ANNAMACHARYA INSTITUTE OF TECHNOLOGY AND SCIENCES::RAJAMPET
(AUTONOMOUS)
www.aitsrajampet.ac.in

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

ACADEMIC REGULATIONS (R15)

AND

COURSE STRUCTURE & SYLLABI

For the students admitted to

B. Tech., Regular Four Year Degree Programme in CBCS

from the Academic Year 2015-16

and

B. Tech., Lateral Entry Scheme from the Academic Year 2016-17

B. Tech., COMPUTER SCIENCE & ENGINEERING

VISION AND MISSION OF THE INSTITUTION

Vision

We impart futuristic technical education and instill high patterns of discipline through our dedicated staff who set global standards, making our students technologically superior and ethically strong, who in turn shall improve the quality of life of the human race.

Mission

Our mission is to educate students from the local and rural areas and from other states so that they become enlightened individuals, improving the living standards of their families, industry and society. We provide individual attention, world-class quality of Technical education and take care of character building.

VISION AND MISSION OF THE DEPARTMENT

Vision

To become an advanced learning centre in the field of Computer Science and Engineering that make knowledgeable, skillful, socially responsible and ethical professionals

Mission

To provide matured engineering graduates, who can serve nation and solve real world problems, with strong moral and professional convictions and interdisciplinary research capabilities

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

The B. Tech., Computer Science & Engineering graduates will be able to:

PEO 1. Technical Competence: To disseminateinclusive knowledge of fundamentals of engineering and modern computing practices, through advanced curriculum, enabling the graduates to synthesize novel ideas

PEO 2. Learning Environment: To sensitize the graduates with the efficacy of continuous learning reinforced through student-centric pedagogy that inculcates creative talents to survive and thrive in the profession

PEO 3. Sustainable Skills: To nurture professional behavior and industry-specific acumen in the students to effectively operate and sustain in heterogeneous work environments

PEO 4. Ethical Behavior: To help the students understand the ramifications of emerging computing technologies and ethical application of technical expertise to resolve contemporary challenges for the welfare of the nation

PROGRAMME OUTCOMES (POs)

A graduate of Computer Science & Engineering will have ability to:

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

PROGRAM SPECIFIC OUTCOMES (PSOs)

PSO1: Understand the working of new hardware/software architectures and components and design solutions for real time problems.

PSO2: Model the computer based systems and design algorithms that explores understanding of the trade-offs involved on design choices.

PSO3: Design, develop and test system software and application software for distributed and centralized computing environments to varying domain and platforms.

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ACADEMIC REGULATIONS

B. Tech, Four Year Degree Programme with CBCS
(For the batches admitted from the academic year 2015-16)
and
B. Tech. Lateral Entry Scheme
(For the batches admitted from the academic year 2016-17)

The following rules and regulations will be applicable for the batches of Four year B.Tech. degree admitted from the academic year 2015-16 onwards.

1. ADMISSION:

1.1 Admission into First year of Four year B. Tech. Degree programme of study in Engineering:

As per the existing stipulations of Andhra Pradesh State Council of Higher Education (APSCHE), Government of Andhra Pradesh, admissions are made into the first year of four year B. Tech. Degree programme as per the following pattern.

a) Category-A seats will be filled by the Convener, AP-EAMCET.

b) Category-B seats will be filled by the Management as per the norms stipulated by Govt. of Andhra Pradesh.

1.2 Admission into the Second Year of Three year B.Tech. Degree programme (lateral entry).

As per the existing stipulations of Andhra Pradesh State Council of Higher Education (APSCHE), Government of Andhra Pradesh. Seats will be filled by the Convener, AP-ECET.

2. PROGRAMMES OF STUDY OFFERED BY AITS LEADING TO THE AWARD OF B.Tech DEGREE:

Following are the four year Under Graduate Degree Programmes of study offered in various disciplines at Annamacharya Institute of Technology and Sciences, Rajampet leading to the award of B.Tech. (Bachelor of Technology) Degree:

1. B. Tech. (Computer Science and Engineering)

2. B. Tech. (Electrical and Electronics Engineering)

3. B. Tech. (Electronics and Communication Engineering)

4. B. Tech. (Information Technology)

5. B. Tech. (Mechanical Engineering)

6. B. Tech. (Civil Engineering)

and any other programme as approved by the concerned authorities from time to time.

3. ACADEMIC YEAR:

The entire course of study is of four academic years and each year will have **TWO** Semesters (Total **EIGHT** Semesters). The minimum instruction days for each semester shall be 90.

4. COURSE STRUCTURE:

Each programme of study shall consist of:

4.1 General Courses comprising of the following: (5 to 10%)

a) Language / Communication Skills

b) Humanities and Social Sciences : Environmental Science

c) Economics and Accounting

d) Principles of Management

4.2 Basic Science Courses comprising of the following: (15 to 20%)

a) Computer Literacy with Numerical Analysis
b) Mathematics
c) Physics
d) Chemistry

4.3 Basic Engineering Courses comprising of the following (depending on the branch): (15 to 20%)

a) Engineering Drawing
b) Engineering and IT Workshop
c) Engineering Mechanics
d) Basic Mechanical Engineering
e) Electrical and Electronics Engineering
f) Basic Civil Engineering
g) Computer Programming

4.4 Compulsory Discipline Courses: (30 to 40%)

The lists of professional subjects are chosen as per the suggestions of the experts, to impart broad based knowledge needed in the concerned branch of study.

4.5 Professional subjects - Electives: (10 to 15%)

Electives will be offered to the students to diversify the spectrum of knowledge, based on the interest of the student to broaden his individual skill and knowledge.

4.6 Open Electives: (5 to 10%)

Open subjects will be offered from other technical and / or emerging subject areas

4.7 Project Work, Seminar and /or Internship: (10-15%)

Project Work, Seminar and /or Internship in industry or elsewhere.

4.8 Mandatory Courses:

Environmental Studies, Technical English and Technical Communication & Soft Skills are included as subjects under mandatory courses but with credit weightage.

4.9 There shall be a subject like comprehensive Computer Science and Engineering with 2 hours per week introduced in final year first semester.

4.10 Every programme of study shall be designed to have 42 - 44 theory courses and 19 - 22 laboratory/seminar/comprehensive courses.

4.11 Every programme has included foundation courses to the extent of 30%, programme core and programme elective subjects to the extent of 60%, open electives and mandatory courses to the tune of 10% approximately of the total credits.

4.12 Audit Courses (to be included in III B.Tech. I Sem & II Sem):

Interested students who want to supplement their knowledge can opt for audit courses namely Professional Ethics/Stress Management & Advanced English Communication Skills lab and can appear/pass in Continuous Internal Evaluation and Semester End Examination of these courses, will be included in marks memo only when they pass.

4.13 Open Elective:

IV Year I Semester student has to necessarily select a subject from the list of open electives.

4.14 Contact Hours: Depending on the complexity and volume of the course, the number of contact hours per week will be assigned.

5. CREDIT SYSTEM:

Credits are assigned based on the following norms.

	Semester Pattern	
	Period(s) / Week	Credit(s)
Theory	01	01
Practical	03	02
Comprehensive Course	02	02
Seminar	–	02
Final Year Project	12	08

6. EXAMINATION SYSTEM: All components in any programme of study will be evaluated continuously through internal evaluation and an external evaluation component conducted as semester-end examination.

6.1 Distribution of Marks:

S. No.	Description	Marks	Examination and Evaluation	Scheme of Evaluation
1	Theory	70	Semester-End Examination.	The question paper shall be of subjective type with **Five** questions with internal choice to be answered in 180 Minutes duration.
		30	Mid-Examinations of 120 Minutes duration to be evaluated for 20 marks. The question paper shall be of subjective type in which four questions with an internal choice are to be answered. Remaining 10 marks is for continuous evaluation which includes weekly / fortnightly class tests, homework assignments, problem solving, group discussions, quiz, seminar, mini-project and other means. The method of allotting these marks will be decided by the teacher dealing that subject in consultation with the Head of the Department. Teacher has to announce the evaluation method in the beginning of the semester.	**Two** MID - Examinations are to be conducted for 20 marks each in a semester. 80% weightage for better performance and 20% for other shall be considered. **MID-I:** after first spell of instructions(I & II-Units). **MID-II:** after second spell of instructions (III, IV &V-Units). The student who has missed both the Mid examinations will be permitted to appear for a substitute examination covering the total syllabus. This substitute examination will be given a weightage of 80%. This is to be conducted before the commencement of end semester exams, can be even outside the working hours, can be even two mid exams a day also.

S. No.	Description	Marks	Examination and Evaluation	Scheme of Evaluation
2	Laboratory or Drawing	70	Semester - End Lab Examination	**For laboratory courses:** **180 minutes** duration – two examiners. For Drawing and / or Design: like for the theory examination.
		30	**20 Marks** for Day to Day evaluation	Performance in laboratory experiments
			10 Marks for Internal evaluation	Performance of one best out of two tests to be considered.
3	Seminar	100	**Internal Evaluation** 20 Marks for Report 20 Marks for subject content 40 Marks for presentation 20 Marks for Question and Answers	Continuous evaluation during a semester by the Departmental Committee (DC) consisting of two / three faculty members allotted by Head of the Department.
4	Comprehensive Course	100	The marks can be allotted based on the performance in viva-voce conducted by Head of the department and two senior faculty members in the department.	
5	Project Work	100	70 Marks for External evaluation	Semester-End Project Viva-Voce Examination by Committee as detailed under 6.2
			30 Marks for Internal evaluation	Continuous evaluation by the DC 15 Marks by DC as detailed under 6.2.1 15 Marks by Supervisor

6.2 Project Work Evaluation:

6.2.1 The Internal Evaluation shall be made by the Departmental Committee, on the basis of average of two seminars presented by each student on the topic of his project, the best one to be considered. The presentations shall be evaluated by the Departmental Committee (DC) consisting of Head of the Department, supervisor and a senior faculty member.

6.2.2 The Semester-End Examination (viva-voce) shall be conducted by a Committee consisting of External Examiner nominated by the Chief Controller of Examinations, HOD and Supervisor. The evaluation of project work shall be conducted at the end of the IV year II Semester.

6.3 Eligibility to appear for the Semester-End examination:

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

6.3.2 Condonation of shortage of attendance in aggregate up to 10% (65% and above and below 75%) in each semester may be granted by the Institute Academic Committee if the reason for shortage is convincing.

6.3.3 Shortage of Attendance below 65% in aggregate shall in no case be condoned.

6.3.4 A stipulated fee shall be payable towards condonation of shortage of attendance to the Institute as per following slab system

1st Slab: Less than 75% attendance but equal to or greater than 70% a normal condonation fee can be collected from the student.

2nd Slab: Less than 70% but equal to or greater than 65%, double the condonation fee can be collected from the student.

6.3.5 Students whose shortage of attendance is not condoned in any semester are not eligible to take their End Examination of that class and their registration for that semester shall stand cancelled.

6.3.6 A student will not be promoted to the next semester unless he satisfies the attendance requirements of the current semester, as applicable.

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

6.4 Revaluation / Recounting:

Students shall be permitted to request for recounting / revaluation of the end theory 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 memorandum of marks. If there are no changes, the student shall be intimated the same through a letter or a notice.

