, 2014.
3. Distributed Databases , Sachin Deshpande, Wiley, 2014.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C01	3	2	3	2									2	2
C02	3	2	2	1									2	2
C03	2	3	3	2									2	1
C04	3	2	3	1									2	2

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III B.Tech II Semester -CSE	**3**	**-**	**-**	**3**

Code: 17AME40   Robotics
              (Open Elective-I)

Outcomes:

 After completion of the course, the student will be able to:
1. Describe the basic concepts of robotics.
2. Identify robot components.
3. Select the type of robot for typical manufacturing industry and service sector.
4. Analyze the manipulator kinematics, dynamics and trajectory planning for typical robot with the usage of computer aided technology to develop automotive components
5. Choose a program that the robot can integrate with the manufacturing system to produce quality products with minimum cost with optimum usage of resources.

UNIT- I
INTRODUCTION TO ROBOTICS: Automation versus Robotic technology, Laws of robot, Progressive advancements in Robots, Robot Anatomy, Classification of robots, coordinate method, control method; Specification of robots.
End Effectors: Classification of End effectors – Tools as end effectors, Mechanical, adhesive,vacuum,magnetic,grippers.

UNIT-II
ROBOT ACTUATORS AND MOTION CONVERSION SYSTEMS: Robot Actuators, hydraulic, pneumatic and electric, its comparison.
Motion Conversion Devices: Rotary,to,Rotary motion conversion, Gears, Harmonic Drives, Belt,and, pulley systems, Rotary,to,Linear motion conversion, Lead screws, Rack and Pinion systems, cams.

UNIT-III
ROBOTIC SENSORS: Meaning of sensing, selection of sensor for a robot, types of sensors ,Position sensors, range sensors, velocity sensors, touch sensors, force and torque sensors.
ROBOT VISION, Block diagram of vision system, lighting techniques and devices, analog to digital conversion, Image storage, Image processing and Analysis, Object recognition, Feature extraction.

UNIT- IV
ROBOT ARM KINEMATICS: Homogeneous transformations, Basics of forward kinematics, Inverse kinematics, D,H Notation for a robot.
ROBOT PROGRAMMING: Requirements of good programming language, Types of Robot programming, Robot programming languages and features, AL, AML, RPL, and VAL.

UNIT-V

ROBOTIC APPLICATIONS: Present applications,Material Transfer, Material handling, loading and unloading, processing, welding, spray painting, Assembly and Inspection; Future applications.

Text Books
1. M.P. Groover, Industrial Robotics, New Delhi, Tata McGraw Hill, 2008.
2. R.K. Mittal & I.J.Nagrath, Robotics and Control, New Delhi, 3rdEdition, Tata McGraw Hill, 2007.

References:
1. Ganesh S. Hegde, Industrial Robotics, Lakshmi Publications (P), LTD,2007
2. Richard D.Klafter, Robotics Engineering, Bangalore, New Delhi, Prentice Hall, Eastern Economy Edition, 1989.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C01	3	2	3	2	1								3	2
C02	3	2	2	1	2								3	1
C03	2	1	3	2	1								2	1
C04	3	2	3	2	1								3	2
C05	3	2	2	1	2								2	1

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	L	T	P	C

III B.Tech II Semester -CSE   3   -   -   3

Code : 17AEC45   Digital Image Processing
(Open Elective-I)

Outcome:
On completion of the course the students will be able to
1. Identify, formulate &solve problems involving images.
2. Design &conduct experiments, analyze &interpret image data.
3. Demonstrate the skills to use modern engineering tools, software & equipment to analyze problems.

UNIT I

Digital Image fundamentals: Digital Image representation – Digital image processing System –Visual Perception- Sampling and Quantization - Basic relationships between pixels, and imaging geometry.

UNIT II

Image Transforms: Discrete Fourier Transform – Properties of 2 – D Fourier Transform – Fast Fourier Transform, Walsh, Hadamard, Discrete cosine transforms.

UNIT III

Image Enhancement: Background enhancement by point processing Histogram processing, Spatial filtering, Enhancement in frequency Domain, Image smoothing, Image sharpening, Colour images

Image Restoration: Degradation model, Algebraic approach to restoration – Inverse filtering – Least Mean Square filters, Constrained Least square restoration.

UNIT IV

Image Coding: Fidelity criteria, Encoding process, transform encoding.

UNIT V

Image Segmentation: Detection and discontinuities, Edge linking and Boundary detection, Boundary description.

Text Books:

1. R. C .Gonzalez & R.E. Woods, "Digital Image Processing", Addison Wesley/Pearson education, 3rd Edition, 2010.

2. A .K. Jain, "Fundamentals of Digital Image processing", PHI.

Reference Books:

1. Rafael C. Gonzalez, Richard E woods and Steven L.Eddins, "Digital Image processing using MATLAB", Tata McGraw Hill, 2010.

2. S jayaraman, S Esakkirajan, T Veerakumar, "Digital Image processing",Tata McGraw Hill

3. William K. Pratt, "Digital Image Processing", John Wilely, 3rd Edition, 2004.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C01	3	1	2	1									3	3
C02	3	1	2	1									3	3
C03	3	1	2	1									3	3
C04	3	1	2	1									3	3

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	L	T	P	C

III B.Tech II Semester -CSE　　　　　　　　　　　　　　　　3　-　-　3

Code: 17AEC43　　　　　**MEMS & MICROSYSTEMS**
　　　　　　　　　　　　　(Open Elective-I)

Outcomes:

Outcomes:
After the completion of the course, the student will be able to:
1. Identify various MEMS and Microsystem products**.**
2. Explain construction and functionality of various Microsensors.
3. List materials used for the construction of MEMS and Microsystems.
4. Define elements of Microsystems fabrication processes.
5. Apply Micromanufacturing and Microsystems packaging technologies.

UNIT – I
OVERVIEW OF MEMS AND MICROSYSTEMS:
Introduction to MEMS and Microsystems, Typical MEMS and Microsystems products, Evolution of Microfabrication, Microsystems and Microelectronics, The Multidisciplinary nature of Microsystem design and manufacture, Microsystems and Miniaturization, Applications of Microsystems in the Automotive industry and Applications of Microsystems in other industries.

UNIT-II
WORKING PRINCIPLES OF MICROSYSTEMS:
Microsensors: Acoustic wave sensors, Biomedical sensors and Biosensors, Chemical sensor, Optical Sensors, Pressure sensor, Thermal sensor, Gyro sensor, Flow sensor.
Microactuation: Actuation using Thermal forces, Shape-Memory Alloys, Piezoelectric crystals, Electrostatic forces.
Microsystems: Microactuators, Micro-accelerometers and Microfluidics.

UNIT-III
MATERIALS FOR MEMS AND MICROSYSTEMS:
Introduction, Substrates and Wafers, Active Substrate Materials, Silicon as a Substrate material, Silicon Compounds, Silicon Piezoresistors, Gallium Arsenide, Quartz, Piezoelectric crystals, Polymers and Packaging materials

UNIT-IV
MICROSYSTEM FABRICATION PROCESSES:
Introduction, Photolithography, Ion Implantation, Diffusion, Oxidation, Chemical Vapor Deposition, Physical Vapor Deposition-Sputtering, Deposition by Epitaxy, and Etching.

UNIT-V
MICROMANUFACTURING AND MICROSYSTEM PACKAGING:
Micromanufacturing: Introduction, Bulk Micromanufacturing, Surface Micromachining and The LIGA process.
Microsystem Packaging: Introduction, Overview of Mechanical Packaging of Microelectronics, Microsystem Packaging, Interfaces in Microsystem Packaging and Essential Packaging Technologies.

TEXT BOOKS:

1. Tai-Ran Hsu, "MEMS & Microsystems Design and Manufacture", Tata McGraw Hill edition, 2008.
2. Chang Liu, "Foundations of MEMS" Pearson Education India Limited, 2009.

REFERENCE BOOKS:
1. Marc Madou, "Fundamentals of Microfabrication" CRC press 2002.
2. Stephen D. Senturia, "RF Microelectronics", Kluwer Academic Publishers, 2001.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C01	3	3	2	1	1								3	2
C02	2	2	2	1	2								2	2
C03	3	3	2	2	1								3	2
C04	2	2	1	1	2								2	1
C05	3	3	2	3	1								3	2

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III B.Tech II Semester -CSE   **3   -   -   3**

Code: 17AEC44   Communication Engineering
(Open Elective-I)

Outcomes:

On completion of the course the student will be able to:

1. Analyze the different analog modulation and demodulation methods.
2. Analyze the different analog and digital pulse modulation and demodulation methods.
4. Analyze the various digital modulation and demodulation schemes.
5. interpret basics of satellite and optical fiber communications.

Unit I:

Introduction: Elements of communication system, Modulation, Need for Modulation.

Linear CW Modulation: Amplitude Modulation(AM), Modulation Index of AM, Single tone AM, Side band and carrier power of AM, Generation of AM signal using Switching modulator, Demodulation of AM signal using Envelope detector. Double sideband suppressed carrier(DSB- SC) Modulation- Generation of DSB- SC signal using Ring modulator, Demodulation of DSB- SC signal using Coherent detector. Single sideband (SSB) transmission- Generation of SSB signal using Selective- Filtering modulator, Demodulation of SSB signal using Coherent detector. Vestigial sideband (VSB) modulator and Demodulator.

Unit II:

Angle CW Modulation: Concept of instantaneous frequency, Generalized concept of angle modulation, Bandwidth of angle modulated waves- Narrow band frequency modulation and Wideband frequency modulation, Phase modulation. Generation of FM wave using indirect method, Demodulation of FM by direct differentiation.

Unit III:

Analog pulse modulation: Pulse Amplitude Modulation- Generation and Detection, Pulse Time Modulation Schemes: PWM and PPM Generation and Detection

Digital pulse modulation: Importance of Digitization Techniques for Analog Messages, Pulse Code Modulation- Generation and Reconstruction, Delta Modulation- Generation and Reconstruction.

Unit IV:

DIGITAL MODULATION TECHNIQUES: Introduction, Amplitude Shift Keying- Generation and Reconstruction, Frequency Shift Keying- Generation and Reconstruction, Binary Phase Shift Keying- Generation and Reconstruction, Differential Phase Shift Keying- Generation and Reconstruction.

Unit-V

SATELLITE AND OPTICAL FIBER COMMUNICATIONS: Orbital satellites, Geostationary satellites, Look angles, Satellite system link models, Satellite system parameters, Satellite system link equations; Optical fibers Versus metallic cable, Optical fiber communication system block diagram, Light propagation through an optical fiber, Losses in

optical fiber cables, Operation of light emitting diode, PIN diode and LASER.

Text Books:
1. B. P. Lathi, "Modern Digital and Analog Communication Systems", Oxford University Press, 3rd Edition, 2006.
2. Wayne Tomasi, "Electronic Communication Systems- Fundamentals through Advanced", Pearson Education Asia, 3rd Edition.

Reference:

1. A. Bruce Carlson, & Paul B. Crilly, Communication Systems – An Introduction to Signals & Noise in Electrical Communication, McGraw-Hill International Edition, 5th Edition, 2011.

2. Simon Haykin, Communication Systems, Wiley-India edition, 3rd edition, 2010.
3. Sam Shanmugam, Digital and Analog Communication Systems, John Wiley, 2005.
4. Herbert Taub& Donald L Schilling, Principles of Communication Systems, Tata McGraw- Hill,3rd Edition, 2009.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C01	2	2	2	2									2	2
C02	1	1	2	1									1	2
C03	2	2	1	1									2	2
C04	2	1	2	1									2	1
C05	2	1	1	2									1	2

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	L	T	P	C
III B.Tech II Semester -CSE	3	-	-	3

Code: 17AME39   Operation Research
                    (Open Elective-I)

Outcomes:
After completion of the course, the student will be able to:
1. apply various LPP,TPP, AP, sequencing, replacement, game theory, project management, queuing models of operations Research.
2. Illustrate the application of OR models to identify solutions to industry.
3. Identify the optimum solutions with system approach to both industry and service sector.
4. Judge the advanced software tools for decision making with available sources for cost reduction and profit maximization with society concern.
5. Develop a team and play a key role in decision making with interpretation skills for all round development of organization.
6. Develop managerial skills & knowledge to achieve goals of industry with continuous learning

UNIT- I
Development – definition – characteristics and phases – types of Operations Research models – applications – limitations.
Linear Programming and its Applications: Linear Programming Problem – Graphical solution of LP Problems. Simplex method – artificial variables techniques , Two phase method,, Big M method.

UNIT- II
Transportation : Introduction – Methods of basic feasible solution, Optimality test, Degeneracy in transportation problem, unbalanced transportation Problem, ,,
Assignment problem – Introduction – un balanced model ,, optimal solution – Hungarian method, , un,balanced assignment problems, travelling salesman problem.

UNIT-III
Theory of Games: Introduction – mini, max (max, mini) – criterion and optimal strategy,, to solve the rectangular two person zero sum games, solution of rectangular games in terms of mixed strategies, solution of 2x2 games without saddle point, solution of a two person zero sum 2Xn game, Graphical method for 2Xn and nX2 games.
Replacement : Introduction – replacement of items that deteriorate with time – when money value is not counted and counted – replacement of items that fail completely, group replacement.

UNIT-IV
Waiting lines : Introduction, single channel, Poisson arrival, exponential service time with finite population and infinite population –

Simulation Definition – types of simulation models – phases of simulation – application of simulation – inventory and queuing problems – merits and demerits , simulation languages.

UNIT-V

Project Management by PERT/CPM: Introduction, simple network techniques, construction rules of drawing, Fulkerson's rules, **Critical path method (CPM),** floats, critical path, project duration,
PERT : Introduction, different Time estimates, expected time, variance, expected project duration and probability of completion.

Text Books
1. Operations Research , Hamdy Taha,2010
2. Operations Research – Hiller & Liberman.,2001

References Books
1. Quantitative Techniques – A.P. Natarajan
2. Operations Research – S.D. Sarma

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C01	2	3	2	2	1								2	1
C02	1	3	2	2	1								2	1
C03	2	3	1	2	2								1	2
C04	2	2	2	1	1								2	1
C05	2	3	1	2	2								2	2
CO6	2	2	2	1	1								2	1

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	L	T	P	C
III B.Tech II Semester -CSE	-	-	3	1.5

Code: 17ACS42   **Compiler Design Lab**

Outcomes:

At the end the students will be able to

1. Define the role of lexical analyzer, use of regular expressions and transition diagrams.
2. Analyze the working of lex and yacc compiler for debugging of programs.
3. Demonstrate the working of compiler at various stages
4. Demonstrate the working nature of compiler tools.
5. Evaluate the distinction between various platforms and tools.

LIST OF EXPERIMENTS

1. Design a Lexical analyzer for the given language. The lexical analyzer should ignore redundant

   spaces, tabs and newlines. It should also ignore comments. Although the syntax specification states

   that identifiers can be arbitrarily long, you may restrict the length to some reasonable value.
2. Implement the lexical analyzer using JLex, flex or lex or other lexical analyzer generating tools.
3. Recognition of a valid variable which starts with a letter and followed by any number of letters or

   Digits.
4. Design Predictive parser for the given language.
5. Design LALR bottom up parser for the given language.
6. Implementation of the symbol table.
7. Implementation of type checking.
8. Implementation of Dynamic Memory Allocatation (Stack,Heap,Static)
9. Construction of a DAG (Directed Acyclic Graph)
10. Implementation of the Backend of the Compiler.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C01	3	3	-	-	2	-	-	-	-	-	-	-	-	3
C02	3	3	-	-	-	-	-	-	-	-	-	-	2	-
C03	-	3	-	3	-	-	-	-	-	-	-	3	1	-
C04	3	3	-	1	1	-	-	-	-	-	-	3	-	1
C05	3	-	-	2	3	-	-	-	-	-	-	3	3	2

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III B.Tech II Semester -CSE   -   -   3   1.5

Code : 17ACS43   **Data Analytics Lab**

Outcomes:

At the end of the course the student will be able to

1. Analyze data with Hadoop Frame work
2. Implement file management tasks in Hadoop.
3. Develop Map Reduce program that mines Data.
4. Apply Map Reduce Paradigm

LIST OF EXPERIMENTS

1. Implement the following Data structures in Java
     i. a)Linked Lists b) Stacks c) Queues d) Set e) Map
2. (i) Perform setting up and Installing Hadoop in its three operating modes:
     a. Standalone,
     b. Pseudo
     c. Distributed
     d. Fully distributed

   (ii) Use web based tools to monitor your Hadoop setup.
3. Implement the following file management tasks in Hadoop:
     a. Adding files and directories
     b. Retrieving files
     c. Deleting files Hint: A typical Hadoop workflow creates data files (such as log files) elsewhere and copies them into HDFS using one of the above command line utilities.
4. Run a basic Word Count Map Reduce program to understand Map Reduce Paradigm
5. Write a Map Reduce program that mines weather data. Weather sensors collecting data every hour at many locations across the globe gather a large volume of log data, which is a good candidate for analysis with MapReduce, since it is semi structured and record oriented.
6. Implement Matrix Multiplication with Hadoop Map Reduce.
7. Install and Run Hive then use Hive to create, alter, and drop databases, tables, views, functions, and indexes.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C01	3	3	-	-	-	-	-	-	-	-	-	-	2	-
C02	3	2	2	1	-	-	-	-	-	-	-	-	1	3
C03	3	1	1	2	1	-	-	-	-	-	-	-	3	2
C04	-	-	3	3	1	-	-	-	-	-	-	-	-	1

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	L	**T**	**P**	**C**
III B.Tech II Semester -CSE	-	-	3	1.5

Code: 17ACS44   **Web Technologies Lab**

Outcomes:

At the end of the course the student will be able to

1. Develop web pages.

2. design Program Client side scripting languages

3. Develop database connectivity

LIST OF EXPERIMENTS

Week 1:

1. Develop a static web page that demonstrates basic HTML tags.

Week 2:

2. Develop a web page to demonstrate different types of CSS.

Week 3:

3. Design an XML document to structure the student data and validate using DTD.

Week 4:

4. Design an XML document to structure and display the data using an XSL.

Week 5:

5 .Write an XML file which will display the Book information which includes the following:

1) Title of the book

 2) Author Name

 3) ISBN number

 4) Publisher name

5) Edition

 6) Price

Write a Document Type Definition (DTD) to validate the above XML file.

Display the XML file as follows. The contents should be displayed in a table. The header of the table should be in color GREY. And the Author names column should be displayed in one color and should be capitalized and in bold. Use your own colors for remaining columns. Use XML schemas XSL and CSS for the above purpose.

Note: Give at least for 4 books. It should be valid syntactically.

Hint: You can use some xml editors like XML,spy

Week 6:

6. Install TOMCAT web server. Convert the static web pages of assignments 2 into dynamic web pages using servlets and cookies. Hint: User's information (user id, password, credit card number) would be stored in web. Xml. Each user should have a separate shopping cart

Week 7:
7. Develop a web application using Java script to perform the following tasks:
a. Registration validation
b. User login
c. User profile and credit card payment.

Week 8:
8. Develop and demonstrate a XHTML file that includes JavaScript scripts for the following problems:
a) Input: A number n obtained using prompt
Output: The first n Fibonacci numbers
b) Input: A number n obtained using prompt
Output: A table of numbers from 1 to n and their squares using alert

Week 9:
9 .Write a PHP program to store current date,time in a COOKIE and display the 'Last visited on' date,time on the web page upon reopening of the same page.
Week 10:
10.Write a PHP program to store page views count in SESSION, to increment the count on each refresh, and to show the count on the web page.
Week 11:
11.Create tables in the database which contain the details of items (books in our case like Book name , Price, Quantity, Amount) of each category. Modify your catalogue page (week 2)in such a way that you should connect to the database and extract data from the tables and display them in the catalogue page using PHP

Week 12:
12.Using PHP and MySQL, develop a program to accept book information viz. Accession number, title, authors, edition and publisher from a web page and store the information in a database and to search for a book with the title specified by the user and to display the search results with proper headings.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C01	3	2	2	3	3	-	-	3	3	3	3	-	3	-
C02	3	3	3	3	3	-	-	3	3	3	3	-	-	2
C03	3	3	-	2	3	-	-	-	-	-	-	-	-	-

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	L	**T**	**P**	**C**
IV B.Tech I Semester -CSE	3	1	-	3

Code: 17ACS40   **Cloud Computing**

OUTCOMES:
At the end of course student should be able to
1. Use practical cloud applications in daily life.
2. Apply various cloud services in real time applications.
3. Collaborate with different practical web applications for business management.
4. Differentiate cloud security services and standards.

UNIT-I
CLOUD INTRODUCTION
Meaning of the terms cloud and cloud computing, cloud based service offerings, Grid computing vs Cloud computing, Benefits of cloud model, limitations, legal issues, Key characteristics of cloud computing, Challenges for the cloud, The evolution of cloud computing.

UNIT-II
WEB SERVICES DELIVERED FROM THE CLOUD
Infrastructure,as,a,service, Platform,as,a,service, Software,as,a,service. Building Cloud networks: Evolution from the MSP model to cloud computing and software ,as,a,service, The cloud data center, SOA as step toward cloud computing, Basic approach to a data center based SOA.

UNIT-III
CLOUD SERVICES
Collaborating on calendars, Schedules, and Task Management, Exploring online scheduling applications, Exploring online planning and task management. Collaborating on Word Processing, Storing and sharing files and Other Online Content. Exploring Online Photo,Editing Applications.

UNIT-IV
VIRTUALIZATION
History of virtualization, objectives of virtualization, benefits of virtualized technology, Virtualization Technologies:VMware, Microsoft Hyper,V, Virtual Iron, Xen, Ubuntu (Server Edition), Software Virtualization, Para Virtualization, OS Virtualization, Oracle Virtualization, Storage Virtualization Technologies, Virtualization and Storage Management.

UNIT-V
CLOUD SECURITY
Cloud security challenges, Software,as,a,service security.Common Standards in Cloud computing: The open cloud consortium, The distributed management task force, standards for application developers, standards for messaging, standards for security.

TEXT BOOKS:
1. "Cloud Computing implementation, management and security", John W. Ritting house, James F. Ransome ,CRC Press, Taylor &Francis group, 2010.
2. "Cloud Computing Virtualization Specialist Complete Certification Kit , Study Guide Book" ,Ivanka Menken and Gerard Blokdi j k, , EmereoPvt Ltd, April 2009.

REFERENCE BOOKS:
1. Michael Miller, Cloud Computing: Web,Based Applications That Change the Way You
   Work and Collaborate Online, Que Publishing, August 2008
2. Cloud Application Architectures Building Applications and Infrastructure in the Cloud, George Reese, and O'Reilly Media Released, April 2009.
3. Cloud Computing and SOA convergence in your enterprise", David S. Linthicum, Addison, Wesley, 2009.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C01	3	-		-	-	-	-	-	-	-	-	-	3	-
C02	3	3	1	-	1	-	-	-	-	-	-	2	3	2
C03	-	3	1	3	1	-	-	-	-	-	2	-	-	2
C04	-	-	1	3	1	-	-	-	-	-	2	2	3	2

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		L	T	P	C
IV B.Tech I Semester -CSE		3	1	-	3
Code: 17ACS46	**Software Testing**				

Outcomes:

At the end of the course, students should be able to:

1. Develop and analyze the importance of testing and debugging cases and transaction flow testing on various applications
2. Design the applications of domain testing and regular expressions.
3. Apply logic based testing techniques.
4. Demonstrate automation test tools like IBM rational functional tester and IBM Rational quality manager.

UNIT-I

Introduction: Purpose of testing, Dichotomies, model for testing, consequences of bugs, taxonomy of bugs.

Flow graphs and Path testing: Basics concepts of path testing, predicates, path predicates and Achievable paths, path sensitizing, path instrumentation, application of path testing.

UNIT-II

Transaction Flow Testing: Transaction flows, transaction flow testing techniques.

Data flow testing: Basics of data flow testing, strategies in data flow testing.

UNIT-III

Domain Testing: Domains and paths, Nice & ugly domains, domain testing, domains and interface testing, domain and interface testing, domains and testability.

Paths, Path Products and Regular Expressions: Path products & path expression, reduction Procedure, applications, regular expressions & flow anomaly detection.

UNIT-IV

Logic Based Testing: overview, decision tables, path expressions, kv charts, specifications, building tools (The student should be given an exposure to a tool like IBM Rational Functional Tester).

UNIT-V

Graph Matrices and Application: Motivational overview, matrix of graph, relations, power of a matrix, node reduction algorithm, building tools (The student should be given an exposure to a tool like IBM Rational Quality Manager).

Text Books:
1. Software Testing techniques, Second Edition, Boris Beizer, Dreamtech, 2003.
2. Software Testing Tools, Dr. K.V.K.K.Prasad, Dreamtech, 2004.