6.5 Improvement of Marks:

Students are permitted for improvement examinations once for a maximum of four subjects after completion of the study course but before applying for provisional certificate and consolidated marks memo after payment of prescribed fee.

6.6 Readmission of Students:

A student who has satisfied the minimum attendance requirement in any semester may repeat that semester, after obtaining written permission from the Principal and cancelling the previous record of attendance and academic performance (viz ; internal evaluation and external evaluation marks) of the semester or year. This facility may be availed by any student at the maximum twice for a 4 year B.Tech., and only once by Lateral Entry student & PG student during the entire course of study.

6.7 Supplementary Examination:

a) All Regular Examinations are understood as Regular / Supplementary examinations. The supplementary students have to appear for the supplementary examinations along with their regular examinations conducted at the end of each semester. However, separate supplementary examinations will be conducted for the II-Semester subjects at the end of I-Semester and vice-versa.

b) In case of Seminars and Comprehensive Viva-Voce Examinations, Supplementary Seminar / Comprehensive Viva-Voce will be conducted along with the next batch of students if available. If the next batch of students is not available, a separate supplementary examination will be conducted.

6.8 Internship Programme:

The weightage of two credits given for an internship of three weeks duration and more, when a student undergoes internship / industrial training from the Specified Industries / Research Organizations / Universities. In such a case, the student has to submit a report on that internship which will be evaluated by a team of three faculty members (decided by the HOD) of the department for those two credits. Student is given a chance to drop one seminar in place of a successful internship / industrial training.

6.9 Massive Open Online Course (MOOC):

MOOC is one of the courses introduced in IV year II semester. The list of subjects under MOOC will be intimated before commencement of class work.

7. ACADEMIC REQUIREMENTS FOR PROMOTION / COMPLETION OF B.TECH PROGRAMME OF STUDY:

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

7.1 For students admitted into B. Tech. (Four Year) programme:

7.1.1 A student shall be deemed to have satisfied the minimum academic requirements for each theory, practical, drawing subject if he secures not less than 35% of marks in the End Examination and a minimum of 40% of marks in the sum total of the Internal Evaluation and End Examination taken together.

7.1.2 For promotion from I B.Tech.to II B.Tech. a student must satisfy the attendance requirements in I year (two semesters).

7.1.3 A Student shall be promoted from II year to III year, if he fulfills the academic requirements of securing a minimum of **50** credits from I year I and II-Semesters, II year I and II Semesters examinations conducted till that time.

7.1.4 A student shall be promoted from III year to IV year if he / she fulfills the academic requirements of securing a minimum of **74** credits from I year I and II-Semesters, II year I and II-Semesters and the III year I and II- Semester examinations conducted till that time.

7.1.5 A student shall register for all the subjects and earn all the **195** credits. Marks obtained in all the credits shall be considered for the calculation of the class based on CCPA.

7.1.6 A student who fails to earn all the **195** credits as indicated in the course structure within **eight** academic years from the year of admission shall forfeit his seat in B. Tech. Programme and his admission stands cancelled.

7.2 For Lateral Entry Students (batches admitted from 2016 - 2017):

7.2.1 Academic requirements for pass in a subject are the same as in 7.1.1 and attendance requirements as in 6.3.

7.2.2 A student shall be promoted from II year to III year if he fulfills the academic requirements of securing a minimum of **22** credits from II year I and II-Semesters examinations conducted till that time.

7.2.3 A student shall be promoted from III year to IV year if he fulfills the academic requirements of securing a minimum of **46** credits from II year I and II-Semesters and the III year I and II-Semester examinations conducted till that time.

7.2.4 A student shall register for all the subjects and earn all **139** credits. Marks obtained in all such credits shall be considered for the calculation of the class based on CCPA.

7.2.5 A student who fails to earn all the **139** credits as indicated in the course structure within **six** academic years from the year of his admission shall forfeit his seat in B. Tech. Programme and his admission stands cancelled.

8. 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 for the next batch or later batches with the same (or) equivalent subjects as and when subjects are offered and they continue to be in the academic regulations of the batch he is joining later.

9. CREDIT POINT AVERAGE (CPA) AND CUMULATIVE CREDIT POINT AVERAGE (CCPA):

9.1 For a Semester:

Credit Point Average [CPA] $=\frac{1}{10}\frac{\sum_i C_i T_i}{\sum_i C_i}$

Where C_i= Credits earned for Course i in any semester,

T_i= Total marks obtained for course i in any semester

9.2 For the entire programme:

Cumulative Credit Point Average [CCPA] $=\frac{1}{10}\frac{\sum_n \sum_i C_{ni} T_{ni}}{\sum_n \sum_i C_{ni}}$

Where *n*= the semester in which such courses were credited

9.3 Overall Performance:

CCPA	Classification of final result
7.0 & above	First class with distinction
6.0 & above but below 7.0	First class
5.0 & above but below 6.0	Second class
4.0 & above but below 5.0	Pass

10. TRANSCRIPTS:

After successful completion of the entire programme of study, a transcript containing performance of all academic years will be issued as a final record. Duplicate transcripts will also be issued, if required, after payment of requisite fee. Partial transcript will also be issued up to any point of study to a student on request.

11. ELIGIBILITY:

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

(i) Registered and successfully completed all the components prescribed in the programme of study to which he is admitted.

(ii) Successfully acquired all **195 / 139 credits** as specified in the curriculum corresponding to the branch of study within the stipulated time.

(iii) No disciplinary action is pending against him.

12. AWARD OF B.TECH DEGREE:

12.1 A student is permitted to select one of the extracurricular / extension activities like NSS / Sports / Games / Cultural activities. A certificate in one of these activities is a must for the student to become eligible for the award of Provisional Certificate or Degree.

12.2 The B. Tech. Degree will be conferred and awarded by Jawaharlal Nehru Technological University Anantapur, Ananthapuramu on the recommendations of the Principal of Annamacharya Institute of Technology and Sciences, Rajampet.

13. AMENDMENTS TO REGULATIONS:

The Chairman, Academic Council of Annamacharya Institute of Technology and Sciences, Rajampet reserves the right to revise, amend, or change the Regulations, Scheme of Examinations, and / or Syllabi or any other policy relevant to the needs of the society or industrial requirements etc., without prior notice.

14. Any legal issues are to be resolved in Rajampet Jurisdiction.

15. GENERAL:

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

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CURRICULUM STRUCTURE

ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES::RAJAMPET
(AN AUTONOMOUS INSTITUTION)
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Regulations: **R15** Programme Code: **G1**

I Year B. Tech., I Semester

Subject Code	Subject Name	Hours / Week			C
		L	T	P	
5GC11	English through Literature	2	1	0	2
5GC12	Engineering Chemistry	4	1	0	4
5GC14	Engineering Mathematics-I	3	1	0	3
5G111	Problem solving techniques and Introduction to C Programming	3	1	0	3
5GC15	Mathematical Methods –I	3	1	0	3
5G513	Engineering Drawing –I	1	--	3	3
5GC16	ELCS Lab-I	--	--	3	2
5GC17	Engineering Chemistry Lab	--	--	3	2
5G112	Programming in C Lab	--	--	6	4
5G114	IT Workshop	--	--	3	2
		17	**5**	**18**	**28**

I Year B. Tech., II Semester

Subject Code	Subject Name	Hours / Week			C
		L	T	P	
5GC21	Technical English	2	1	0	2
5GC23	Engineering Physics	4	1	0	4
5GC24	Engineering Mathematics-II	3	1	0	3
5G121	C programming and Data Structures	3	1	0	3
5GC25	Mathematical Methods –II	3	1	0	3
5G523	Engineering Drawing –II	1	--	3	3
5GC26	ELCS Lab-II	--	--	3	2
5GC28	Engineering Physics Lab	--	--	3	2
5G122	Data structures Lab	--	--	6	4
5G524	Engineering workshop	--	--	3	2
	Total	**17**	**5**	**18**	**28**

Note: L - Lecture; T-Tutorial; P – Practical; C – Credits

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Regulations: **R15** Programme Code: **G1**

II Year B. Tech., I Semester

Subject Code	Subject Name	Hours / Week			C
		L	T	P	
5GC33	Probability & Statistics	3	1	0	3
5G236	Electrical Engineering and Electronics Engineering	3	1	0	3
5G131	Advanced Data Structures Through C++	3	1	0	3
5G132	Digital Logic Design	3	1	0	3
5G133	Principles of Programming Languages	3	1	0	3
5G431	Discrete Mathematics	3	1	0	3
5GC35	Aptitude and Reasoning Skills	2	0	0	2
5G23A	Electrical Engineering And Electronics Engineering Lab	0	0	3	2
5G134	Advanced Data Structures Lab Through C++	0	0	3	2
	Sports and Extension Activities	0	0	1	0
Total		**18**	**6**	**9**	**24**

II Year B. Tech., II Semester

Subject Code	Subject Name	Hours / Week			C
		L	T	P	
5GC43	Environmental Science	3	1	0	3
5G141	Computer Organization	3	1	0	3
5G142	Design and Analysis of Algorithms	3	1	0	3
5G143	Formal Languages and Automata Theory	3	1	0	3
5G144	Object Oriented Programming	3	1	0	3
5G441	Database Management Systems	3	1	0	3
5G145	Seminar-1	0	0	2	2
5G146	JAVA Lab	0	0	3	2
5G443	Database Management Systems Lab	0	0	3	2
Total		**18**	**6**	**8**	**24**

Note: L - Lecture; T-Tutorial; P – Practical; C – Credits

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Regulations: **R15** Programme Code: **G1**

III Year B. Tech., I Semester

Subject Code	Subject Name	Hours / Week			C
		L	T	P	
5G151	Compiler Design	3	1	0	3
5G152	Computer Networks	3	1	0	3
5G153	Operating Systems	3	1	0	3
5G154	Software Engineering	3	1	0	3
5G155	Web Technologies	3	1	0	3
5G356	Microprocessors and Interfacing	3	1	0	3
5GC52	English for Competitive Examinations	2	0	0	2
5G156	System Programming Lab (Computer Networks, Operating System & Compiler Design Lab)	0	0	3	2
5G157	Web Technologies LAB & Microprocessors and Interfacing LAB	0	0	3	2
Audit Course	Stress Management / Professional ethics	2	0	0	0
Total		**20**	**6**	**8**	**24**

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Regulations: **R15** Programme Code: **G1**

III Year B. Tech., II Semester

Subject Code	Subject Name	Hours / Week			C
		L	T	P	
5G161	Cryptography and Network Security	3	1	0	3
5G162	Data mining and Data warehousing	3	1	0	3
5G16C	Internet of Things	3	1	0	3
5G163	Smart Phone Programming	3	1	0	3
	PROFESSIONAL ELECTIVE–I	3	1	0	3
	PROFESSIONAL ELECTIVE–II	3	1	0	3
5G16D	Seminar-II	0	0	2	2
5G16E	Data Mining & Internet of Things Lab	0	0	3	2
5G16F	Smart Phone Programming through Android Lab	0	0	3	2
Audit Course	Advanced English Communication Skills Lab	0	0	3	0
Total		**18**	**6**	**11**	**24**

LIST OF PROFESSIONAL ELECTIVE– I	
5G164	Artificial Intelligence
5G165	Mobile Ad hoc Networks
5G166	Real Time Systems
5G167	Software Testing Methodologies

LIST OF PROFESSIONAL ELECTIVE– II	
5G168	Client Server Computing
5G169	Distributed Systems
5G16A	Machine Learning
5G16B	Software Project Management

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Regulations: **R15** Programme Code: **G1**

IV Year B. Tech., I Semester

Subject Code	Subject Name	Hours / Week			C
		L	T	P	
5G171	Big data & Data Analytics	3	1	0	3
5G478	Object Oriented Analysis and Design	3	1	0	3
5G172	Enterprise Programming	3	1	0	3
5G173	Industrial Management & Entrepreneurship	3	1	0	3
	PROFESSIONAL ELECTIVE–III	3	1	0	3
5G178	**MOOC**	3	1	0	3
5G177	**Comprehensive Computer Science and Engineering**	0	0	2	2
5G179	Big data & Case Tools lab	0	0	3	2
5G17A	Enterprise Programming lab	0	0	3	2
Total		**18**	**6**	**8**	**24**

LIST OF PROFESSIONAL ELECTIVE–III	
5G174	Operations Research
5G175	Semantic web and Social Networks
5G176	Service Oriented Architecture
5G471	Cloud Computing

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Regulations: **R15** Programme Code: **G1**

IV Year B. Tech., II Semester

Subject Code	Subject Name	Hours / Week			C
		L	T	P	
	Open Elective	3	1	0	3
	PROFESSIONAL ELECTIVE–IV	3	1	0	3
	PROFESSIONAL ELECTIVE–V	3	1	0	3
5G189	Seminar-III	0	0	2	2
5G18A	Project	0	0	12	8
Total		**9**	**3**	**14**	**19**

MOOC: List of available and selected subjects under MOOC will be intimated before commencement of class work.

LIST OF PROFESSIONAL ELECTIVE–IV	
5G182	Advanced Computer Architecture
5G183	Digital Image Processing
5G184	Software Architecture
5G485	Soft Computing

LIST OF PROFESSIONAL ELECTIVE–V	
5G185	Computer Graphics & Human Computer Interaction
5G186	Computer Vision
5G187	Design Patterns Through JAVA
5G188	Web Services

Note: L - Lecture; T-Tutorial; P – Practical; C – Credits

LIST OF OPEN ELECTIVES SUBJECTS		**Offered By Department of**
5G679	Disaster Management	CE
5G27C	System Modelling and Simulation	EEE
5G57D	Total Quality Management	ME
5G57E	Integrated Product Development	ME
5G377	Nano Technology and Applications	ECE
5G378	Medical Instrumentation	ECE
5G181	.NET Technologies	CSE
5G473	Cyber Laws	IT
5GA71	Intellectual Property Rights	DBA
5GA72	Human Resource Management	DBA

ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES::RAJAMPET
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I Year B. Tech., I Semester

(5GC11) ENGLISH THROUGH LITERATURE
(Common to all branches)

Course Objectives:

- To improve the language proficiency of the students in English through literature
- To enhance the vocabulary of the students in English through the use of diverse authentic materials
- To enable the students absorb the human values expressed in literature

Course Outcomes:

- Students will be able to read, interpret, and evaluate select literary works
- Students will be able to identify literary, cultural, and philosophical sensitivity
- Students will learn about great engineers and scientists
- Students will relish the experience of reading challenging literature: appreciate literature's ability to elicit feeling, cultivate the imagination and teach English language
- Students will be able to read complex texts actively; recognize key passages; raise questions; appreciate complexity and ambiguity; comprehend the literal and figurative uses of language

Unit– I

Detailed Study: *Cabuliwallah* by Rabindranath Tagore; *The Road not Taken* by Robert Frost

Non-detailed Study: G. D. Naidu

Unit– II

Detailed Study: *A Dog's Tale* by Mark Twain*; If* by Rudyard Kipling

Non-detailed Study: Sudha Murthy

Unit– III

Detailed Study: *The Gift of Magi* by O. Henry; *Leisure* by W. H. Davies

Non-detailed Study: Vijay Bhatkar

Unit– IV

Detailed Study: *An Astrologer's Day* by R. K. Narayan: *Night of the Scorpion* by Nissim Ezekiel*;*

Non-detailed Study: Jagadish Chandra Bose

Unit– V

Detailed Study: *The Proposal* by Anton Chekhov

Non-detailed Study: HomiJehangir Baba

Text Books:

1. For Detailed study: Texts from Open Sources (Available on Web)
2. For Non-detailed study: *Trailblazers* published by Orient Black Swan

- Texts from open sources are included in the syllabus to make the teaching-learning process more interesting and inspiring. Also, the literary texts from open sources will allow the student learn language through literature. The book for the non-detailed study allows the student to have an insight into the lives and careers of some legendary personalities.
- The text for non-detailed study is meant for extensive reading by the students. They

may be encouraged to read some select topics on their own, which could lead into a classroom discussion. In addition to the exercises from the texts done in the class, the teacher can bring variety by using authentic materials such as newspaper articles, advertisements etc.

Mode of Evaluation:

Continuous Internal Examination (CIE)		Continuous Evaluation	Semester End Examination (SEE) 70 Marks
Mid1 20 Marks	Mid2 20 Marks	10 Marks	

Course Outcomes & Program Outcomes Mapping:

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

ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES::RAJAMPET
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I Year B. Tech., I Semester

(5GC12) ENGINEERING CHEMISTRY
(Common to CSE, IT, ME and CE)

Course Objectives:

- The course main aim is to impart in-depth knowledge of the subject and highlight the role of chemistry in the field of engineering.
- The Engineering Chemistry course for undergraduate students is framed to strengthen the fundamentals of chemistry and then build an interface of theoretical concepts with their industrial/engineering applications.
- The lucid explanation of the topics will help students understand the fundamental concepts and apply them to design engineering materials and solve problems related to them. An attempt has been made to logically correlate the topic with its application.
- The extension of fundamentals of electrochemistry to energy storage devices such as commercial batteries and fuel cells is one such example.
- After completion of the course, the student would understand about the concepts of chemistry in respect of Electrochemical cells, fuel cells, mechanism of corrosion and factors to influence, polymers with their applications, analytical methods, engineering materials and water chemistry.

Course Outcomes:

The student is expected to:

- Students will be able to understand the basic concepts of water analysis methods which helps them in solving problems related to boiler troubles and also in various water treatment methods
- Students will be able to understand the basic principles of batteries & fuel cells, and extends the knowledge to different types of sensors, corrosion and their prevention methods
- Students will be able to synthesize and differentiate different types of polymers
- Students will be able to derive/ manufacture different types of fuels and elucidate their properties
- Students will be able to manufacture cement, understand the basic concepts of propellants, refractoriness, lubricants and elucidate their properties

Unit– I

Water Treatment: Impurities in water, Hardness of water and its Units, Disadvantages of hard water, Estimation of hardness by EDTA method, Numerical problems on hardness, Estimation of dissolved oxygen, Alkalinity and chlorides in water, Water treatment for domestic purpose Disinfection- Definition, Kinds of disinfectants (Bleaching powder, Ozone, chloramine, UV light and Chlorine), Break point chlorination.

Industrial Use of water: For steam generation, Boiler troubles: Scale & Sludge, Priming and Foaming, Caustic Embrittlement and Boiler Corrosion.

Treatment of Boiler Feed water: Internal Treatment: Colloidal, Phosphate, Carbonate, Calgon and sodium aluminate conditioning. External Treatment: Permutit/ Zeolite process, Ion-Exchange process, Desalination of brackish water by Reverse Osmosis.

Unit–II

Electrochemistry: Electrochemical cells: Basic concepts, classification of electrochemical cells, numerical calculations, Batteries: classification of batteries: Primary (Leclanche

battery, mercury battery) and Secondary /rechargeable batteries (Lead acid, Ni-Cd, Lithium Ion Batteries) Fuels cells: (Hydrogen-Oxygen and Methanol-Oxygen)

Electrochemical sensors: Potentiometric Sensors and Voltammetric sensors. Examples: analysis of Glucose and urea.

Corrosion: Definition & Types (dry & wet Corrosions), Electrochemical Theory of corrosion, concentration cell corrosion, galvanic corrosion, factors affecting the corrosion, Prevention: Anodic and Cathodic protection, Electroplating (Nickel, copper and chromium) & Electrolessplating

Unit– III

POLYMERS: Introduction to polymers, Polymerization process- types (without mechanism), Plastics: Thermosetting and Thermoplastics, Preparation, properties and Engineering applications of PVC, Bakelite, nylons.

Natural Rubber: Processing, vulcanization and compounding of rubber. Elastomers: Preparation, properties and engineering applications of Buna-S, Buna-N and polyurethane rubbers.

Conducting polymers: Mechanism, synthesis and applications of polyacetylene, polyaniline. Biodegradable polymers Carbohydrates, proteins

Inorganic Polymers: Basic Introduction Silicones, polyphosphazines.

Unit– IV

FUEL TECHNOLOGY: Classification of Fuels – Characteristics of Fuels- Calorific Value – Units, its determination using bomb calorimeter, Numerical Problems. Solid Fuels-Coke: Manufacture of Metallurgical Coke by Otto Hoffmann's by product oven processes.

Liquid Fuels: Petroleum: Refining of Petroleum, Gasoline: Knocking, Octane Number, Synthetic Petrol: Bergius Processes, Fischer Tropsch's synthesis. Diesel and Cetane number. Power Alcohol: Manufacture, Advantages and Disadvantages of Power Alcohol

Gaseous Fuels: Origin, Production and uses of Natural gas, Producer gas, Water gas, Coal gas and Biogas. Flue Gas analysis by Orsat's apparatus, Solving of problems on Combustion.

Unit– V

CHEMISTRY OF ENGINEERING MATERIALS

Cement: Composition & manufacture of Portland cement, Setting and Hardening (Hydration and Hydrolysis), Refractories: Classification with suitable examples, properties and applications

Lubricants: Definition and properties of lubricants, theory of lubrication, and applications of lubricants.

Rocket Propellants: Classification, Characteristics of a good propellant

Text Books:

1. Engineering Chemistry by K.N.Jayaveera, G.V.Subba Reddy and C. Ramachandraiah, McGraw Hill Higher Education, New Delhi, Fourth Edition, 2012.
2. A Text Book of Engineering Chemistry, Jain and Jain, DhanapathRai Publishing Company, New Delhi, 15th Edition, 2010.

Reference Books:

1. A Text book of Engineering Chemistry by S.S Dhara, S.S.Umare, S. Chand Publications, New Delhi, 12th Edition, 2010.
2. Engineering Chemistry by K.B.ChandraSekhar, UN.Das and Sujatha Mishra, SCITECH, Publications India Pvt Limited, Chennai, 2nd Edition, 2012.
3. Concepts of Engineering Chemistry- Ashima Srivastava and N.N. Janhavi, Acme Learning Pvt Ltd, First Edition, 2013.

4. Text Book of Engineering Chemistry – C. Parameswara Murthy, C.V.AgarwalandAndra Naidu, BS Publications, Hyderabad, 3rd Edition, 2008.
5. Text Book of Engineering Chemistry, Shashichawla, DhanapathRai Publications, New Delhi, 4th Edition, 2011.
6. Engineering Chemistry, K. SeshaMaheswaramma and MrudulaChugh, Pearson Education, First Edition, 2013.