Reference Books:
1. The craft of software testing, Brian Marick, Pearson Education, 1995.
2. Software Testing, Third Edition, P.C.Jorgensen, Aurbach Publications, 1995.
3. Software Testing, N.Chauhan, Oxford University Press, 2010.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C01	3	3	-	-	1	-	-	-	-	-	-	-	3	-
C02	-	2	-	1	1	-	-	-	-	-	-	-	3	3
C03	3	-	2	1	-	-	-	-	-	-	-	-	-	-
C04	3	1	2	1	1	-	-	-	-	-	-	-	-	3

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IV B.Tech I Semester -CSE   **3   1   -   3**

Code: 17ACS47   **Internet of Things**

Outcomes:

1. recognize the vision of IoT from the global context.
2. Determine the market perspective of IoT
3. Use of devices ,gateways and data management in IoT
4. Design the state of Architecture for IoT

UNIT-I

INTRODUCTION AND CONCEPTS: Introduction to Internet of Things , Physical Design of IoT, Logical Design of IoT – IoT Enabling Technologies – IoT levels & Deployment Templates.
Domain Specific IoTs: Introduction – Home Automation – Cities , Environment – Energy – Retail, Logistics – Agriculture , Industry, Health & Lifestyle.

UNIT-II

IOT AND M2M: Introduction – M2M, Difference between IoT and M2M, SDN and NFV for IoT, IoT System management with NETCONF,YANG , Need for IoT Systems Management –Simple network Management protocol(SNMP) – Network operator requirements, NETCONF,YANG, IOT systems management with NETCONF,YANG – NETOPEER.

UNIT-III

DEVELOPING INTERNET OF THINGS: IoT Platforms Design Metholodogy , Introduction, IoT Design Metholodogy, Case Study on IoT System for Weather Monitoring – Motivation for Using Python –Iot Systems,logical Design using Python,installing Python,Python Data Types &Data Structures,Control   flow,functions,Modules,Packages,File   Handling,Data/Time Operations,Classes,Python Packages of Interest for IoT.

UNIT-IV

IOT PHYSICAL DEVICES & ENDPOINT: What is an IOT devices,Exemplary Devices: Raspberry Pi,About the Board, Linux on Raspberry Pi,Raspberry Pi Interfaces,Programming Raspberry Pi with Python – Other IoT Devices.

UNIT-V IOT PHYSICAL SERVERS & CLOUD OFFERINGS: Introduction to Cloud Storage Models & Communication APIs,WAMP,AutoBahn for IoT, Xively Cloud for IoT, Python Web Application Framework,Django,Designing a RESTful Web API,Amazon Web services for IoT, SkyNet IoT Messaging Platform.

Text books:

1. Arshdeep Bahga,Vijay K.Madisetti",Internet of Things", A
   HANDS,ON,APPROACH,Universities Press,2014

Reference books :
1. Adrian Mcewen,Hakin Cassimally,"Designing The Internet of Things",EILEY Publications,2015
2. Jan Holler, Vlasios Tsiatsis, Catherine Mulligan, Stefan Avesand, David Boyle, Stamatis Karnouskos,"From Machine-to-Machine to the Internet of Things",Academic Press ,2014

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C01	3	-	1	-	-	-	-	-	-	-	-	-	3	-
C02	3	3	-	-	-	-	-	-	-	-	-	-	3	1
C03	-	2	1	2	1	-	-	-	-	-	2	-	-	3
C04	-	1	-	2	1	-	-	-	-	-	-	2	-	2

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	L	T	P	C

IV B.Tech I Semester -CSE   3   -   -   3

Code: 17ACS48   Software Project Management
(Professional Elective-III)

Outcomes:

At the end of course, students should be able to:

1. Implement a project to develop the scope of work, provide accurate cost estimates and to plan the various activities.
2. Analyze the various artifacts of the process and technical perspectives.
3. Evaluate the resources required for a project and to produce a work plan and resource schedule.
4. Implement emerging trends in software engineering.

UNIT- I
Introduction to Software Project Management:

Project Management Concepts: The management spectrum , People, The product, The process, The project; The W5HH principle, Critical Practices.

Process and Project Metrics: Introduction, Software measurement, Software quality metrics, integrating metrics within the software process, Metrics for small organizations.

UNIT- II
Project Evaluation:

Strategic Assessment – Technical Assessment – Cost Benefit Analysis –Cash Flow Forecasting – Cost Benefit Evaluation Techniques – Risk Evaluation.

UNIT- III
Artifacts and Model Based Software Architectures:

Artifacts of the process , the artifact sets, Management artifacts, Engineering artifacts, programmatic artifacts.

Model based software architectures: A Management perspective and technical perspective.
Workflows of the process , Software process workflows, Iteration workflows.

UNIT-IV
Future Software Project Management:

Modern Project Profiles, Next generation Software economics, modern process transitions.

UNIT-V
Emerging Trends in Software Engineering:

Technology evolution, Software engineering trends, Identifying soft trends, Technology directions, and Tools,related trends.

Text Books:
1. Software Project Management, Walker Royce, Pearson Education, 2005.
2. Software Project Management, Henrey, Pearson, 2003.

Reference Books:
1. Software Project Management, Bob Hughes, Mike Cottrell, Tata McGraw,Hill Edition, India, 2006.
2. Software Project Management: A Concise Study, S. A. Kelkar, PHI, 2004.
3. Software Project Management, Second Edition, Hughes Cotterell, TMH, 2009.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C01	3	2	1	2									3	2
C02	3	2	2	2									2	2
C03	3	3	2	1									2	1
C04	3	2	2	2									3	2

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IV B.Tech I Semester -CSE　　　　　　　　　　　　　　3　　-　　-　　3
Code: 17ACS49　　　　**Machine Learning**
　　　　　　　　　　　　(Professional Elective-III)

Outcomes
1 Design hypothesis model for any real life problem.
2. Apply learning techniques like decision tree, Bayesian theory, to solve real life problems.
3. apply multilayer networks and back propagation algorithm.
4. apply Bayes theorem and concept learning.

UNIT I : Introduction: well posed learning Problems, Designing a Learning System, Issues in Machine Learning, A Concept Learning Task, Concept Learning as search, Find-S, Version Space and Candidate Elimination Algorithm, Remarks on Version Space and Candidate Elimination, Inductive bias.

UNIT II , Decision Tree Representation, Appropriate Problem for decision tree algorithm, The basic decision tree algorithm, Hypothesis and base search in decision tree Learning, Issues in decision tree Learning,

UNIT III
Artificial Neural Networks: Introduction, Neural Networks Representation, Appropriate Problem for, Neural Networks Learning, Perception, Multilayer Networks and Back Propagation algorithm, Remarks on the Back Propagation algorithm.

UNIT IV
Evaluating Hypothesis : Estimating Hypothesis accuracy, Basics of Sampling Theory, A General approach for deriving confidence intervals, Difference in error of two Hypothesis ,Comparing learning Algorithms.

UNIT V
Bayesian Learning, Bayes theorem, Bayes theorem and concept learning, maximum likelihood and least squared error Hypotheses, maximum likelihood Hypotheses for Predicting Probabilities, Minimum description length principle, Bayes optimal classifier, gibbs Algorithm,Naïve Bayes Classifier,Bayesian belief network.

Text Book;
　　　1.Tom Mitchel,machine Learning,McGraw-hill,1997.
Reference Book;
1 Ethem Alpaydin,Introduction to machine Learning, PHI,2015
2.Jiawei Han, Jain pei,micheline kamber, data mining-concepts and techniques,2011

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C01	2	-	-	1	-	-	-	-	-	-	-	-	2	-
C02	3	2	-	-	1	-	-	-	-	-	-	-	3	1
C03	1	2	1	2	2	-	-	-	-	-	-	-	2	3
C04	-	2	1	3	3	-	-	-	-	-	-	-	1	2

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IV B.Tech I Semester -CSE   3   -   -   3
Code: 17AIT04   Human Computer Interaction
                (Professional Elective-III)

Outcomes:
At the end of the course the student will be able to:
1. describe the importance of Graphical user Interface
2. Design, Implement and evaluate effective and usable graphical computer interface
3. define the concepts of screen navigation flow and different types of statistical chart.
4. Deploy multimedia window components to design interactive GUI
5. Implement simple graphical user interfaces using software Tools

UNIT-I
Introduction: Importance of user Interface – definition, importance of good design. Benefits of good

design. A brief history of Screen design. The graphical user interface – popularity of graphics, the concept of direct manipulation, graphical system, Characteristics, Web user – Interface popularity, characteristics, Principles of user interface.

UNIT-II
Design process – Human interaction with computers, importance of human characteristics human consideration, Human interaction speeds, understanding business Functions.

UNIT-III
Screen Designing:, Design goals – Screen planning and purpose, organizing screen elements, ordering of screen data and content – screen navigation and flow – Visually pleasing composition – amount of information – focus and emphasis – presentation information simply and meaningfully – information retrieval on web – statistical graphics –Technological consideration in interface design.

UNIT-IV
Windows – New and Navigation schemes selection of window, selection of devices based and screen based controls. Components – text and messages, Icons and increases – Multimedia, colors, uses problems, choosing colors

UNIT-V
Software tools – Specification methods, interface – Building Tools. Interaction Devices –
Keyboard and function keys – pointing devices – speech recognition digitization and generation – image and video displays – drivers.

Text Books:

1. The essential guide to user interface design, Wilbert O Galitz, Wiley DreamTech, 2007.
2. Designing the user interface. 3rd Edition Ben Shneidermann , Pearson Education Asia, 2005.

REFERENCES Books:

1. Human – Computer Interaction. 3rd Edition Alan Dix, Janet Fincay, GreGoryd, Abowd, Russell Bealg, Pearson Education, 2004.
2. Interaction Design Prece, Rogers, Sharps. Wiley Dreamtech, 2002.
3. User Interface Design, Soren Lauesen , Pearson Education, 2005.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C01	2	3	2	3	2								2	1
C02	1	3	2	3	2								2	2
C03	2	2	1	2	1								1	1
C04	2	2	2	3	1								2	1
C05	1	3	2	2	2								1	2

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		L	T	P	C
IV B.Tech I Semester -CSE		3	-	-	3

Code: 17ACS50   **Network Programming**
                       (Professional Elective-III)

Outcomes:
At the end of the course the student will be able to:
1. develop socket API based programs.
2. Design and implement client,server applications using TCP and UDP sockets.
3. Analyze the usage of TCP/UDP Raw sockets
4. Develop the network programs.

UNIT-I
Sockets and Application Development : Overview of UNIX OS, Environment of a UNIX process and its control, Signals, Interprocess Communication, Overview of TCP/IP protocols. Introduction to Socket Programming, System Calls, Address conversion functions, POSIX Signal Handling, Server with multiple clients, Boundary conditions, Server process Crashes, Server host Crashes, Server Crashes and reboots, Server Shutdown, I/O Multiplexing, I/O Models, TCP echo client/server with I/O Multiplexing.

UNIT-II
Socket Options: Socket options, getsockopt and setsockopt functions, Generic socket options, IP socket options, ICMP socket options, TCP socket options, Multiplexing TCP and UDP sockets, SCTP Sockets, SCTP Client/server, Streaming Example, Domain name system, gethostbyname, gethostbyaddr, getservbyname and getservbyport functions, Protocol Independent functions in TCP Client/Server Scenario.

UNIT-III
Advanced Sockets: IPv4 and IPv6 interoperability, Threaded servers, Thread creation and termination, TCP echo server using threads, Mutex, Condition variables, Raw sockets, Raw socket creation, Raw socket output, Raw socket input, ping program, trace route program.

UNIT-IV
Simple Network Management: SNMP network management concepts, SNMPv1, Management information, MIB Structure, Object syntax, Standard MIB's, MIB,II Groups, SNMPv1 protocol and Practical issues.

UNIT-V

SNMP V2, SNMP V3 AND RMO: Introduction to SNMPv2, SMI for SNMPV2, Protocol, SNMPv3, Architecture and applications, Security and access control model, Overview of RMON.

TEXT BOOKS:

1. "**UNIX Network Programming Vol,I**", Third Edition, W. Richard Stevens,
   PHI Pearson Education, 2003.
2. "**SNMP, SNMPv2, SNMPv3 and RMON 1 and 2**", Third Edition, William Stallings,
   Pearson Edition, 2009.

REFERENCE Books:

1. "**Internetworking with TCP/IP Vol, III**: **Client,Server Programming and Application**
   BSD Sockets Version", Second Edition, D.E. Comer, Pearson Edition, 2003.