Mode of Evaluation:

Continuous Internal Examination (CIE)		Continuous Evaluation	Semester End Examination (SEE) 70 Marks
Mid1 20 Marks	Mid2 20 Marks	10 Marks	

Course Outcomes & Program Outcomes Mapping:

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

ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES::RAJAMPET
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I Year B. Tech., I Semester

(5GC14) ENGINEERING MATHEMATICS – I
(Common to all branches)

Course Objectives:

The course aims to provide the student with the ability

- To understand the Differential equations of first, second and higher orders with their applications.
- To understand the concept of partial differentiation and its applications.
- To understand the concept of curve tracing in various forms

Course Outcomes:

Upon completion of the course, students should be able to

- Students will be able to solve first order differential equations and their applications.
- Students will learn the usage of higher order differential equations that are applied to real world problems
- Students will be able to apply his knowledge to solve the problems on Mean value theorems, series and sequences in day to day life.
- Students will exhibit an ability to identify, formulates, and solves the problems on functions of several variables
- Students develop an ability to trace the curve for a given equation of a curve & its nature

Unit– I

Linear and Bernoulli equations, Applications to Newton's law of cooling, law of natural growth and decay, Rate of decay of radio-active materials, Chemical reaction and solutions, orthogonal trajectories.

Unit–II

Non-homogeneous linear differential equations of second and higher order with constant coefficients with RHS term of the type e^{ax}, sinax and cosax, polynomials in x, e^{ax}V(x), xV(x), method of variation of parameters. Applications to oscillatory electrical circuits.

Unit– III

Series solutions of differential equations: Validity of series solution of the equation, series solution when x=0 is an ordinary point of the equation,Frobenius method .

Rolle's Theorem – Lagrange's Mean Value Theorem (without proof). Simple examples of Taylor's and Maclaurin's Series

Unit– IV

Functions of several variables – Partial differentiation- Chain rule-Jacobian – Maxima and Minima of functions of two variables, Lagrangian method of Multipliers with three variables only.

Unit– V

Curve tracing – Tracing of Cartesian, polar and parametric curves.

Text Book:

1. Higher Engineering Mathematics, B.S.Grewal, Khanna publishers-43rd Edition (2014)

Reference Books:

1. Higher Engineering Mathematics, by Kreyszing
2. A Text Book of Engineering Mathematics, B.V. Ramana, Tata McGraw Hill.

3. A Text Book of Engineering Mathematics, Vol – 1, T.K.V. Iyengar, B. Krishna Gandhi and others, S.Chand& Company.

Mode of Evaluation:

Continuous Internal Examination (CIE)		Continuous Evaluation	Semester End Examination (SEE) 70 Marks
Mid1 20 Marks	Mid2 20 Marks	10 Marks	

Course Outcomes & Program Outcomes Mapping:

Course Outcomes	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO1 1	PO12
CO1	3	-	2	-	-	-	-	-	-	-	-	3
CO2	3	-	2	-	-	-	-	-	-	-	-	2
CO3	3	3	-	-	-	-	-	-	-	-	-	2
CO4	3	2	-	-	-	-	-	-	-	-	-	3
CO5	3	3	-	-	-	-	-	-	-	-	-	2

ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES::RAJAMPET
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I Year B. Tech., I Semester

(5G111)PROBLEM SOLVING TECHNIQUES AND INTRODUCTION TO C PROGRAMMING

(Common to ALL branches)

Course Objectives:

- To remember the basic concepts of problem solving aspect, algorithms, flowcharts and SDLC.
- To understand the structure of a C language program.
- To apply C program statements, Two-way selection, Multi-way selection, Loop control statements and other related statements.
- To apply Arrays and Strings for solving different problems.
- To analyze recursive and non-recursive functions.

Course Outcomes:

- To define the basic concepts ofproblem solving aspect, algorithms, flowcharts and SDLC.
- To explain the structure of a C program.
- To implement C program statements, Two-way selection, Multi-way selection, Loop control statements and other related statements.
- To use two dimensional, Multidimensional arrays and Strings in C programs.
- To differentiate recursive and non-recursive functions in different applications of C programs.

Unit– I

Introduction to Computer Problem Solving: Introduction to Computer Systems, Computer Environments, Computer Languages, Introduction to Problem Solving Aspect, Top- down Design, Implementation of Algorithms, Flow Charts, SDLC.

Unit– II

Introduction to C Language: Structure of a C Language program, Creating and Running C programs, Keywords, Identifiers, Data Types, typedef, enumerated Types variables, constants, input/output. Operators and Expressions, precedence and associatively, Type Conversions, Bitwise Operators. Example programs for each topic.

Unit– III

C Program Statements, Selection and Decision making Statements-two way selection – if…else statements, multi way selection-switch statements. Loop Control Statements-concept of a loop, Loops in C-while loop, do…while loop, for loop, Other Related Statements -break, continue, goto. Example programs for each topic.

Unit– IV

ARRAYS: Declaring and Referencing Arrays, Array Subscripts, Using for Loops for Sequential Access, Multidimensional Arrays.

Strings: String Basics, String Library Functions, Array of Strings. Example programs for each topic.

Unit– V

Functions: Library Functions in C, User defined Functions,-declaration, definition, calling of function, types of User defined functions, Parameter passing methods-pass by value, pass by reference, Scope, Storage Classes - Auto, Register, Static, Extern, Scope rules, Type Qualifiers, Recursion - Recursive Functions, Preprocessor Commands. Using Array Elements as Function Arguments. Example programs for each topic.

Text Books:

1. C Programming and Data Structures.B.AForouzan,R. F.Gilberg,Cengage learning, Indian edition.
2. Programming in C and Data Structures, J.R.Hanly, Ashok N. Kamthane and A. Ananda Rao, Pearson Education.
3. C and Data Structures, E.Balaguruswamy, Tata McGraw Hill.
4. How to Solve it By Computer, R.G.Dromey,PHI.

Reference Books:

1. C and Data Structures, A snapshot oriented treatise with live engineering examples, Dr. N.B.Venkateswarlu, Dr. E.V.Prasad, S. Chand.
2. LET US C, YeswanthKanitkar, Ninth Edition, BPB Publication.

Mode of Evaluation:

Continuous Internal Examination (CIE)		Continuous Evaluation	Semester End Examination (SEE) 70 Marks
Mid1 20 Marks	Mid2 20 Marks	10 Marks	

Course Outcomes mapping with Program Outcomes & PSOs:

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

ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES::RAJAMPET
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I Year B. Tech., I Semester

(5GC15) MATHEMATICAL METHODS-I
(Common to CSE and IT)

Course Objectives:

- This course aims at providing the student with the concepts of Matrices, which find the applications in engineering.
- Emphasis will be more on logical and problem solving development in Numerical methods and their applications.

Course Outcomes:

- Students will be able to find the rank of matrices and solve the system of equations
- Student will understand the concept of modeling or translating a physical or any other
- Students become familiar with the applications of complex matrices and quadratic forms
- Students understand the concept of solutions of algebraic and transcendental equations
- Student will understand various types of numerical methods

Unit– I

Matrices: Real Matrices -Types - definitions - Elementary row transformations – Rank – Echelon form, Normal form – Solution of Linear System of Homogenous and Non Homogeneous equations by Gauss Elimination method.

Unit– II

Eigen Values, Eigen vectors – Properties, Cayley – Hamilton Theorem –Diagonalization of matrix- Calculation of powers of matrix.

Unit– III

Reduction of quadratic form to canonical form and their nature - Linear Transformation – Orthogonal Transformation. Complex matrices: Hermitian, Skew-Hermitian, Unitary matrices- Eigen Values, Eigen vectors – Properties.

Unit– IV

Solution of Algebraic and Transcendental Equations – Bisection Method – Method of False Position – Newton-Raphson Method.

Unit– V

Interpolation - Introduction – Forward Differences – Backward Differences – Newton's forward and backward difference interpolation formulae – Lagrange's Interpolation formula.

Numerical Differentiation - Numerical Integration: Newton-Cotes quadrature formula- Simpson's 3/8 Rule, Boole's rule, Weddle's rule.

Text Book:

Higher Engineering Mathematics, B. S. Grewal, Khanna publishers, 43rd Ed, 2014

Reference Books:

1. Numerical Methods for Scientific and Engineering Computation, M.K. Jain, S.R.K. Iyengar& R.K. Jain, New Age international Publishers.
2. Introduction to Numerical Analysis – S.S. Sastry, Prentice Hall of India.
3. Mathematical Methods, T.K.V. Iyengar, B. Krishna Gandhi and Others, S. Chand & company.

Mode of Evaluation:

Continuous Internal Examination (CIE)		Continuous Evaluation	Semester End Examination (SEE) 70 Marks
Mid1 20 Marks	Mid2 20 Marks	10 Marks	

Course Outcomes & Program Outcomes Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11	PO 12
CO1	2	3	-	-	-	-	-	-	-	-	-	3
CO2	3	3	-	-	-	-	-	-	-	-	-	3
CO3	3	3	3	-	-	-	-	-	-	-	-	3
CO4	3	2		-	-	-	-	-	-	-	-	2
CO5	3	3	-	-	-	-	-	-	-	-	-	1

ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES::RAJAMPET
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I Year B. Tech., I Semester

(5G513) ENGINEERING DRAWING- I
(Common to EEE, ECE, CSE and IT)

Course Objectives:

- To enable the students with various concepts like Dimensioning, Conventions and standards related to working drawing in order to become professionally efficient.
- To introduce fundamental concepts of curves used in engineering, projection of points, lines.
- To impart and inculcate proper understanding of the theory of projections.
- To improve the visualization skills.

Course Outcomes:

- Students will be able to know and understand the conventions and the methods of Engineering Drawing.
- Able to understand the application of industry standards and techniques applied in Engineering Drawing.
- Dimension and annotate two-dimensional engineering drawings.
- Students will be able to improve their visualization skills.

Unit– I

INTRODUCTION: Lettering –Geometrical constructions - Construction of polygons by General method – Inscribing a triangle, square. Pentagon, hexagon in a circle.

Unit– II

CONICS: Ellipse, Parabola and Hyperbola (General method only). Special Methods: Ellipse - Concentric Circles method, Oblong method & Arcs of Circles method - Drawing tangent& normal to the conics.

Unit– III

CYCLOIDAL CURVES: Cycloid, Epi cycloid, Hypo cycloid (simple problems) - Drawing tangent & normal to the cycloidal curves.

Unit– IV

PROJECTIONS OF POINTS & LINES: Projections of points - Projections of lines inclined to one reference plane.

Unit– V

PROJECTIONS OF LINES INCLINED TO BOTH REFERENCE PLANES: Projections of lines; inclined to both reference planes.

Text Book:

Engineering drawing by N.D.Bhatt

Reference Books:

1. Engineering graphics by K.L. Narayana& P. Kannayya
2. Engineering drawing and graphics by Venugopal/ New age
3. Engineering drawing by Johle / TMI

Mode of Evaluation:

Continuous Internal Examination (CIE)		Continuous Evaluation	Semester End Examination (SEE) 70 Marks
Mid1 20 Marks	Mid2 20 Marks	10 Marks	

Course Outcomes & Program Outcomes Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11	PO 12
CO1	2			2	2				2	1		
CO2	2	1		2	2				1			
CO3	2	2		2	2				1			
CO4	3	3		1	1				1	3	3	

ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES::RAJAMPET
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I Year B. Tech., I Semester

(5GC16) ENGLISH LANGUAGE COMMUNICATION SKILLS LAB – I
(Common to all branches)

Course Objectives:

- To train students to use language effectively in everyday conversations
- To expose the students to a varied blend of self-instructional, learner-friendly modes of language learning
- To enable the students learn better pronunciation through emphasis on individual speech sounds

Course Outcomes

- Students will learn about the significance of accent and intonation and will attempt to neutralize their accent
- Students will be able to express themselves fluently in social and professional contexts
- Students will be able to converse over phone confidently and clearly in English
- The student will be able to describe people, objects and situations using adjectives

SYLLABUS:

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

1. **Introduction to the Sounds of English- Vowels, Diphthongs & Consonants**
2. **Situational Dialogues and Role-play**
3. **Telephone Skills**
4. **Describing Objects / Situation / People**

Manual cum Record, prepared by the Faculty Members of English of the college will be used by Students.

Minimum Requirement:

The English Language Lab shall have two parts:

- **The Computer aided Language Lab** for 60 students with 60 systems, one master console, LAN facility and English language software for self- study by learners.
- **The Communication Skills Lab** with movable chairs and audio-visual aids with a P.A System, a T. V. an LCD projector, a digital stereo –audio & video system and camcorder etc.

Suggested Software:

Sky Pronunciation Suite
Connected Speech from Clarity
Clarity Pronunciation Power – Part I
Mastering English in Vocabulary, Grammar, Spellings, Composition
English in Mind, Herbert Puchta and Jeff Stranks with Meredith Levy, Cambridge
Dorling Kindersley - Series of Grammar, Punctuation, Composition etc.
Language in Use, Foundation Books Pvt Ltd with CD
Learning to Speak English - 4 CDs
Microsoft Encarta with CD
Cambridge Advanced Learners' English Dictionary with CD.
Murphy's English Grammar, Cambridge with CD

Mode of Evaluation:

Day to Day Evaluation	Internal lab Evaluation	Semester End lab Examination (SEE) 70 Marks
20 Marks	10 Marks	

Course Outcomes & Program Outcomes Mapping:

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

ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES::RAJAMPET
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I Year B. Tech., I Semester

(5GC17) ENGINEERING CHEMISTRY LAB
(Common to CSE, IT, ME and CE)

Course Objectives:

- The student will learn practical understanding of the redox reaction.
- The student will learn the preparation and properties of synthetic polymers and other material that would provide sufficient impetus to engineer these to suit diverse applications.
- The student will also learn the hygiene aspects of water would be in a position to design methods to produce potable water using modern technology.

Course Outcomes:

- Students will understand the concept of redox systems
- Students will exhibit skills to handle the analytical methods with confidence
- Students will be able to acquire the operating principles and the reaction mechanisms of the instruments
- Students will be able apply his knowledge on the basic principles of batteries

LIST OF EXPERIMENTS

Any 10 of the following experiments has to be performed

VOLUMETRIC ANALYSIS

Redox Titrations

1. Estimation of iron (II) using Diphenylamine indicator (Dichrometry – Internal indicator method)
2. Estimation of Chloride ion using potassium Chromite indicator (Mohr's method)

Water analysis

3. Determination of total hardness of water by EDTA method
4. Estimation of Dissolved Oxygen by Winkler's method
5. Determination of acidity of Water
6. Determination of Alkalinity of Water.

Complexometry

7. Determination of Copper by EDTA method

Iodometry

8. Determination of Copper by Iodometry

INSTRUMENTATION

Colorimetry

9. Estimation of Iron in Cement by Colorimetry.

Conductometry

10. Conductometric titration of strong acid Vs strong base (Neutralization titration)

Fuel analysis

11. Determination of Calorific Value of fuel by using Bomb Calorimeter

Lubricants

12. Determination of Viscosity of oils using Redwood Viscometer I
13. Determination of Viscosity of oils using Redwood Viscometer II

PREPARATION OF POLYMERS

14. Preparation of Bakelite
15. Preparation of Thiokol rubber

Manual cum Record: Prepared by the Faculty Members of Engineering Chemistry of the college will be used by Students.

Equipment Required:

- ✓ Analytical weighing balance
- ✓ Digital Conductometer
- ✓ Photo-colorimeter
- ✓ Bomb calorimeter
- ✓ Redwood viscometers
- ✓ Deionizer plant
- ✓ Digital electronic balance

Glassware Required:

Pipettes, burettes, conical flasks, standard flasks, beakers, reagent bottles, spatulas, wash bottles, BOD Bottles, measuring cylinders, glass rods, Bunsen burners, funnels, thermometers etc.

Chemicals Required:

EDTA, Hypo, Mohr Salt Solution, HCl, Sulphuric Acid, Copper Solution, Iron Solution, Potassium Dichromate Solution, Potassium Iodide Solution, Buffer Solution, diphenyl amine, EBT indicator, NaOH solution, Benzoic acid Urea, distilled water etc.

REFERENCE BOOKS:

1. Vogel's Text book of Quantitative Chemical Analysis, J. Mendham et al, Pearson Education, Sixth Edition, 2012.
2. Chemistry Practical – Lab Manual by K.B.ChandraSekhar, G.V. Subba Reddy and K.N.Jayaveera, SM Publications, Hyderabad, 3rd Edition, 2012.

Mode of Evaluation:

Day to Day Evaluation	Internal lab Evaluation	Semester End lab Examination (SEE) 70 Marks
20 Marks	10 Marks	

Course Outcomes & Program Outcomes Mapping:

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

ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES::RAJAMPET
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I Year B. Tech., I Semester

(5G112)PROGRAMMING IN C LAB
(Common to CSE and IT branches)

Course Objectives:

- To learn simple programs in C.
- To understand different arithmetic operators, Expressions and type conversions.
- To apply the syntax of Two-way selection, Multi-way selection and other related statements in C programs.
- To analyze string handling functions and arrays of strings in sorting the names of students.
- To apply the user define functions, recursive and non-recursive functions in C programs.

Course Outcomes:

- Students will be able to understand programs with simple data types, variables, constants and I/O statements in C.
- Students will be able to understand and write programs on different arithmetic operators, Expressions and type conversions in C.
- Students will be able to apply and compare the syntax of Two-way selection, Multi-way selection and other related statements in C programs.
- Students will be able to write C code and apply the applications of strings, string handling functions and arrays of strings.
- Students will be able to make use of the user define functions, recursive and non-recursive functions in C programs.

Recommended Systems/Software Requirements:

Intel based desktop PC with ANSI C/ TURBO C Compiler and Supporting Editors

Exercise l:

Minimum of 4 programs on Data types, Variables, Constants and Input and Output.

Exercise 2:

Minimum of 4 programs on each Operator, Expressions and Type Conversions.

Exercise 3:

Minimum of 4 programs on Conditional Statements [two way and multipath].

Exercise 4:

Minimum of 4 programs on each Loop Control Statements[for, while and do-While]

Exercise 5:

Minimum of 4 programs on Unconditioned JUMP Statements- break, continue, Goto.

Exercise 6:

Minimum of 4 programs on Declaring Arrays, Referencing Arrays, Array Subscripts. Using for loop for sequential Access.

Exercise 7:

Minimum of 4 programs on Multidimensional Arrays.

Exercise 8:

Minimum of 4 programs on String Basics, String Library Functions and Array of Strings.

Exercise 9:

Minimum of 4 programs on simple user defined functions, Parameter passing methods- pass by value, pass by reference.

Exercise 10:

Minimum of 4 programs on Storage classes- Auto, Register, Static and Extern

Exercise 11:

Minimum of 4 programs on Recursive Functions, Preprocessor commands.

Exercise 12:

Minimum of 4 programs on using Array Elements as Function Arguments.

Mode of Evaluation:

Day to Day Evaluation	Internal lab Evaluation	Semester End lab Examination (SEE) 70 Marks
20 Marks	10 Marks	

Course Outcomes mapping with Program Outcomes & PSOs:

	PO1	PO2	PO3	PO4	PO5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PS O1	PS O2	PSO3
CO1	-	3	-	-	3	3	-	-	-	-	-	3	3	3	3
CO2	-	3	3	-	3	3	-	-	3	-	-	-	3	3	3
CO3	-	3	3	-	3	3	-	-	3	-	-	3	3	3	3
CO4	-	-	-	-	3	3	-	-	3	-	-	3	3	3	3
CO5	-	3	-	-	3	3	-	-	3	-	-	3	3	3	3

ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES::RAJAMPET
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I Year B. Tech., I Semester

(5G114) I.T. WORKSHOP
(Common to CSE, EEE, ECE and IT)

Course Objectives:

- To identify various parts of a computer and to learn Assembling of a Computer
- To demonstrate installation of various operating systems like windows, linux
- To learn about Networking of computers and use Internet facility for Browsing and Searching.
- To choose different anti-virus software's to enhance the system performance
- To develop Productivity tools like Word processors, Spreadsheets, Presentations

Course Outcomes:

- Able to identify various parts of a computer and to learn Assembling of a Computer
- Able to explain installation of various operating systems like windows, linux
- Able to administer about Networking of computers and use Internet facility for Browsing and Searching.
- Able to distinguish different anti-virus software's to enhance the systemperformance
- Able to develop Productivity tools like Word processors, Spreadsheets, Presentations

Preparing your Computer

Task 1: Learn about Computer: Identify the internal parts of a computer, and its peripherals. Represent the same in the form of diagrams including Block diagram of a computer. Write specifications for each part of a computer including peripherals and specification of Desktop computer. Submit it in the form of a report.

Task 2: Assembling a Computer: Disassemble and assemble the PC back to working condition. Students should be able to trouble shoot the computer and identify working and non-working parts. Student should identify the problem correctly by various methods available (eg: beeps). Students should record the process of assembling and trouble shooting a computer.

Task 3: Install Operating system: Student should install Linux on the computer. Student may install another operating system (including proprietary software) and make the system dual boot or multi boot. Students should record the entire installation process.

Task 4: Operating system features: Students should record the various features that are supported by the operating system(s) installed. They have to submit a report on it. Students should be able to access CD/DVD drives, write CD/DVDs, access pen drives, print files, etc. Students should install new application software and record the installation process.

Networking and Internet

Task 5: Networking: Students should connect two computers directly using a cable or wireless connectivity and share information. Students should connect two or more computers using switch/hub and share information. Crimpling activity, logical configuration etc should be done by the student. The entire process has to be documented.

Task 6: Browsing Internet: Student should access the Internet for Browsing. Students should search the Internet for required information. Students should be able to create e-mail account and send email. They should get acquaintance with applications like Facebook, skype etc. If Intranet mailing facility is available in the organization, then students should share the information using it. If the operating system supports sending messages to multiple users (LINUX supports it) in the same network, then it should be done by the student. Students are expected to submit the information about different browsers available, their features, search process using different natural languages, and creating e-mail account.