2. "**The Unix Programming Environment",** Second Edition, Brian W.Kernighan, Pearson
   Edition, 2003.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C01	2	3	2	2									2	2
C02	2	2	2	1									2	2
C03	1	3	1	1									1	2
C04	2	3	2	2									2	1

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	L	T	P	C
IV B.Tech I Semester -CSE	3	-	-	3

Code: 17ACS51   Web Services

(Professional Elective-III)

Outcomes:

At the end of the course the student will be able to:

1. Apply OOP Concepts through C#.
2. Design classes and objects in C#.
3. Design windows applications on .NET
4. Use .NET components in C# programs and develop web application.
5. Use .NET framework for elaborate and complex building web application.

UNIT- I

Introduction to Web services

Business motivations of Web Services,B2B,B2C,Service Oriented Architecture(SOA), Architecting Web Services,Web Services Technology stack,logical view,composition of web services,deployment view,from application server to peer to peer,procees view,life in runtime

UNIT-II

Introduction to C#: Introducing C#, Understanding .NET, Overview of C#, Literals, Variables, Data types, Expressions, Branching, Looping, Methods, Arrays, Strings, Structures, Enumerations.

UNIT-III

Object oriented aspects of C#: Classes, Objects, Inheritance, Polymorphism, Interfaces, Operator Overloading, Delegates, Events, Errors and Exceptions.

UNIT-IV

Application Development on .NET: Building Windows Applications, Accessing Data with ADO.NET

UNIT-V

Web Based Application Development on .NET

Programming Web applications with Web Forms, Programming Web Services.

The CLR and the .NET Framework: Assemblies, Versioning, Attributes, Reflection, Viewing Meta Data, Type Discovery, Reflecting on a type, Marshalling, Remoting, Understanding Server Object Types, Specifying a server with an Interface, Building a server, Building the Client, Using Single Call, Threads.

TEXT BOOKS:

1. "Programming in C#: A Primer", 3rd edition, E. Balagurusamy, TMH, 2010.
2. "Developing Enterprise web Services: An Architect's guide, Sandeep chatterjee and James

webber, prentice hall, 2004

REFERENCE BOOKS:

1. "Programming in C#", 2nd Edition, J Liberty – O'Reilly, 2001.
2. "Learning Web App Development: Build Quickly with Proven JavaScript Techniques", Semmy Purewal, O'Reilly Media, February 2014.
3. "CLR via C#", Dreamtech Press, Fourth edition, June 2013.
4. "Beginning C# Object,Oriented Programming" 2nd edition, Dan Clark, Apress, March 2013.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C01	2	3	2	2	3							2	2	2
C02	3	2	2	3	2							2	2	2
C03	1	3	3	1	3							1	1	2
C04	2	3	2	2	1							2	2	1
C05	1	2	1	2	2							3	1	2

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IV B.Tech I Semester -CSE   3   -   -   3

Code: 17ACS52   **Service oriented Architecture**
                    (Professional Elective-IV)

OUTCOMES:

Upon Successful completion of the course students will be able to

1. Develop applications based on XML.
2. Develop web services using technology elements.
3. Use SOA based applications for intra enterprise and inter enterprise applications.

UNIT-I
INTRODUCTION TO XML

XML document structure – Well,formed and valid documents – Namespaces – DTD – XML Schema – X,Files.

UNIT-II
BUILDING XML, BASED APPLICATIONS

Parsing XML – using DOM, SAX – XML Transformation and XSL – XSL Formatting – Modeling Databases in XML.

UNIT-III
SERVICE ORIENTED ARCHITECTURE

Characteristics of SOA, Comparing SOA with Client,Server and Distributed architectures – Benefits of SOA ,, Principles of Service orientation – Service layers.

UNIT-IV
WEB SERVICES

Service descriptions – WSDL – Messaging with SOAP – Service discovery – UDDI – Message Exchange Patterns – Orchestration – Choreography –WS Transactions.

UNIT-V
BUILDING SOA,BASED APPLICATIONS

Service Oriented Analysis and Design – Service Modeling – Design standards and guidelines ,, Composition – WS,BPEL – WS,Coordination – WS,Policy – WS,Security – SOA support in J2EE

TEXT BOOKS:

1. Ron Schmelzer et al. "XML and Web services", Pearson Education, 2002.
2. Thomas Erl," Service Oriented Architecture: Concepts, Technology, and Design", Pearson Education, 2005.

REFERENCE BOOKS:
1. Frank P. Coyle, "XML, Web Services and the Data Revolution", Pearson Education , 2002.
2. Eric Newcomer, Greg Lomow, "Understanding SOA with web services" Pearson Education, 2005.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C01	2	3	3	2	2								2	2
C02	3	2	2	3	2								2	1
C03	1	3	3	1	3								1	2

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IV B.Tech I Semester -CSE	3	-	-	3

Code: 17ACS53   **Wireless Sensor Networks**
                (Professional Elective-IV)

Outcomes:
After completing the course, the students will be able to:
1. Describe the challenges and applications of sensor networks
2. Implement the design principles of WSN
3. Use the specific MAC protocol for sensor networks
4. Design, implement various routing protocol for different applications
5. Analyze the network security mechanism and QoS metric.

Unit-I
Introduction and Overview of Wireless Sensor Networks
Background of Sensor Network Technology, Application of Sensor Networks, Challenges for Wireless Sensor Networks, Mobile AdhocNETworks (MANETs) and WSN, Enabling Technologies for WSN.

Unit-II
Network Architectures of WSN
Single,node Architecture, Hardware Components & Design Constraints, Energy Consumption of WSN,Network Architecture, Sensor Network Scenarios, Optimization Goals and Figures of Merit, Design Principles for WSNs, Service Interfaces of WSNs, Gateway Concepts.

UNIT-III
MAC for Wireless Sensor Networks
Fundamental MAC protocols, MAC design, Low duty cycle protocols and wakeup concepts,Contention,based protocols and contention,free protocols, Schedule,based protocols, IEEE 802.15.4 MAC protocol.

Unit-IV
Routing Protocol
Motivation and basic ideas, Hierarchical networks by clustering, Combining hierarchical topologies and power control.
Routing Protocols: Energy,efficient unicast, Broadcast and multicast, Geographic Routing, Data,centric and content,based networking: Data,centric routing, Data aggregation.
Unit-V
QoS and Security in WSN
QoS in WSN, Reliable data transport, Single packet delivery, Block delivery, Security.

Text Book:
1. Holger Karl & Andreas Willig, "Protocols And Architectures for Wireless Sensor

Networks", John Wiley, 2005.

2. Kazem Sohraby, Daniel Minoli, &TaiebZnati, "Wireless Sensor Networks,Technology, Protocols, and Applications", 2012, First Edition, John Wiley & Sons, New Jersey.

References Books

1. Ian F. Akyildiz, and Mehmet Can Vuran, "Wireless Sensor Networks", 2011, First Edition, John Wiley & Sons, New Jersey.
2. Anna Hac, "Wireless Sensor Network Designs", 2013, First Edition, John Wiley & Sons, New Jersey.
3. E,link: http://nptel.ac.in/courses/106105160/22.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C01	3	2	3	2	2								2	2
C02	2	3	2	3	3								2	1
C03	3	3	2	3	2								1	2
C04	1	2	3	2	3								2	1
C05	2	2	2	3	2								1	1

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IV B.Tech I Semester -CSE   3   -   -   3

Code: 17ACS54   **Digital Forensics**

(Professional Elective-IV)

Outcomes:

1. explain computer forensics fundamentals.
2. Describe the types of computer forensics technology.
3. Analyze various computer forensics systems.
4. Illustrate the methods for data recovery, evidence collection and data seizure and Summarize duplication and preservation of digital evidence.

UNIT-I
Computer Forensics Fundamentals

Introduction to Computer Forensics, Use of Computer Forensics in Law Enforcement, Computer Forensics Assistance to Human Resources/Employment Proceedings, Computer Forensics Services, Benefits of Professional Forensics Methodology.

UNIT-II
Types of Computer Forensics Technology

Types of Military Computer Forensic Technology, Types of Law Enforcement:
Computer Forensic Technology, Types of Business Computer Forensic Technology, Specialized Forensics Techniques, Hidden Data and How to Find It, Spyware and Adware. Encryption Methods and Vulnerabilities, Protecting Data from Being Compromised , Internet Tracing Methods, Security and Wireless Technologies, Avoiding Pitfalls with Firewalls, Biometric Security Systems.

UNIT- III
Types of Computer Forensics Systems

Internet Security Systems, Intrusion Detection Systems, Firewall Security Systems, Storage Area Network Security Systems, Network Disaster Recovery Systems, Public Key Infrastructure Systems, Wireless Network Security Systems, Satellite Encryption Security Systems, Instant Messaging (IM) Security Systems, Net Privacy Systems, Identity Management Security Systems, Identity Theft, Biometric Security Systems, Homeland Security Systems

UNIT- IV
Data Recovery

Data Recovery Defined, Data Backup and Recovery, the Role of Backup in Data Recovery, the Data,Recovery Solution, Hiding and Recovering Hidden Data

Evidence Collection and Data Seizure

Why Collect Evidence?, Collection Options ,Obstacles,Types of Evidence, The Rules of

Evidence ,Volatile Evidence ,General Procedure, Collection and Archiving, Methods of Collection, Artifacts.

UNIT-V
 Duplication and Preservation of Digital Evidence
Preserving the Digital Crime Scene, Computer Evidence Processing Step.
Computer Image Verification and Authentication: Special Needs of Evidential Authentication, Practical Considerations.

TEXT BOOK:
1. John R. Vacca, Computer Forensics: Computer Crime Scene Investigation, 2nd Edition, Charles River Media, 2005.

REFERENCE BOOKS:
1.ChristofPaar, JanPelzl, Understanding Cryptography: A Textbook for Students and Practitioners,2nd Edition, Springer's, 2010.
2.AliJahangiri, Live Hacking: The Ultimate Guide to Hacking Techniques & Countermeasures forEthical Hackers & IT Security Experts, Ali Jahangiri, 2009.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C01	3	2	1	2									2	1
C02	2	3	2	3									2	2
C03	2	1	1	3									1	2
C04	1	2	1	2									2	1

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IV B.Tech I Semester -CSE   3 - - 3
Code : 17ACS55   **Artificial Intelligence**
      (Professional Elective-IV)

OUTCOMES:
At the end of the course, students should be able to:
 1. define foundation and basic concepts of AI and Intelligent Agents.
 2. Evaluate Searching techniques for problem solving in AI.
3. Apply First order Logic and chaining techniques for problem solving.
4. Use knowledge representation techniques for problem solving.
5. Apply supervised, unsupervised learning and Neural Networks for solving problem in AI.

Unit – I
Introduction: What Is AI, the Foundations of Artificial Intelligence, The History of Artificial Intelligence, The State of the Art
 Intelligent Agents: Agents and Environments, Good Behavior: The Concept of Rationality, The Nature of Environments, And The Structure of Agents

Unit – II
Solving Problems by Searching: Problem,Solving Agents, Uninformed Search Strategies, Informed (Heuristic) Search Strategies, Heuristic Functions
 Beyond Classical Search: Local Search Algorithms and Optimization Problems, Searching with Nondeterministic Actions and Partial Observations, Online Search Agents and Unknown Environments **Constraint Satisfaction Problems:** Definition, Constraint Propagation, Backtracking Search, Local Search, The Structure of Problems

Unit – III
Logical Agents: Knowledge,Based Agents, Propositional Logic, Propositional Theorem Proving, Effective Propositional Model Checking, Agents Based on Propositional Logic
First,Order Logic: Syntax and Semantics, Knowledge Engineering in FOL, Inference in First Order Logic, Unification and Lifting, Forward Chaining, Backward Chaining, Resolution

Unit – IV
Planning: Definition, Algorithms, Planning Graphs, Hierarchical Planning, Multiagent Planning
 Knowledge Representation: Ontological Engineering, Categories and Objects, Events, Mental Events and Mental Objects, Reasoning Systems for Categories, Reasoning with Default Information, The Internet Shopping World

Unit – V
Learning from Examples: Forms of Learning, Supervised Learning, Learning Decision

Trees, Evaluating and Choosing the Best Hypothesis, The Theory of Learning, Regression and Classification with Linear Models, Artificial Neural Networks.

Expert Systems Architectures: Rule Based System Architecture, Non Production System Architecture, Knowledge System Building Tools.

TEXT BOOKS:
1. Artificial Intelligence: A Modern Approach, 3rd edition, Pearson , Russel S, Norvig P, Education, 2010.
2. Introduction to Artificial Intelligence and Expert Systems, Dan W. Patterson ,PHI, New Delhi, 2006.

REFERENCE BOOKS:
1. Artificial Intelligence, 3rd edition, Rich E, Knight K, Nair S B, Tata McGraw,Hill, 2009.
2. Artificial Intelligence: Structures and Strategies for Complex problem solving, 6th edition, Luger   George F,   Pearson Education, 2009
3. Minds and Computers An Introduction to the Philosophy of Artificial Intelligence, Carter M,Edinburgh University Press, 2007

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C01	3	-	-	-	-	-	3	-	-	3	-	-	-	2
C02	3	1	-	-	-	-	-	-	-	-	-	-	3	-
C03	3	2	2	1	1	-	3	-	-	3	-	3	-	-
C04	-	3	2	1	1	-	-	-	-	-	-	-	3	2
C05	-	-	-	1	1	-	-	-	-	-	-	3	3	-

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IV B.Tech I Semester -CSE   3   -   -   3

Code : 17ACS56   E-Commerce

(Professional Elective-IV)

Outcomes:

At the end of the course the student will have the ability to:

1. analyze t Electronic Commerce catalogs and information
2. develop filtering on business models
3. Implement electronic data interchange and value added networks.
4. Evaluate the use and techniques of advertising and marketing on the internet.
5. Evaluate the use of multimedia and digital video in E,Commerce.

UNIT-I

Welcome to Electronic Commerce: Electronic Commerce Framework, E,Commerce Consumer Applications, E,Commerce Organization Applications.

Consumer Oriented Electronic Commerce: Mercantile Process Models from the Consumer's Perspective, Mercantile Process Models from the Merchant's Perspective.

UNIT-II

Electronic Payment Systems: Designing Electronic Payment Systems, Types of Electronic Payment Systems, Digital Token,Based Electronic Payment Systems, Smart Cards, Credit Cards.

UNIT-III

Inter organizational Commerce and EDI: Electronic Data Interchange, EDI Applications in Business, Value Added Networks.

Intra organizational Commerce: Work,flow Automation and Coordination, Customization and Internal Commerce, Supply chain Management.

UNIT-IV

The Corporate Digital Library: Document Library, Types of Digital Documents, Corporate Data Warehouses.

Advertising and Marketing on the Internet: The New Age of Information,Based Marketing, Advertising on Internet, Market Research.

UNIT-V

Consumer Search and Resource Discovery: Information Search and Retrieval, Commerce

Catalogues and Directories, Information Filtering.

Multimedia and Digital Video: key Multimedia Concepts, Digital Video and Electronic Commerce, Desktop Video Processing.

Text Book:

"Frontiers of Electronic Commerce" ,1/e , Ravi Kalakata and Andrew B.Whinston. Pearson Education, 1995.

Reference Books:

1."E,Commerce, Fundamentals and Applications" by Hendry Chan, Raymond Lee, Tharam Dillon, Ellizabeth Chang. John Wiley & Sons Publications, 2001.

2."Doing Business on the Internet: E – Commerce" by S.Jaiswal. Galgotia Publications, 2003.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C01	3	2	3	2	1								2	2
C02	2	2	2	2	2								2	2
C03	2	1	3	1	1								1	2
C04	3	2	3	2	2								2	1
C05	2	2	2	2	1								1	2

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IV B.Tech I Semester -CSE $\qquad$ 3 - - 3

Code: 17AEC53 $\qquad$ **Satellite Communication**
(Open Elective-II)

Outcomes:

On completion of the course the students will be able to
1. Determine the location of Satellite.
2. Design satellite uplink and downlink.
3. Design earth station transmitter, receiver and antenna systems.
4. Various satellite systems &services provided

UNIT I

INTRODUCTION TO SATELLITE COMMUNICATIONS:

Origin of satellite communications, Historical background, basic concepts of satellite communications, frequency allocations for satellite services, applications, future trends of satellite communications.

Orbital Mechanics:

Orbital Mechanics, look angle determination, orbital perturbations, orbit determination, launches and launch vehicles, orbital effects in communication systems performance.

UNIT II

SATELLITE SUBSYSTEMS AND LINK DESIGN:

Attitude and orbital control system, Telemetry, Tracking, command and monitoring, power systems, communication subsystems, satellite antenna equipment reliability and space qualification. Basic transmission theory, system noise temperature and G/T ratio, design of down links, uplink design, design of satellite links for specified C/N, system design example.

UNIT III

EARTH STATION TECHNOLOGY:

Introduction, transmitters, receivers, Antennas, tracking systems, terrestrial interface, primary power test methods.

LOW EARTH ORBIT AND GEO-STATIONARY SATELLITE SYSTEMS:

Orbit consideration, coverage and frequency considerations, delay and throughput considerations, system considerations, operational NGSO constellation designs.

UNIT IV

MULTIPLE ACCESS:

Frequency division multiple access (FDMA) Inter modulation, calculation of C/N, Time Division multiple access (TDMA) frame structure, examples. Satellite switched TDMA onboard processing, DAMA, code division multiple access (CDMA), spread spectrum transmission and reception.

UNIT V

SATELLITE NAVIGATION & THE GLOBAL POSITIONING SYSTEM:

Radio and satellite navigation, GPS position location principles, GPS receivers and codes, satellite signal acquisition, GPS navigation message, GPS signal levels, GPS receiver operation, GPS C/Acode accuracy, differential GPS.

Text Books:

1. Timothi Pratt, Charles Bostian and Jeremy Allnutt, "Satellite communications", WSE, Wiley publications, 2nd Edition, 2003.

2. Wilbur L.Prichard, Robert A. Nelson & Henry G.Suyderhoud, "Satellite communications Engineering", Pearson Publications, 2nd Edition, 2003.

3. D.C.Agarwal, "Satellite communications", Khanna publications, 5th Ed.

Reference Books:

1. Dennis Roddy, "Satellite communications", McGraw Hill, 2nd Edition, 1996.

2. M. Richharia, "Satellite communications: Design principles", BS publications, 2nd Edition, 2003.

3. K.N.Rajarao, "Fundamentals of Satellite communications", PHI, 2004.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C01	3	2	2										1	2
C02	3	2	2										1	2
C03	3	2	2										1	2
C04	3	2	2										1	2

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IV B.Tech I Semester-CSE   3   -   -   3
Code : 17AAT26   **Supply Chain Management**
                                (Open Elective-II)

Outcomes

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

1. Apply concepts of SCM, with inventory management, application of IT tools, logistic management, and emerging trends.
2. Illustrate the application of SCM tools to identify solutions to industry.
3. Identify the optimum solutions with system approach to both industry and service sector.
4. Judge the advanced software tools for decision making with available sources for cost reduction and profit maximization with society concern.
5. Develop a team and play a key role in decision making with interpretation skills for all round development of organization.
6. Develop managerial skills to achieve goals of industry with continuous learning

UNIT - I
Introduction to SCM
Supply Chain , Definition, Objectives; Global optimization, Importance of Supply Chain Decisions, Decision Phases in a Supply Chain and Importance of supply chain. SCM and objectives of SCM; Competitive and Supply Chain Strategies; Achieving Strategic fit, Obstacles to achieve strategic fit. Supply Chan Drivers , Inventory, Information, Transportation
and Facilities

UNIT- II
Inventory Management in SCM
Economic lot size model, Effect of demand uncertainty, Risk pooling, centralized and decentralized system, Managing inventory in the supply chain, Distribution Channel Management, Distribution Resource Planning

UNIT - III
Value of information
Bullwhip effect, Information and supply chain technology, Supply chain integration, push, Pull and push,pull system, Demand driven strategies, Role of Information Technology in SCM , Impact of internet on SCM, DSS for SCM , Goals, Standardization and Infrastructure.

UNIT - IV
Designing And Planning Transportation Networks
The role of transportation in a Supply chain, Modes of transportation and their performance

characteristics, Transportation infrastructure and policies, Design options for a transportation network, Trade,offs in transportation design, tailored transportation,

UNIT - V

International & Contemporary issues in SCM

Demand and Supply planning, Mass customization, Global issues and Outsourcing problems, aligning the Supply Chain with Business Strategy , SCOR Model, Third party logistics; Retailer,Supplier Partnership, Distributors integration, Supply Chain Management Metrics, Emerging

trends in SCM

Text Books:

1. Sunil Chopra & Peter Meindl, Supply Chain Management strategy, Planning & Operation, 4th Edition, Pearson Education Asia.
2. Janat Shah, Supply Chain Management, Pearson, 1st edition 2009.

Reference Books:

1. Thomas E Vollman and Clay Whybark D, Manufacturing Planning and Control for SupplyChain Management, Tata McGraw Hill, Fifth Edition, New Delhi, 2005
2. Simchi , Levi Davi, Kaminsky Philip and Simchi,Levi Edith, Designing and Managing the Supply Chain, Tata McGraw Hill, New Delhi, 3rd edition 2007.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C01	3	2	2	3	2	1							2	2
C02	2	2	1	2	2	1							2	3
C03	2	1	2	1	1	2							1	2
C04	3	2	2	3	2	1							2	3
C05	2	2	2	2	2	2							1	2
CO6	3	2	2	3	2	1							2	3

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IV B.Tech I Semester - CSE	**3**	**-**	**-**	**3**

Code : 17AME57   **Total Quality management**
                                      (Open Elective-II)

Outcomes:

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

1. Apply TQM concepts with quality standards, tools, value addition and reliability concept.
2. Develop a team and play a key role in decision making with interpretation skills besides continuous learning.
3. Solve industry problems with available sources, software tools, modern TQM techniques with system approach.
4. Select the best solution for problem solving using QFD model and obtain patents for innovative idea and models.
5. Judge the solutions to sustain customer trust worth ship besides industry growth by getting ISO certification.

Unit-I
Introduction
Introduction , Need for quality , Evolution of quality , Definitions of quality , Dimensions of product and service quality , Basic concepts of TQM , TQM Framework , Contributions of Deming, Juran and Crosby , Barriers to TQM , Quality statements , Customer focus , Customer orientation, Customer satisfaction, Customer complaints, Customer retention , Costs of quality.

Unit-II
TQM Principles
Leadership , Strategic quality planning, Quality Councils , Employee involvement , Motivation,
Empowerment, Team and Teamwork, Quality circles Recognition and Reward, Performance appraisal , Continuous process improvement , PDCA cycle.

Unit-III
TQM Tools and Techniques,I
The seven traditional tools of quality , New management tools , Six sigma: Concepts, Methodology, applications to manufacturing, service sector including IT , Bench marking , Reason to bench mark, Bench marking process , FMEA , Stages, Fault tree analysis.

Unit-IV
 TQM Tools And Techniques,II
Control Charts , Process Capability – Problem solving , Quality Function Development (QFD) , Taguchi quality loss function – Total Productive Maintenance , Concepts, improvement needs , Performance measures. Poka,yoke, Kaizen , JIT.

Unit-V
Quality Systems
Need for ISO 9000 , ISO 9001,2008 Quality System , Elements, Documentation, Quality

Auditing , QS 9000 , ISO 14000 , Concepts, Requirements and Benefits , TQM Implementation in manufacturing and service sectors

TEXT BOOKS:

1. Dale H. Besterfiled, et at., "Total quality Management", Third Edition, Pearson Education Asia,

   Indian Reprint, 2006.
2. "Total quality Management", Dr.K.C.Arora,2007.

REFERENCES BOOKS:

1. James R. Evans and William M. Lindsay, "The Management and Control of Quality", 8th
   Edition, First Indian Edition, Cengage Learning, 2012.
2. Suganthi.L and Anand Samuel, "Total Quality Management", Prentice Hall (India) Pvt. Ltd.,
   2006.
3. Janakiraman. B and Gopal .R.K., "Total Quality Management , Text and Cases", Prentice Hall

   (India) Pvt. Ltd., 2006.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C01	3	2	3	2									3	1
C02	2	2	3	1									2	2
C03	3	1	3	2									1	2
C04	3	2	2	2									2	3
C05	2	2	3	2									1	1

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IV B.Tech I Semester -CSE		3	-	-	3

Code : 17ACE63   Disaster management
                   (Open Elective-II)

Outcomes:

After learning the course the students should be able to:

1. define disasters, disaster preparedness and mitigation measures
2. relate role of IT, remote sensing, GIS and GPS in risk reduction
3. explain disaster management acts and guidelines along with role of various stakeholders during disasters
4. Understand various plans and guidelines of Govt. of India
5. develop Medical and Psychosocial Response to Disasters

UNIT-I
Understanding Disasters

Understanding the Concepts and definitions of Disaster, Hazard, Vulnerability, Risk, Capacity – Disaster and Development, and disaster management.