Task 7: Antivirus: Students should download freely available Antivirus software, install it and use it to check for threats to the computer being used. Students should submit information about the features of the antivirus used, installation process, about virus definitions, virus engine etc.

Productivity tools

Task 8: Word Processor: Students should be able to create documents using the word processor tool. Some of the tasks that are to be performed are inserting and deleting the characters, words and lines, Alignment of the lines, Inserting header and Footer, changing the font, changing the colour, including images and tables in the word file, making page setup, copy and paste block of text, images, tables, linking the images which are present in other directory, formatting paragraphs, spell checking, etc. Students should be able to prepare project cover pages, content sheet and chapter pages at the end of the task using the features studied. Students should submit a user manual of the word processor considered.

Task 9: Spreadsheet: Students should be able to create, open, save the application documents and format them as per the requirement. Some of the tasks that may be practiced are Managing the worksheet environment, creating cell data, inserting and deleting cell data, format cells, adjust the cell size, applying formulas and functions, preparing charts, sorting cells. Students should submit a user manual of the Spreadsheet application considered.

Task 10: Presentations: creating, opening, saving and running the presentations, selecting the style for slides, formatting the slides with different fonts, colours, creating charts and tables, inserting and deleting text, graphics and animations, bulleting and numbering, hyperlinking, running the slide show, setting the timing for slide show. Students should submit a user manual of the Presentation tool considered.

Optional Tasks:

Task 11: Laboratory Equipment: Students may submit a report on specifications of various equipment that may be used by them for the laboratories in their curriculum starting from I B.Tech to IV. B.Tech. It can vary from department to department. Students can refer to their syllabus books, consult staff members of the concerned department or refer websites. The following is a sample list. Instructors may make modifications to the list to suit the department concerned.

- Desktop computer
- Server computer
- Switch (computer science related)
- Microprocessor kit
- Micro controller kit
- Lathe machine
- Generators
- Construction material
- Air conditioner
- UPS and Inverter
- RO system
- Electrical Rectifier
- CRO
- Function Generator
- Microwave benches

Task 12: Software: Students may submit a report on specifications of various software that may be used by them for the laboratories in their curriculum starting from I B. Tech., to IV.

B.Tech., The software may be proprietary software or Free and Open source software. It can vary from department to department. Students can refer to their syllabus books, consult staff members of the concerned department or refer websites. The following is a sample list. Instructors may make modifications to the list to suit the department concerned.

- Desktop operating system
- Server operating system
- Antivirus software
- MATLAB
- CAD/CAM software
- AUTOCAD

REFERENCE BOOKSS:

1. Introduction to Computers, Peter Norton, Mc Graw Hill
2. MOS study guide for word, Excel, Powerpoint & Outlook Exams", Joan Lambert, Joyce Cox, PHI.
3. Introduction to Information Technology, ITL Education Solutions limited, Pearson Education.
4. Networking your computers and devices, Rusen, PHI
5. Trouble shooting, Maintaining & Repairing PCs", Bigelows, TMH

Mode of Evaluation:

Day to Day Evaluation	Internal lab Evaluation	Semester End lab Examination (SEE) 70 Marks
20 Marks	10 Marks	

Course Outcomes mapping with Program Outcomes & PSOs:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11	PO 12	PSO 1	PSO2	PSO3
CO1	2	3			3								3		
CO2		3		2								3	3		
CO3				2	3										
CO4	2														3
CO5			2		3							3			3

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I Year B. Tech., II Semester

(5GC21) TECHNICAL ENGLISH
(Common to all branches)

Course Objectives:

- To improve the language proficiency of the students in English with an emphasis on LSRW skills
- To equip the students with comprehension skills to study academic subjects with greater facility.
- To develop English communication skills of the students in formal and informal situations

Course Outcomes:

- Students will increase his vocabulary through the study of word parts, use of context clues, idiomatic expressions, and practice with a dictionary
- Students will exhibit their ability to read, comprehend, organize, and retain written information
- Students will practice the unique qualities of technical writing style, such as sentence conciseness, clarity, accuracy, avoiding ambiguity, using direct order organization, readability, coherence and transitional devices
- Students exhibit effective writing skills and create effective documents in technical communication such as letters, reports and emails
- Students will understand the factors that influence the use of grammar and vocabulary in speech and writing

Unit– I

Sure Outcomes: Technology with a Human Face

Grammar: Kinds of Verbs and their Use; Writing: Official Letters; Vocabulary: Synonyms and Antonyms, Prefixes and Suffixes, Idioms and Phrases

Unit– II

Sure Outcomes: Climatic Change and Human Strategy

Grammar: Tenses; Writing: Letters of Application; Vocabulary: One-word Substitutes

Unit– III

Sure Outcomes: Emerging Technologies: Solar Energy in Spain

Grammar: Types of Sentences: Simple, Compound and Complex; Declarative, Interrogative, Imperative and Exclamatory; Writing: E-mails; Vocabulary: Commonly Confused Words

Unit– IV

Sure Outcomes: Water: The Elixir of Life

Grammar: Subject-Verb Agreement; Writing: Official Reports, Technical Reports; Vocabulary: English Spelling, Commonly miss spelt words

Unit– V

Sure Outcomes: The Secret of Work

Grammar: Active and Passive Voice; Writing: Note-making; Vocabulary: Connotations

Text Books:

Sure Outcomes **published by Orient Black Swan (with CD)**

- The book prescribed serves as students' handbook. The reader comprises essays which are particularly relevant to engineering students.
- The teacher should focus on developing LSRW skills of students while using the prescribed text and exercises. The classes should be interactive. The students should be

encouraged to participate in the classroom proceedings and also to write short paragraphs and essays. The main aim is to encourage two-way communication in place of one-sided lecture.

Reference Books:

1. Essential Grammar in Use, (with CD), Raymond Murphy, 3/e, Cambridge University Press, 2009
2. Basic Communication Skills for Technology, Andrea J Ruthurford, Pearson Education, Asia.
3. English for Technical Communication, AyshaViswamohan, Tata Mc-Graw Hill
4. English Grammar and Composition, David Grene, Mc Millan India Ltd.
5. Murphy's English Grammar, Raymond Murphy, CAMBRIDGE
6. Everyday Dialogues in English by Robert J. Dixson, Prentice-Hall of India Ltd., 2006.
7. Communication Skills for Technical Students, Farhathullah, T.M., Orient Blackswan, 2008
8. Developing Communication Skills, 2/e. by Krishna Mohan &MeeraBanerji, Macmillan, 2009
9. English for Technical Communication, Vol. 1 & 2, by K. R. Lakshmi Narayanan, Sci tech. Publications.
10. Longman Dictionary of Contemporary English with DVD, Pearson Longman

Mode of Evaluation:

Continuous Internal Examination (CIE)		Continuous Evaluation	Semester End Examination (SEE) 70 Marks
Mid1 20 Marks	Mid2 20 Marks	10 Marks	

Course Outcomes & Program Outcomes Mapping:

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

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I Year B. Tech., II Semester

(5GC23) ENGINEERING PHYSICS
(Common to CSE, IT, ME and CE)

Course Objectives:

- The mission of the Engineering Physics course is to prepare students for careers in engineering where physics principles can be applied to the advancement of technology.
- The Engineering Physics course educates the principles of optical science and engineering necessary to understand optical systems.
- The Crystallography, X-ray diffraction of crystals and crystal defects explains how basic structure modulates properties of materials.
- The principles of quantum mechanics and electron theory of metals gives an idea on basic development of energy in metals.
- The main objective of this course is to provide basic understanding of different engineering materials (semiconductors, magnetic, superconducting and Nano materials).

Course Outcomes:

- Students gain knowledge about basic concepts of optics, fiber optics, and lasers
- Students will be able to identify different types of crystal structures that occur in materials and understand production and application of acoustics
- Students exhibits knowledge of the roots and founding principles of Quantum Mechanics and band theory of solids.
- Students develop an understanding of the basic principles underlying the magnetic and semiconductor
- Students becomes familiar with the general physics of superconducting materials and nanomaterials

Unit– I

PHYSICAL OPTICS, LASERS AND FIBRE OPTICS:

Physical Optics: Introduction - Interference in thin films by reflection – Newton's Rings – Fraunhofer diffraction due to single slit, double slit and diffraction grating.

Lasers: Introduction - Characteristics of laser – Spontaneous and stimulated emission of radiation - Einstein's coefficients - Population inversion – Ruby laser - He-Ne laser - Semiconductor laser - Applications of lasers. Holography: Construction and Re-Construction of hologram - Applications

***Fiber optics*:** Introduction– Construction and working principle of optical fiber – Numerical Aperture and acceptance angle – Types of optical fibers – Optical fiber communication system – Applications of optical fibers in communications, sensors and medicine.

Unit– II

CRYSTALLOGRAPHY AND ULTRASONICS:

Crystallography: Introduction – Space lattice –Unit cell – Lattice parameters – Bravias lattice –Crystal systems – Packing fractions of SC, BCC and FCC - Directions and planes in crystals – Miller indices – Inter planar spacing in cubic crystals – X-ray diffraction - Bragg's law – Powder method– Defects in solids: point defects and types.

***Ultrasonics*:**Introduction – Properties – Production of ultrasonics by piezoelectric method and detection – Applications in non-destructive testing.

Unit–III

QUANTUM MECHANICS AND FREE ELECTRON THEORY:

Quantum Mechanics: Introduction to matter waves – de-Broglie's hypothesis - Heisenberg's uncertainty principle - Schrodinger's time independent wave equation – Significance of wave function - Particle in a one dimensional infinite potential well.

Free electron theory: Classical free electron theory –- Sources of electrical resistance – Equation for electrical conductivity - Quantum free electron theory – Fermi-Dirac distribution – Kronig - Penny model (qualitative) – Origin of bands in solids – Classification of solids into conductors, semiconductors and insulators.

Unit– IV

SEMICONDUCTORS AND MAGNETIC MATERIALS:

Semiconductors: Introduction – Intrinsic and extrinsic semiconductors – Drift & diffusion currents and Einstein's equation – Hall Effect - Direct and indirect band gap semiconductors – Working principle of p-n junction diode, LED and photodiode.

Magnetic materials: Introduction and basic definitions – Origin of magnetic moments – Bohr magneton – Classification of magnetic materials into dia, para, ferro, antiferro and ferri magnetic materials – Hysteresis - Soft and hard magnetic materials and applications.

Unit– V

SUPERCONDUCTIVITY AND NANOMATERIALS:

Superconductivity: Introduction –Properties of superconductors - Meissner effect – Type I and type II superconductors – Flux quantization – London penetration depth – BCS theory (qualitative) –ac and dc Josephson effects- Applications of superconductors.

***Nanomaterials*:** Introduction - Significance of nanoscale –Basic principles of nano materials (Surface area and quantum confinement) – Physical properties: optical, thermal, mechanical and magnetic properties –Synthesis of nanomaterials: ball mill, chemical vapor deposition, sol-gel, plasma arcing methods – Carbon nanotubes (CNT) and properties – Applications of nanomaterials.

Text Books:

1. Engineering physics –K.Thyagarajan, MacGraw Hill Publishers,2013.
2. Engineering Physics – S. ManiNaidu, Pearson Education, I Edition, 2012.
3. Engineering physics –P.K.palanisamy,scietech publisher,Edition,2013.