UNIT-II
Types, Trends, Causes, Consequences and Control of Disasters

Geological Disasters (earthquakes, landslides, tsunami, mining); Hydro,Meteorological Disasters (floods, cyclones, lightning, thunder,storms, hail storms, avalanches, droughts, cold and heat waves); Biological Disasters (epidemics, pest attacks, forest fire); Technological Disasters (chemical, industrial, radiological, nuclear) and Manmade Disasters (building collapse, rural and urban fire, road and rail accidents, nuclear, radiological, chemicals and biological disasters).

UNIT-III
Disaster Management Cycle and Framework

Disaster Management Cycle – Paradigm Shift in Disaster Management Pre,Disaster – Risk Assessment and Analysis, Risk Mapping, zonation and Microzonation, Prevention and Mitigation of Disasters, Early Warning System; Preparedness, Capacity Development; Awareness During Disaster – Evacuation – Disaster Communication – Search and Rescue – Emergency Operation Centre – Incident Command System – Relief and Rehabilitation – Post,disaster – Damage and Needs Assessment, Restoration of Critical Infrastructure – Early Recovery – Reconstruction and Redevelopment; IDNDR, Yokohama Strategy, Hyogo Framework of Action.

UNIT-IV
Disaster Management in India

Disaster Profile of India – Mega Disasters of India and Lessons Learnt Disaster Management Act 2005 – Institutional and Financial Mechanism National Policy on Disaster Management, National Guidelines and Plans on Disaster Management; Role of Government (local, state and

national), Non,Government and Inter,Governmental Agencies.

UNIT-V
Applications of Science and Technology for Disaster Management
Geo,informatics in Disaster Management (RS, GIS, GPS and RS), Disaster Communication System (Early Warning and Its Dissemination), Land Use Planning and Development Regulations, Disaster Safe Designs and Constructions, Structural and Non Structural Mitigation of Disasters, S&T Institutions for Disaster Management in India.

Text Books:
1. Disaster Management Act 2005, Publisher by Govt. of India.
2. Encyclopedia of disaster management, Vol I, II and IIIL Disaster management policy and administration, S L Goyal, Deep & Deep, New Delhi, 2006.
3. Management of Natural Disasters in developing countries, H.N. Srivastava & G.D. Gupta, Daya Publishers, Delhi, 2006.

Reference Books:
1. Publications of National Disaster Management Authority (NDMA) on Various Templates and
   Guidelines for Disaster Management.
2. National Disaster Management Policy, 2009, GoI.
3. Satapathy S. Psychosocial care in Disaster management, A training of trainers manual (ToT), NIDM publication, 2009.
4. Taori, K, Disaster Management through Panchayati Raj, Concept Publishing Company, New Delhi, 2005.
5. Roy, P.S. Space Technology for Disaster management: A Remote Sensing & GIS Perspective,
   Indian Institute of Remote Sensing (NRSA) Dehradun, 2000.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C01	3	2	2	3	3								2	2
C02	2	2	1	2	2								2	2
C03	2	1	2	2	3								1	1
C04	3	2	1	3	3								2	2
C05	2	2	2	2	2								1	2

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	L	T	P	C
IV B.Tech I Semester -CSE	3	-	-	3

Code : 17AMB03   **Professional Ethics**
                             (Open Elective-II)

Outcomes: After completion of this course students will be able to:

1. practice human values and ethical standards to lead career accordingly.

2. follow appropriate safety measures in designing systems.

3. identify the role of "responsible engineer" in the society.

4. Use natural resources in a sustainable manner and be conscious of environment.

5. practice safety measures in engineering and product design aspects.

UNIT-I
INTRODUCTION: Professionalism, models of professionalism, Ethics,Types of ethics and morality, Engineering ethics, Positive and negative faces of ethics, Responsibility for safety,Technology pessimism and perils of technological optimism.

UNIT-II
ETHICAL CONCEPTS: Human Values – morals, integrity, work ethics, Respect for others, respect for authority, conflicts of interests, moral dilemmas, honesty, courage, cooperation, valuing time, commitment, collegiality, loyalty, self ,interest, Professional accountability, royalty, Problem of bribery, extortion and grease payments, problem of nepotism, excessive gifts, confidentiality,uses of ethical theories, Kohlberg's Theory, Gilligan`s Theory, Ethical codes of IEEE and Institution of Engineers.

UNIT-III
ENGINEERS ROLE IN SAFETY: Safety and risks,risk and costs,risk benefit analysis,Testing methods for safety,The promise of technology,Computer Technology Privacy,Social policy,Engineering standards,the standards care,Social and value dimensions of technology,communicating risk and public policy,occupational crime,professional rights and employee rights,whistle blowing.

UNIT- IV
ROLES OF ENGINEERS: Engineers as managers, Advisors, Consultants, Experts and

witnesses, Engineers role in industry and society, models of professional roles,Theories about right action,paternalism,different business practices,Moral leadership, Cases , Bhopal gas tragedy, Nuclear power plant disasters.

UNIT –V

ENVIRONMENTAL ETHICS: Global Issues,Multinational corporations,Living in harmony with NATURE,Holistic technology,Eco friendly production system,sustainable technology and development,weapon development,Four orders of living, their interconnectedness,Eco system,Ozone depletion,,pollution

TEXT BOOKS:
1. Subramanian R, Professional Ethics,1st Edition, Oxford University Press. 2013.
2. Naagarazan , R.S., A Textbook on Professional Ethics and Human Values,1st edition, New Age International (P) Limited, Publishers New Delhi.,2014

REFERENCE BOOKS:
1. Fundamentals of Ethics for scientists and Engineers, Edmond G Seebauer and
   Robert L. Barry, 1st edition Oxford University Press, 2008.
2. R. R. Gaur, R. Sangal and G. P. Bagaria, Human Values and Professional
   Ethics:, Eecel Books,New Delhi.2010.
3. Professional Ethics and Human Values – M.Govindrajan, S.Natarajan and V.S.
   Senthil Kumar, PHI Learning Pvt. Ltd. Delhi.
4. Professional Ethics and Human Values: Prof. D.R. Kiran, TATA McGraw Hill
   Education, 2007.
5. Charles D Fleddermann, "Engineering Ethics", Prentice Hall.
6. Charles E Harris, Micheal J Rabins, "Engineering Ethics, Cengage Learning.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C01	3	-	-	-	-	-	-	-	-	-	-	-	-	2
C02	3	2	-	1	1	-	1	-	-	-	-	-	3	2
C03	3	2	1	1	1	-	1	-	-	-	-	-	3	-
C04	-	-	1	3	-	1	-	3	-	-	-	-	3	2
C05	-	-	1	3	1	1	1	3	-	-	-	-	3	-

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	L	T	P	C

IV B.Tech I Semester -CSE   -   -   3   1.5

Code : 17ACS58   **Software Testing lab**

Outcomes:

1. Analyze the software requirements and report the bugs
2. Design test cases using relevant testing techniques for an application.
3. Use software testing tools and technologies for testing desktop applications.
4. Understand the software development lifecycle in developing a software.
5. perform as an individual and member of a team for testing software applications.

LIST OF EXPERIMENTS

1.   Write programs in 'C' Language to demonstrate the working of
   the   following   constructs:

   i) do...while ii) while….do iii) if…else iv) switch v) for

2. "A program written in 'C' language for Matrix Multiplication fails" Introspect the causes
   for its failure and write down the possible reasons for its failure.

3. Take any system (e.g. ATM system) and study its system specifications
   and report the various bugs.

4. Write the test cases for any known application (e.g. Banking application)

5. Create a test plan document for any application (e.g. Library Management System)

6. Study of any testing tool (e.g. Winrunner)

7. Study of any web testing tool (e.g. Selenium)

8. Study of any bug tracking tool (e.g. Bugzilla, bugbit)

9. Study of any test management tool (e.g. Test Director)

10. Study of any open source, testing tool (e.g. Test Link)

11. Take a mini project (e.g. University admission, Placement Portal) and
    executes it. During the Life cycle of the mini project create the various testing
    documents* and final test report document.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C01	3	1	1	-	-	-	-	-	-	-	-	-	-	3
C02	3	1	2	1	1	-	-	-	-	-	-	1	2	3
C03	-	1	3	3	1	-	-	-	-	-	-	3	2	-
C04	-	-	-	2	1	-	-	-	-	-	-	2	2	3
C05	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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		L	T	P	C
		-	-	3	1.5

IV B.Tech I Semester -CSE

Code: 17ACS59   **Internet of Things lab**

Outcomes:

1. Implement the technology that enables IoT.

2) use Hardware and software required to design and build IoT

3) develop Interface with sensors and actuators, other IoT devices, and cloud servers

4) Design and Develop program mobile computing device to access IoT data from cloud and to interact with devices.

LIST OF EXPERIMENTS

1 Connect Arduino board and glow LED, Read analog and digital sensors such as relay, temperature, Humidity.

2 Load the OS in Raspberry pi,

3 Interface with Bluetooth and transmit sensor data to other node

4 Interface with Zigbee and transmit sensor data to other node

5 Interface with 6LoWPAN and transmit sensor data to other node

6 Store sensor data in cloud

7 Mobile app to display cloud data

8 Measure the light intensity in the room and output data to the web API

9 Control your home power outlet from anywhere using raspberry pi, zigbee and arduino

10 Build a web based application to automate door that unlocks itself using facial recognition.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C01	3	1	-	-	1	-	-	-	-	-	-	-	3	3
C02	3	1	3	-	-	-	-	-	-	-	-	2	3	2
C03	-	1	2	3	2	-	-	-	-	-	2	-	-	1
C04	-	-	1	3	3	-	-	-	-	-	2	2	3	2

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	L	T	P	C
IV B.Tech II Semester -CSE	3	-	-	3

Code : 17ACS62   **Data Sciences**
(Professional Elective-V)

Outcomes:

After completing this course the student will be able to:
1. Develop basic skills and understanding of Data Science
2. Use python to carry out basic statistical modeling and analysis.
3. Apply Bayes's Theorem , Random Variables, Continuous Distributions,.
4. develop programs for Getting Data, stdin and stdout, Reading Files.

UNIT 1 : Introduction: What Is Data Science, Motivating Hypothetical: Data Sciencester, Finding Key Connectors, Data Scientists You May Know,

UNIT 2: Python :The Basics, Getting Python, The Zen of Python, Whitespace Formatting,Modules,Arithmetic,Functions,Strings,Exceptions,Lists,Tuples,Dictionaries,Sets, Control Flow, Truthiness, The Not-So-Basics, Sorting, List Comprehensions, Generators and Iterators, Randomness, Regular Expressions, Object-Oriented Programming, Functional Tools, enumerate,zip and Argument Unpacking, args and kwargs,

UNIT 3: Visualizing Data, matplotlib, Bar Charts, Line Charts, Scatterplots, Linear Algebra, Vectors, Matrices

UNIT 4: Statistics, Describing a Single Set of Data, Central Tendencies, Dispersion, Correlation, Simpson's Paradox , Probability, Dependence and Independence, Conditional Probability, Bayes's Theorem Random Variables, Continuous Distributions, The Normal Distribution, The Central Limit Theorem

UNIT 5: Hypothesis and Inference, Statistical Hypothesis Testing, Example: Flipping a Coin, Confidence Intervals, P-hacking, Example: Running an A/B Test, Bayesian Inference, Getting Data, stdin and stdout, Reading Files, The Basics of Text Files, Delimited Files, Scraping the Web, HTML and the Parsing Thereof, Working with Data, Exploring Your Data, Exploring One-Dimensional Data, Two Dimensions, Many Dimensions,

TEXT BOOK:

"Data Science from Scratch",Joel Grus,O'Reilly Media,2015

REFERENCE BOOKS:

1."Doing Data Science, Straight Talk from the Frontline", Cathy O'Neil and Rachel Schutt.

O'Reilly. 2014.

2. Jiawei Han, Micheline Kamber and Jian Pei. Data Mining: Concepts and Techniques, Third Edition.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C01	1	-	-	-	-	-	-	-	-	-	-	-	-	2
C02	2	3	-	1	-	-	-	-	-	-	-	-	3	-
C03	3	2	1	2	1	-	-	-	-	-	-	-	-	2
C04	-	1	1	3	1	-	-	-	-	-	-	-	3	2

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	L	**T**	**P**	**C**
IV B.Tech II Semester -CSE	**3**	**-**	**-**	**3**

Code: 17ACS63   **Deep Learning**
                    (Professional Elective-V)

Outcomes:

At the end of the course the student will be able to:

1   Describe basics of deep learning
2   Implement various deep learning models
3   Realign high dimensional data using reduction techniques
4   Analyze optimization and generalization in deep learning
5   Use deep learning applications

UNIT I

Introduction: Introduction to machine learning- Linear models (SVMs and Perceptrons, logistic regression)- Intro to Neural Nets: What a shallow network computes- Training a network: loss functions, back propagation and stochastic gradient descent- Neural networks as universal function approximates.