Reference Books:

1. Engineering Physics – RV.S.S.N. Ravi Kumar and N.V. Siva Krishna, Maruthi Publications, 2013
2. Engineering Physics – D.K.Battacharya and A.Bhaskaran,OxfordHeigher Education I Edi 2010.
3. Engineering Physics – D K Pandey, S. Chaturvedi, Cengage Learning, I Edition, 2012.
4. Engineering Physics – D.K.Bhattacharya and A.Bhaskaran, Oxford University press.
5. Engineering Physics – M. Arumugam, Anuradha Publications II Edition, 1997.
6. Engineering physics – M.N. Avadhanulu and P.G. KrshiSagar, Chand and Co, Revised Edi 2013.
7. Solid State Physics – A.J. Dekkar, McMillan Publishers, Latest edition, 2012.
8. Engineering Physics – Gaur and Gupta Dhanapati, RaiPublishers, 7th Edition, 1992.
9. Text book of Nanoscience and Nanotechnology: B S Murthy, P.Shankar, Baldev Raj B B Rath, James Murday, University Press, I Edition, 2012.

Mode of Evaluation:

Continuous Internal Examination (CIE)		Continuous Evaluation	Semester End Examination (SEE) 70 Marks
Mid1 20 Marks	Mid2 20 Marks	10 Marks	

Course Outcomes & Program Outcomes Mapping:

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

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I Year B. Tech., II Semester

(5GC24) ENGINEERING MATHEMATICS – II
(Common to all branches)

COURSE OBJECTIVES:

The course aims to provide the student with the ability

- To apply this knowledge to evaluate the multiple integrals in real life situations.
- To apply the knowledge of Laplace transforms and vector calculus for engineering problems

Course Outcomes:

- Students will understand the applications of Multiple Integration
- Students will exhibit the knowledge of Laplace transforms
- Students will be able to apply Ordinary Differential equations with given initial and boundary conditions in engineering subjects
- Students will be able to analyze the Vector differentiation and Integration in various domains
- Student understands the applications of Vector Integral theorems.

Unit– I

Multiple integral: –Double integral – Evaluation - Change of Variables - Change of order of integration- Area and volumes using double integral. Triple integral - Evaluation.

Unit– II

Laplace transform of standard functions – Inverse transform – First shifting Theorem, Transforms of derivatives and integrals – Second shifting theorem– Laplace transform of Periodic functions – Inverse Laplace transform – Convolution theorem.

Unit– III

Application of Laplace transforms to ordinary differential equations of first and second order.

Unit– IV

Vector Calculus: Scalar and vector point functions, Gradient and its geometrical interpretation, Divergence –physical interpretation of divergence, Curl -physical interpretation of curl, Del applied twice to point functions, Line integral - Area, Surface and volume integrals.

Unit– V

Vector Integral Theorems: Green's theorem – Stoke's theorem and Gauss's Divergence Theorem (without proofs) and their applications.

TEXT BOOK:

Higher Engineering Mathematics, B.S.Grewal, Khanna publishers- 43rdEdition (2014)

REFERENCE BOOKS:

1. Higher Engineering Mathematics, by Kreyszing
2. A Text Book of Engineering Mathematics, B.V. Ramana, Tata McGraw Hill.
3. A Text Book of Engineering Mathematics, Vol – 1, T.K.V. Iyengar, B. Krishna Gandhi and others, S.Chand & Company.

Mode of Evaluation:

Continuous Internal Examination (CIE)		Continuous Evaluation	Semester End Examination (SEE) 70 Marks
Mid1 20 Marks	Mid2 20 Marks	10 Marks	

Course Outcomes & Program Outcomes Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
Co1	3	2	-	-	-	-	-	-	-	-	-	3
Co2	3	3	-	-	-	-	-	-	-	-	-	3
Co3	3	2	-	1	-	-	-	-	-	-	-	3
Co4	3	3	-	-	-	-	-	-	-	-	-	3
Co5	3	3	-	2	-	-	-	-	-	-	-	3

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I Year B. Tech., II Semester

(5G121) C PROGRAMMING AND DATA STRUCTURES
(Common to ALL branches)

Course Objectives:

- To learn the basic concepts of pointers and its applications.
- To apply the syntax of structures, unions, files and different sorting and searching techniques.
- To understand different linear data structures such as stacks, queues, circular queues and their applications.
- To compare different linear data structures such as single linked list, double linked list, circular linked list and their applications.
- To analyze non- linear data structures such as trees, graphs and their applications.

Course Outcomes:

- To understand the basic concepts of pointers and how the memory will be allocated dynamically using pointers.
- To compare the syntax of structures, unions with arrays, and to create simple text vs. binary files and different sorting and searching techniques.
- To analyze different linear data structures such as stacks, queues, circular queues and their applications.
- To implement appropriate linear data structures such as single linked list, double linked list, circular linked list in different applications of C programs.
- To constructnon- linear data structures such as trees, graphs.

Unit– I

Pointers - Introduction, Features of Pointers, Pointer Declaration and Definition, Void Pointers, pointers for inter function communication, Pointers to Pointers, Pointer Applications: arrays and pointers, pointer arithmetic, Dynamic Memory Allocation, Pointers to Functions, pointer to void and command line arguments.

Unit– II

Structures – Definition, initialization, accessing structures, nested structures, array of structures, structures and functions. Pointers and Structures. Unions. Sample programs

Files: Introduction to Streams and Files, Standard library input / output functions, formatted input / output functions, character input/output functions; Text verses binary Streams, Standard library functions for files. File examples.

Searching and Sorting - Exchange (Bubble) Sort, Selection Sort, Quick Sort, Insertion Sort, Merge Sort, Searching- Linear and Binary Search Methods.

Unit– III

Data Structures: Overview of Data Structure. **Stack:** Representation of a Stack, Operation on a Stack, Implementation of a Stack using Arrays and Pointers, Representation of Arithmetic Expressions, Infix, Prefix, and Postfix Notations, Evaluation of Postfix Expression, Recursion.

Queues: Representation of Queue, Insertion, Deletion, Searching Operations, Circular Queues.

Unit– IV

Linked List: Singly Linked List, Linked List with and without header, Insertion, Deletion and Searching Operations.

Doubly Linked List: Insertion, Deletion and Searching Operations.

Circular Linked List: Insertion, Deletion and Searching Operations.

Unit– V

Trees: Introduction to Trees, Binary Trees, creation of binary tree, Operations on Binary Tree. Introduction to Binary Search Tree, Operations on Binary Search Trees.

Graphs: Defining graph, basic terminology, graph representation.

Text Books:

1. C Programming and DataStructures.B.AForouzan,R. F.Gilberg,Cengage learning, Indian edition.
2. Programming in C and Data Structures, J.R.Hanly, Ashok N. Kamthane and A. Ananda Rao, Pearson Education.
3. Data Structures and Algorithms: Concepts, Techniques and ApplicationsG.A.V. Pai[UNIT-V]

Reference Books:

1. C and Data Structures, A snapshot oriented treatise with live engineering examples, Dr. N.B.Venkateswarlu, Dr. E.V.Prasad, S. Chand.
2. LET US C, YeswanthKanitkar, Ninth Edition, BPB Publication.

Mode of Evaluation:

Continuous Internal Examination (CIE)		Continuous Evaluation	Semester End Examination (SEE) 70 Marks
Mid1 20 Marks	Mid2 20 Marks	10 Marks	

Course Outcomes mapping with Program Outcomes & PSOs:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11	PO 12	PS O1	PS O2	PS O3
CO1	-	-	2	-	2	-	-	-	-	-	-	3	-	2	2
CO2	-	2	-	3	-	-	-	-	2	-	2	-	-	-	-
CO3	2	3	3	2	-	-	-	-	-	-	-	-	3	-	3
CO4	3	2	-	-	-	-	-	-	2	-	-	2	-	-	-
CO5	-	-	3	-	2	-	-	-	-	-	3	3	-	3	-

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I Year B. Tech., II Semester

(5GC25) MATHEMATICAL METHODS-II
(Common to CSE and IT)

Course Objectives:

- This course aims at providing the student with the concepts of Matrices, Fourier series and partial differential equations which find the applications in engineering.
- Emphasis will be more on logical and problem solving development in Numerical methods and their applications.

Course Outcomes:

- Students will be familiar with the equations of the respective curves using the data given.
- Students will be able to calculate the Fourier coefficients for normal and half range series in any given intervals to solve the engineering problems related to Fourier series.
- Students will be able to apply the knowledge to Fourier transforms in their engineering subjects to solve the problems.
- Students will be able to analyze and apply the appropriate numerical methods to solve the differential equations
- Student knows how to form partial differential equations and solve those equations in their engineering areas.

Unit–I

Curve fitting: Fitting a straight line – Second degree curve – Exponential curve-Power curve by method of least squares.

Unit– II

Numerical solution of Ordinary Differential equations - Taylor's series - Euler's Method – Picard's Method –Runge-Kutta Fourth Order Method – Milne's Predictor-Corrector Method.

Unit– III

Fourier series: Determination of Fourier coefficients – Fourier series of Even and odd functions – Fourier series in an arbitrary interval – Half-range Fourier sine and cosine expansions.

Unit– IV

Fourier transforms – Fourier sine and cosine transforms- Finite Fourier sine and cosine transforms.

Unit– V

Partial differential equations: Formation of a PDE by elimination of arbitrary constants and functions- Solution of first order linear equation and nonlinear equations of standard types. Method of separation of variables.

Text Book:

Higher Engineering Mathematics, B. S. Grewal, Khanna publishers, 43rd Ed, 2014.

Reference Books:

1. Numerical Methods for Scientific and Engineering Computation, M.K. Jain, S.R.K. Iyengar& R.K. Jain, New Age international Publishers.
2. Introduction to Numerical Analysis – S.S. Sastry, Prentice Hall of India.
3. Mathematical Methods, T.K.V. Iyengar, B. Krishna Gandhi and Others, S. Chand & company.

Mode of Evaluation:

Continuous Internal Examination (CIE)		Continuous Evaluation	Semester End Examination (SEE) 70 Marks
Mid1 20 Marks	Mid2 20 Marks	10 Marks	

Course Outcomes & Program Outcomes Mapping:

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

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I Year B. Tech., II Semester

(5G523) ENGINEERING DRAWING- II
(Common to EEE, ECE, CSE and IT)

Course Objectives:

- To impart and inculcate proper understanding of the theory of projections of planes, solids and simple machine components.
- To improve the visualization skills of the student.
- To prepare the student for future engineering positions.

Course Outcomes:

- Comprehend general projection theory, with an emphasis on the use of orthographic projection to represent three-dimensional objects in two-dimensional views.
- Can employ 3D pictorial sketching to aid in the visualization process and to efficiently communicate ideas graphically.
- Analyze a drawing and bring out any inconsistencies to put forth inferences graphically

Unit– I

PROJECTIONS OF PLANES: Projection of planes inclined to one reference plane - and inclined to both the reference planes.

Unit– II

PROJECTIONS OF SOLIDS: Cylinder, Cone, Prism and Pyramid - Axis Inclined to one reference plane.