UNIT II

 Deep Networks: History of Deep Learning- A Probabilistic Theory of Deep Learning- Back propagation and regularization, batch normalization- VC Dimension and Neural Nets-Deep Vs Shallow Networks Convolutional Networks - Generative Adversarial Networks (GAN), Semi-supervised Learning .

UNIT III

Dimensionality Reduction: Linear (PCA, LDA) and manifolds, metric learning - Auto encoders and dimensionality reduction in networks - Introduction to Convnet - Architectures – AlexNet, VGG, Inception, ResNet - Training a Convnet: weights initialization, batch normalization, hyper parameter optimization.

UNIT IV

Optimization and Generalization: Optimization in deep learning– Non-convex optimization for deep networks- Stochastic Optimization Generalization in neural networks- Spatial Transformer Networks- Recurrent networks, LSTM - Recurrent Neural Network Language Models- Word-Level RNNs & Deep Reinforcement Learning - Computational & Artificial Neuroscience.

UNIT V

Case Study and Applications: Image net- Detection-Audio Wave Net-Natural Language Processing Word2Vec - Joint Detection Bioinformatics- Face Recognition- Scene Understanding- Gathering Image Captions.

 TEXT BOOKS:

1. **"Deep Learning"** , Ian Goodfellow, Yoshua Bengio , Aaron Courville, MIT Press , 2016.
2. "**Neural Networks and Deep Learning A Text Book**", Charu C Aggarwal, Springer International Publishing AG, Part of Springer Nature 2018.

REFERENCE BOOKS:

1. "**Deep Learning: Methods and Applications (Foundations and Trends (R) in Signal Processing)",** Li Deng and Dong Yu, New Publishers, 2013.
2. "**Advanced Data Analysis from an Elementary Point of View",** Cosma Rohilla Shalizi, Cambridge University Press, 2015.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C01	3	2	2	1	1								2	3
C02	3	3	2	2	1								2	3
C03	3	3	2	2	2								1	2
C04	3	3	3	2	1								2	3
C05	2	2	2	2	2								1	2

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	L	**T**	**P**	**C**

IV B.Tech II Semester -CSE   **3   -   -   3**
Code : 17ACS64   **Android Application Development**
                                              (Professional Elective-V)

OUTCOMES:
On Completion of the course, the students should be able to:
1   Design and implement the user interfaces for mobile applications.
2   Design mobile applications that is aware of the resource constraints of mobile devices.
3   Develop advanced mobile applications that accesses the databases and the web.
4   Develop useful mobile applications in the current scenario using Google Android and Eclipse simulator.

UNIT I - INTRODUCTION
Mobile Applications – Characteristics and Benefits – Android Development Environment– Writing Your First Android Application– Mastering the Android Development Tools – Understanding the Anatomy of an Android Application

UNIT II - ANDROID USER INTERFACE DESIGN ESSENTIALS
Exploring User Interface Screen Elements– Introducing Android Views and Layouts, Displaying Text to Users with Text View, Retrieving Data from Users with Edit Text, Allowing Simple User Selections
With Buttons, Check Boxes, Switches, and Radio Groups.
Designing User Interfaces with Layouts - Creating User Interfaces in Android, Organizing Your User Interface, Using Built-in Layout Classes, Using Container Control Classes.

UNIT III - ANDROID APPLICATION DESIGN ESSENTIALS
Using Android Preferences - Working with Files and Directories - Using Content Providers - Designing Compatible Applications - Designing User Interfaces for Compatibility, Providing Alternative Application Resources.

UNIT IV - JAVA FOR ANDROID
Android Is Reshaping Client-Side Java - The Java Type System – Scope - Idioms of Java Programming - The Ingredients of an Android Application - Traditional Programming Models Compared to Android - Activities, Intents, and Tasks - Other Android Components - Component Life Cycles - Static Application Resources and Context - Extending Android - Concurrency in Android - Serialization

UNIT V - ANDROID FRAMEWORK
Android GUI Architecture - Assembling a Graphical Interface - Wiring Up the Controller - Fragments and Multiplatform Support - Drawing 2D and 3D Graphics – SQLite - SQL and the Database-Centric Data Model for Android Applications.

TEXT BOOKS:
1. Share Conder, Lauren Darcey, "Android Wireless Application Development" Pearson 3rd Edition. 2012
2. Zigurd Mednieks, Laird Dornin, G, Blake Meike and Masumi Nakamura, ―Programming Android‖, O‟Reilly, 2011
REFERENCES:

1. Professional mobile Application Development paperback, Jeff Mcherter (Author),Scott Gowell (Author), Wiley India Private Limited 2012
2. Reto Meier, Wrox Wiley, ―Professional Android 2 Application Development‖, 2010.
3. Alasdair Allan, ―iPhone Programming‖, O‟Reilly, 2010.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C01	3	2	3	1	2								3	2
C02	3	1	2	2	1								3	2
C03	3	2	3	2	2								2	1
C04	3	1	3	1	1								3	2
C05	2	1	2	2	2								2	1

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	L	**T**	**P**	**C**
IV B.Tech II Semester -CSE	**3**	**-**	**-**	**3**

Code : 17ACS65　　　　**HIGH SPEED NETWORKS**
(Professional Elective-V)

Outcomes:

After completing this course the student will be able to:

1 Implement Wireless LANs,Wifi and WiMax networks .

2 Implement congestion control in Packet switching Networks.

3 Analyze the performance of TCP over ATM networks.

4 Implement protocols for Quality of service.

UNIT I HIGH SPEED NETWORKS

Frame Relay Networks – Asynchronous transfer mode – ATM Protocol Architecture,
ATM logical Connection – ATM Cell – ATM Service Categories – AAL. High Speed
LAN's: Fast Ethernet – Gigabit Ethernet– Fibre Channel – Wireless LAN's, WiFi and
WiMax Networks applications, requirements – Architecture of 802.11.

UNIT II CONGESTION AND TRAFFIC MANAGEMENT

Queuing Analysis – Queuing Models – Single Server Queues – Effects of Congestion –
Congestion Control – Traffic Management – Congestion Control in Packet Switching
Networks – Frame Relay Congestion Control.

UNIT III TCP AND ATM CONGESTION CONTROL

TCP Flow control – TCP Congestion Control – Retransmission – Timer Management –
Exponential RTO backoff – KARN's Algorithm – Window management – Performance of
TCP over ATM. Traffic and Congestion control in ATM – Requirements – Attributes –
Traffic Management Frame work, Traffic Control – ABR traffic Management – ABR rate
control, RM cell formats – ABR Capacity allocations – GFR traffic management.

UNIT IV INTEGRATED AND DIFFERENTIATED SERVICES

Integrated Services Architecture – Approach, Components, Services- Queuing Discipline
– FQ – PS – BRFQ – GPS – WFQ – Random Early Detection – Differentiated Services.

UNIT V PROTOCOLS FOR QOS SUPPORT

RSVP – Goals & Characteristics, Data Flow, RSVP operations – Protocol Mechanisms
– Multiprotocol Label Switching – Operations, Label Stacking – Protocol details – RTP

– Protocol Architecture – Data Transfer Protocol– RTCP.

TEXT BOOKS:

1. William Stallings, "High speed networks and internet", Second Edition, Pearson Education, 2002.

REFERENCES:

1. Warland, Pravin Varaiya, "High performance communication networks", Second Edition , Jean Harcourt Asia Pvt. Ltd., , 2001.

2. Irvan Pepelnjk, Jim Guichard, Jeff Apcar, "MPLS and VPN architecture", Cisco Press, Volume 1 and 2, 2003.

3. Abhijit S. Pandya, Ercan Sea, "ATM Technology for Broad Band Telecommunication Networks", CRC Press, New York, 2004.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C01	3	2	2	3	1								3	2
C02	2	1	2	2	1								1	1
C03	3	2	2	3	2								2	1
C04	3	1	1	3	1								3	2

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		L	T	P	C
IV B.Tech II Semester -CSE		3	-	-	3

Code : 17ACS66 **Information Retrieval Systems**
(Professional Elective-V)

Outcomes

1 Develop skills for storing and retrieving textual documents using appropriate models
2 Use various retrieval strategies for improving search
3 Design indexing and catalog documents to improve space and time efficiency
4 Formulate SQL like queries for unstructured data.
5 Define concepts of clustering and in advanced topics.

UNIT-I
Introduction: Concepts and teriminology of information retrieval systems, Significance of information retrieval and storage, information retrieval vs information extraction,Relationship to DBMS,Digital library and Data Warehouse.
RETRIEVAL TOOLS: Bibilographies,Catalogs,Indexes,Finding Aids,Registers,Online Databases.

UNIT-II
Retrieval Strategies: Vector space model,Probabilistic retrieval strategies,Simple term weights,Non binary independence model,Language model.

UNIT-III
Cataloging and Indexing: Objectives indexing process,Automatic indexing information extraction.
Automatic Indexing: Classes of automatic indexing, Statistical indexing, Natural language,Concept indexing,Hypertext linkages.

UNIT-IV
User Search techniques: Boolean queries,Sequential searching,Pattern matching,Structual queries compression,Parallel and Distributed IR
Text Search Algorithm: Software Text Search,Hardware Text Search

UNIT-V
Clustering: Partitioning methods,k-means clustering, hierarchical
Introduction to advanced topics: Search relevance feedback,ranking,query expansion.

TEXT BOOK

- David A. Grossman, Ophir Frieder, information Retrieval —Algorithms and Heuristics, Springer, 2 Edition (Distributed by Universities Press), 2004.

REFERENCE BOOKS

1.   Gerald J Kowaiski, Mark T Maybury. Information Storage and Retrieval Systems, Springer, 2000

2.   Soumen Chakrabarti, Mining the Web : Discovering Knowledge from Hypertext Data, Morgan-Kaufrnann Publishers, 2002

3.   Christopher D. Manning, Prabhakar Raghavan, Hinñch Schütze, An Introduction to Information Retrieval, Cambridge University Press, Cambridge, England, 2009

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C01	3	1	3	2	3								3	2
C02	2	1	2	1	2								3	2
C03	3	2	3	2	3								2	2
C04	3	1	3	2	3								2	1
C05	3	2	1	1	1								3	2

1

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IV B.Tech II Semester -CSE   3   -   -   3
Code : 17ACS67   **Software quality assurance and Testing**
                                      (Professional Elective-VI)

Outcomes:
At the end of the course, the students would be able to
   1. Define Software Quality program and the standards involved.

   2. Analyse purpose of establishing software quality goals and gain knowledge in documentation.

   3. Develop structured approach to software testing

   4. Apply appropriate techniques and tools for software testing.

UNIT I
Introduction to Software Quality:
Quality as a Management Information System, Software Modeling and Commonly Used Models, The Structure of the Model, The Three CPIs, Total Quality Management Practice, and The First steps to Planning for Quality.
Establishment of a Software Quality Program:
Scope of the Software Quality Program, Professional Ethics -Selling the Quality Plan.
Quality Standards: ISO 9000 and Companion ISO Standards, CMM, CMMI standards.

UNIT II
Software Quality Assurance Planning- Overview: History of the Standard, Contents and Structure of the Standard.
Establishing Quality Goals: The purpose of Quality Goals, The Quality Goal Methodology.
Software Quality AssurancePlan-Management: Organization,Quality Tasks, Responsibilities, a Minimal QA Effort, Factors Affecting QA Effort.

UNIT III
Building a Software Testing Strategy: Establishing testing policy, structured approach to testing, test factors, Economics of System Development Life Cycle (SDLC) Testing.
Software Testing Methodology: Defects hard to find, verification and validation, functional and structural testing, workbench concept, eight considerations in developing testing methodologies, testing tactics checklist.

UNIT IV
Software Testing Techniques: Testing Techniques/Tool Selection Process, Selecting Techniques/Tools, Structural System Testing Techniques, Functional System Testing Techniques, Unit Testing Technique, Functional Testing and Analysis, FunctionalTesting.
Selecting and Installing Software Testing Tools: Testing tools-The Hammers of testing,

Overview, Selecting and Using the Test Tools, Appointing managers for Testing Tools.

UNIT V
Software Testing Process:
Eleven Step Testing Process: Assess Project Management Development Estimate and Status, Develop Test Plan, Requirements Phase Testing, Design Phase Testing, Program Phase Testing, Execute Test and Record Results, Acceptance Test, Report test results, testing software installation, Test software changes, Evaluate Test Effectiveness.
Testing Specialized Systems and Applications
Testing Client/Server – Web applications, testing off the Shelf Components, Testing Security, Testing a Data Warehouse.

TEXT BOOKS:

1. William E. Perry, Effective *Methods for Software Testing,* Second Edition, Wiley India, 2006.

2. Mordechai Ben-Menachem/Garry S. Marliss, Software *Quality*, BS *Publications, 2014.*

REFERENCE BOOKS:

1. Gao, Tsao and Wu, *Testing and Quality Assurance for Component-based Software*, Artech House Publishers (August 2003).

2. G. Gordon Schulmeyer, James I.McManus ,*Handbook of Software Quality Assurance*, Second Edition, International Thomson Computer Press.

3. William E.Lewis, Gunasekaran Veerapillai, *Software Testing and continuous Quality Improvement*, Second Edition, Auerbach Publications.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C01	3	2	3	2	1								3	3
C02	3	2	2	1	1								2	3
C03	2	1	3	2	2								3	3
C04	2	2	3	2	1								2	2

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	L	T	P	C
IV B.Tech II Semester -CSE	3	-	-	3

Code : 17ACS68   STORAGE AREA NETWORK
(Professional Elective-VI)

Outcomes:

At the end of this course the student should be able to:

1. Define Server, storage-Centric IT Architecture.

2. Apply important storage technologies' features such as availability, replication, scalability and performance,

3. Identify and install current storage virtualization technologies .

4. Apply Storage Virtualization on various levels of the storage Network

UNIT – I

INTRODUCTION: Server Centric IT Architecture and its Limitations; Storage – Centric IT Architecture and its advantages; Case study: Replacing a server with Storage Networks; The Data Storage and Data Access problem; The Battle for size and access.

UNIT - II

INTELLIGENT DISK SUBSYSTEMS - 1: Architecture of Intelligent Disk Subsystems; Hard disks and Internal I/O Channels, JBOD, Storage Virtualization using RAID and different RAID levels;

UNIT - III

I/O TECHNIQUES - 1: Caching: Acceleration of Hard Disk Access; Intelligent disk subsystems; Availability of disk subsystems. The Physical I/O path from the CPU to the Storage System; SCSI.

UNIT - IV

I/O TECHNIQUES – 2 : NETWORK ATTACHED STORAGE: Fibre Channel Protocol Stack; Fibre Channel SAN; IP Storage. The NAS Architecture, The NAS hardware Architecture, The NAS Software Architecture, Network connectivity, NAS as a storage system.

UNIT - V

FILE SYSTEM AND NAS: Local File Systems; Network file Systems and file servers; Shared   Disk file systems; Comparison of fibre Channel and NAS.

STORAGE VIRTUALIZATION: Definition of Storage Virtualization; Implementation Considerations; Storage Virtualization on Block or file level; Storage Virtualization on various levels of the storage Network; Symmetric and Asymmetric storage Virtualization in the Network

TEXT BOOKS:

1. Ulf Troppens, Rainer Erkens and Wolfgang Muller,Storage Networks Explained, John Wiley & Sons, 2003.

2. Robert Spalding,Storage Networks: The Complete Reference , Tata McGraw Hill, 2003.

REFERENCE BOOKS:

1. Richard Barker and Paul Massiglia,Storage Area Network Essentials: A Complete Guide to understanding and Implementing SANs–, John Wiley India, 2002.

2. Marc Farley,Storage Networking Fundamentals, Cisco Press, 2005.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C01	3	2	3	2	2								3	2
C02	3	1	2	1	1								2	1
C03	2	1	2	2	2								3	2
C04	2	2	3	2	1								2	1

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	L	**T**	**P**	**C**
IV B.Tech II Semester -CSE	**3**	**-**	**-**	**3**

Code : 17ACS69   INTRODUCTION TO CYBER SECURITY
                        (Professional Elective-VI)

OUTCOMES:

1. define cyber security fundamentals.
2. list the types of cyber technology.
3. Analyze various security countermeasures.
4. Illustrate the methods for privacy in cyberspace.

UNIT I INTRODUCTION TO CYBER SECURITY Introduction -Computer Security - Threats -Harm - Vulnerabilities - Controls - Authentication - Access Control and Cryptography - Web—User Side - Browser Attacks - Web Attacks Targeting Users - Obtaining User or Website Data - Email Attacks

UNIT II SECURITY IN OPERATING SYSTEM & NETWORKS Security in Operating Systems - Security in the Design of Operating Systems -Rootkit - Network security attack- Threats to Network Communications - Wireless Network Security - Denial of Service - Distributed Denial-of-Service.

UNIT III DEFENCES: SECURITY COUNTERMEASURES Cryptography in Network Security - Firewalls - Intrusion Detection and Prevention Systems - Network Management - Databases - Security Requirements of Databases - Reliability and Integrity - Database Disclosure - Data Mining and Big Data.

UNIT IV PRIVACY IN CYBERSPACE Privacy Concepts -Privacy Principles and Policies -Authentication and Privacy - Data Mining -Privacy on the Web - Email Security - Privacy Impacts of Emerging Technologies - Where the Field Is Headed.

UNIT V MANAGEMENT AND INCIDENTS Security Planning - Business Continuity Planning - Handling Incidents - Risk Analysis - Dealing with Disaster - Emerging Technologies - The Internet of Things - Economics - Electronic Voting - Cyber Warfare- Cyberspace and the Law - International Laws - Cyber crime - Cyber Warfare and Home Land Security.

Text Books:

1.Charles P. Pfleeger Shari Lawrence Pfleeger Jonathan Margulies, Security in Computing, 5th Edition , Pearson Education , 2015
REFERENCES:
1. George K.Kostopoulous, Cyber Space and Cyber Security, CRC Press, 2013.
 2. Martti Lehto, Pekka Neittaanmäki, Cyber Security: Analytics, Technology and Automation edited, Springer International Publishing Switzerland 2015
3. Nelson Phillips and Enfinger Steuart, ―Computer Forensics and Investigations‖, Cengage Learning, New Delhi, 2009.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C01	3	2	3	2	2								2	1
C02	3	1	2	1	1								1	2
C03	2	2	2	2	2								2	2
C04	3	2	2	1	2								2	1

SRI VENKATESWARA COLLEGE OF ENGINEERING AND TECHNOLOGY
(AUTONOMOUS)

	L	T	P	C

IV B.Tech II Semester -CSE   3   -   -   3
Code : 17ACS70   **Social Media Networking**
                                (Professional Elective-VI)

OUTCOMES: Upon completion of the course, the student should be able to:

1   Develop semantic web related applications.
2   Represent knowledge using ontology.
3   Predict human behavior in social web and related communities.
4   Visualize social networks.

UNIT I: INTRODUCTION

Introduction to Semantic Web: Limitations of current Web – Development of Semantic Web – Emergence of the Social Web – Social Network analysis: Development of Social Network Analysis – Key concepts and measures in network analysis – Electronic sources for network analysis: Electronic discussion networks, Blogs and online communities – Web-based networks – Applications of Social Network Analysis.

UNIT II: MODELLING, AGGREGATING AND KNOWLEDGE REPRESENTATION

Ontology and their role in the Semantic Web: Ontology-based knowledge Representation – Ontology languages for the Semantic Web: Resource Description Framework – Web Ontology Language – Modelling and aggregating social network data: State-of-the-art in network data representation – Ontological representation of social individuals – Ontological representation of social relationships – Aggregating and reasoning with social network data – Advanced representations.

UNIT III: EXTRACTION AND MINING COMMUNITIES IN WEB SOCIAL NETWORKS

Extracting evolution of Web Community from a Series of Web Archive – Detecting communities in social networks – Definition of community – Evaluating communities – Methods for community detection and mining – Applications of community mining algorithms – Tools for detecting communities social network infrastructures and communities – Decentralized online social networks – Multi-Relational characterization of dynamic social network communities.

UNIT IV: PREDICTING HUMAN BEHAVIOUR AND PRIVACY ISSUES

Understanding and predicting human behaviour for social communities – User data management – Inference and Distribution – Enabling new human experiences – Reality mining – Context – Awareness – Privacy in online social networks – Trust in online environment – Trust models based on subjective logic – Trust network analysis – Trust transitivity analysis – Combining trust and reputation – Trust derivation based on trust comparisons – Attack

spectrum and countermeasures.

UNIT V: VISUALIZATION AND APPLICATIONS OF SOCIAL NETWORKS

Graph theory – Centrality – Clustering – Node-Edge Diagrams – Matrix representation – Visualizing online social networks, Visualizing social networks with matrix-based representations – Matrix and Node-Link Diagrams – Hybrid representations – Applications – Cover networks – Community welfare – Collaboration networks – Co-Citation networks.

TEXT BOOKS:

1 Peter Mika, "Social Networks and the Semantic Web", , First Edition, Springer 2007.
2 Borko Furht, "Handbook of Social Network Technologies and Applications", 1st Edition, Springer, 2010.

REFERENCES:

1 Guandong Xu ,Yanchun Zhang and Lin Li, "Web Mining and Social Networking – Techniques and applications", First Edition Springer, 2011.
2 Dion Goh and Schubert Foo, "Social information Retrieval Systems: Emerging Technologies and Applications for Searching the Web Effectively", IGI Global Snippet, 2008.
3 Max Chevalier, Christine Julien and Chantal Soulé-Dupuy, "Collaborative and Social Information Retrieval and Access: Techniques for Improved user Modelling", IGI Global Snippet, 2009.
4 John G. Breslin, Alexandre Passant and Stefan Decker, "The Social Semantic Web", Springer, 2009.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C01	2	3	3	2	2								2	2
C02	1	2	2	1	3								1	2
C03	2	2	3	2	2								2	2
C04	2	2	2	3	2								2	1

SRI VENKATESWARA COLLEGE OF ENGINEERING AND TECHNOLOGY
(AUTONOMOUS)

	L	T	P	C

IV B.Tech II Semester -CSE   3   -   -   3

Code : 17ACS71   Advanced Computer Networks
(Professional Elective-VI

Outcomes:

After completing this course the student will be able to:

1   Implement various network switching mechanisms and layered IP referencemodels.
2   Use networking devices and LAN protocols for wired and wireless networks.
3   Select and implement best routing protocols for given network.
4   Analyze mobile transport and wireless mess networks.
5   Create VPNs, and analyze Overlay Networks

UNIT I

Foundation of Networking Protocols: 5- layer TCP/IP Model, 7-Layer OSI Model

Review of Computer Networks and the Internet: The Network edge- Access Networks and Physical media, Packet switched Networks-Basic definition in Networks, Types of Packet switched networks, packet size and optimization, Internet Protocols and Addressing.

UNIT II

Networking Devices: NIC, wireless Switching and Routing Devices, Modems, and Multiplexers.

LANs and Network of LANS: LAN and Basic Topologies, LAN Protocols, Networks of LAN,MAC/IP Address conversion Protocol ,Spanning Tree Protocol, Virtual LANS

UNIT III

Multicasting Techniques and Protocols: Basic Definitions and Techniques, Intra domain Multicast Protocols, Inter domain Multicast Protocols, Node-Level Multicast algorithms

UNIT IV : overview of Transport Layer, Mobile Transport Protocols, TCP Congestion Control

Wireless Networks and Mobile IP: Infrastructure of Wireless Networks, Cellular Networks, Mobile IP Management in Cellular Networks, LTE Technology, Wireless Mesh Networks (WMNs).

UNIT V

VPNs, Overlay Networks: Virtual Private Networks (VPNs), Multiprotocol Label Switching (MPLS), overlay networks.

TEXT BOOKS:

"Computer and Communication Networks", Second Edition, Nader F. Mir, Pearson Education, 2015

REFERENCE BOOKS:

1."Computer Networking: A Top-Down Approach Featuring the Internet", Sixth Edition, James F. Kurose, Keith W.Ross, Pearson Education, 2013

2."Computer Network –A System approach" ,Fourth Edition, Larry L Peterson & Bruce S Davie ,Elsevier ,2007

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C01	3	-	2	-	-	-	-	-	-	-	-	-	-	1
C02	3	1	-	1	1	-	-	-	-	-	-	-	3	2
C03	3	1	2	1	1	-	-	-	-	-	-	-	3	-
C04	-	1	2	3	-	-	-	-	-	-	-	-	-	3
C05	-	-	2	3	1	-	-	-	-	-	-	-	3	-