Unit– III

PROJECTIONS OF SOLIDS: Cylinder, Cone, Prism and Pyramid - Axis inclined to both the reference planes.

Unit–IV

ISOMETRIC PROJECTIONS: Projections of Lines, Planes and Simple Solids – Prism, Pyramid, Cylinder and Cone in simple positions only.

Unit–V

CONVERSION OF VIEWS: Conversions of Orthographic views into Isometric views and Conversion of Isometric views to Orthographic views.

TEXT BOOK:

Engineering drawing by N.D. Bhatt

REFERENCE BOOKSS:

1. Engineering graphics by K.L. Narayana& P. Kannayya
2. Engineering drawing and graphics by Venugopal/ New age
3. Engineering drawing by Johle / TMI

Mode of Evaluation:

Continuous Internal Examination (CIE)		Continuous Evaluation	Semester End Examination (SEE) 70 Marks
Mid1 20 Marks	Mid2 20 Marks	10 Marks	

Course Outcomes & Program Outcomes Mapping:

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

ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES::RAJAMPET
(AN AUTONOMOUS INSTITUTION)

I Year B. Tech., II Semester

(5GC26) ENGLISH LANGUAGE COMMUNICATION SKILLS LAB - II
(Common to all branches)

Course Objectives:

- To enable a learner sharpen his public speaking skills
- To expose the students to a varied blend of self-instructional, learner-friendly modes of language learning
- To enable the student learn better pronunciation through emphasis on word accent, intonation, and rhythm

Course Outcomes

- Students will be able to understand the importance of intonation, word and sentence stress for improving communication competence to identify and to overcome mispronunciation
- Students will be able to make spontaneous a speech confidently
- Students will enhance their public speaking skills and make technical presentations
- Students will analyze, interpret and compare data from graphs/pie charts

SYLLABUS

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

1. Introduction to Stress and Intonation
2. 'Just A Minute' (JAM)
3. Oral Presentations
4. Information Transfer

Manual cum Record, prepared by the Faculty Members of English of the college will be used by Students.

Minimum Requirements:

The English Language Lab shall have two parts:

- **The Computer aided Language Lab** for 60 students with 60 systems, one master console, LAN facility and English language software for self- study by learners.
- **The Communication Skills Lab** with movable chairs and audio-visual aids with a P.A System, a T. V. an LCD projector, a digital stereo –audio & video system and camcorder etc.

Suggested Software:

- Sky Pronunciation Suite
- Connected Speech from Clarity
- Clarity Pronunciation Power – Part I
- Language in Use, Foundation Books Pvt Ltd with CD
- Learning to Speak English - 4 CDs
- Cambridge Advanced Learners' English Dictionary with CD.
- Murphy's English Grammar, Cambridge with CD

Mode of Evaluation:

Day to Day Evaluation	Internal lab Evaluation	Semester End lab Examination (SEE) 70 Marks
20 Marks	10 Marks	

Course Outcomes & Program Outcomes Mapping:

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

ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES::RAJAMPET
(AN AUTONOMOUS INSTITUTION)

I Year B. Tech., II Semester

(5GC28) ENGINEERING PHYSICS LAB
(Common to CSE, IT, ME and CE)

Course Objectives:

- The student will be able to handle and understand different apparatus to perform experiments.
- The student will learn practical measurement of different physical quantities.
- The student will be able to characterize the materials and their properties.
- The student will be allowed to learn practical experience of theory conceptual values.

Course Outcomes:

- Students will understand the characteristics and behavior of various materials
- Students will be able to understand the applications of optics using basic fundamentals of physics
- Students will exhibit an ability to use techniques and skills associated with modern engineering tools such as lasers and fiber optics
- Students will be able to measure properties of a semiconductor and magnetic materials

LIST OF EXPERIMENTS

Any 10 of the following experiments has to be performed

1. Determination of wavelengths of various colors of mercury spectrum using diffraction grating in normal incidence method
2. Determination of dispersive power of the prism
3. Determination of thickness of thin object by wedge method
4. Determination of radius of curvature of lens by Newton's Rings
5. Laser : Diffraction due to single slit
6. Laser : Diffraction due to double slit
7. Laser: Determination of wavelength using diffraction grating
8. Determination of Numerical aperture of an optical fiber
9. Meldi's experiment: Determination of the frequency of tuning fork
10. Determination of particle size by using laser.
11. Energy gap of a material using p-n junction diode
12. Hall effect : Determination of mobility of charge carriers in Semiconductor
13. B-H curve
14. Magnetic field along the axis of a current carrying coil – Stewart and Gee's method.
15. Determination of rigidity modulus –Torsional pendulum

Manual Cum Record:

Prepared by Engineering Physics Faculty Members of Annamacharya Institute of Technology and Sciences.

Reference Books:

1. Engineering Physics Practicals – Dr. B. Srinivasa Rao V.K.V. Krishna K.S Rudramamba
2. Engineering Practical Physics – S.L Kakani& Shubra Kakani

Equipment required:

- Spectrometers
- Microscopes

- Meldi's apparatus
- Stewart-Gee's apparatus
- Torsional pendulum
- Light sources
- Optical fiber cables

Mode of Evaluation:

Day to Day Evaluation	Internal lab Evaluation	Semester End lab Examination (SEE) 70 Marks
20 Marks	10 Marks	

Course Outcomes & Program Outcomes Mapping:

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

ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES::RAJAMPET
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I Year B. Tech., II Semester

(5G122) DATA STRUCTURES LAB
(Common to CSE and IT)

Course Objectives:

- To learn simple programs of pointers and dynamic memory allocations in C.
- To understand the syntax of structures, unions, files and different sorting and searching techniques.
- To differentiate stacks, queues and circular queues programs using arrays and pointers.
- To compare single linked list, double linked list and circular linked list programs using arrays and pointers.
- To analyze the operations on binary tree.

Course Outcomes:

- To write simple programs of pointers and how memory will be allocated dynamically in C.
- To discuss syntax of structures, unions, files and different sorting and searching techniques.
- To apply arrays and pointers in writing C code for stacks, queues and circular queues programs
- To distinguish single linked list, double linked list and circular linked list programs using arrays and pointers.
- To create binary tree and display the tree traversals of binary tree.

Recommended Systems/Software Requirements:

Intel based desktop PC with ANSI C/ TURBO C Compiler and Supporting Editors

Exercise 1 : Minimum of 4 Programs on pointer basics.

Exercise 2 : Minimum of 4 Programs on Pointers applications.

Exercise 3 : Minimum of 4 programs on structures and unions

Exercise 4 : Minimum of 4 programs on basic File operations.

Exercise 5 : Minimum of 4 programs on searching and sorting techniques.

Exercise 6 : Implementation of Stack and perform all Stack operations using

i) Arrays ii) Pointers

Exercise 7 : Implementation of Queue and perform all Queue operations using

i) Arrays ii) Pointers

Exercise 8 : Implement Circular Queue (its operations) using

i) Arrays ii) Pointers

Exercise 9 : Implementation of Single Linked List and its operations using

i) Arrays ii) Pointers

Exercise 10 : Implementation of Double Linked List and its operations using

i) Arrays ii) Pointers

Exercise 11 : Implementation of Circular Linked List and its operations using

i) Arrays ii) Pointers

Exercise 12 : C program that uses Stack operations to perform the following:

i) Converting infix expression into postfix expression

ii) Evaluating the postfix expression

Exercise 13 : Implement Binary Tree using Double Linked List and its operations.

Mode of Evaluation:

Day to Day Evaluation	Internal lab Evaluation	Semester End lab Examination (SEE) 70 Marks
20 Marks	10 Marks	

Course Outcomes mapping with Program Outcomes & PSOs:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11	PO 12	PS O1	PS O2	PS O3
CO1	-	-	2	-	2	-	-	-	-	-	-	3	-	2	2
CO2	-	2	-	3	-	-	-	-	2	-	2	-	-	-	-
CO3	2	3	3	2	-	-	-	-	-	-	-	-	3	-	3
CO4	3	2	-	-	-	-	-	-	2	-	-	2	-	-	-
CO5	-	-	3	-	2	-	-	-	-	-	3	3	-	3	-

ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES::RAJAMPET
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I Year B. Tech., II Semester

(5G524) ENGINEERING WORKSHOP
(Common to CSE, EEE, ECE and IT)

Course Objectives:

- To understand the usage of tools in manufacturing of components in the trades of Fitting, Carpentry, Foundry, Tin smithy, welding.
- To recognize the tools and use basic electrical engineering knowledge for house wiring Practice.

Course outcomes:

- An ability to identify and apply suitable tools for manufacturing of components in workshop trades of Fitting, Carpentry, Foundry, Tin smithy, Welding.
- An ability to identify and use hand tools for electrical wiring and give power supply to domestic installations.

1. TRADES FOR EXERCISES:

A. **CARPENTRY SHOP**– Two joints (exercises) involving tenon and mortising, groove and tongue: Making middle lap T joint, cross lap joint, mortise and tenon T joint, Bridle T joint from out of 300 x 50 x 50 mm soft wood stock

B. **FITTING SHOP**– Two joints (exercises) from: square joint, V joint, half round joint or dove tail joint out of 100 x 50 x 5 mm M.S. stock.

C. **SHEET METAL SHOP**– Two jobs (exercises) from: Tray, cylinder, hopper or funnel from out of 22 or 20 gauge G.I. sheet.

D. **HOUSE-WIRING**– Two jobs (exercises) from: wiring for ceiling rose and two lamps (bulbs) with independent switch controls with or without looping, wiring for stair case lamp, wiring for a water pump with single phase starter.

E. **Foundry–**Preparation of two moulds (exercises): for a single pattern and a double pattern.

F. **WELDING** – Preparation of two welds (exercises): single V butt joint, lap joint, double V butt joint or T fillet joint

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. Engineering Work shop practice for JNTU, V. Ramesh Babu, VRB Publishers Pvt. Ltd., 2009.
2. Work shop Manual / P.Kannaiah/ K.L.Narayana/ SciTech Publishers.
3. Engineering Practices Lab Manual, Jeyapoovan, Saravana Pandian, 4/e Vikas.
4. Dictionary of Mechanical Engineering, GHF Nayler, Jaico Publishing House.

Mode of Evaluation:

Day to Day Evaluation	Internal lab Evaluation	Semester End lab Examination (SEE) 70 Marks
20 Marks	10 Marks	

Course Outcomes & Program Outcomes Mapping:

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

ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES::RAJAMPET
(AN AUTONOMOUS INSTITUTION)

II Year B. Tech., I Semester

(5GC33)PROBABILITY AND STATISTICS

Course Objectives:

- To understand the measure of uncertainty.
- To apply this knowledge to insurance, statistics, Engineering.

Course Outcomes:

Student will be able to

- Understand the basic concepts of probability and random variables.
- Gain the knowledge on probability distributions.
- Understand the concepts of sampling distributions and theory of estimation.
- Able to test various hypothetical statements for large and small samples.
- Provide the knowledge in testing the goodness of fit and decision-making process.

Unit–I

Probability: Sample space and events – Probability – The axioms of probability – Some Elementary theorems - Conditional probability – Baye's theorem. Random variables – Discrete and continuous – Distribution functions - mean and variance.

Unit–II

Binomial distribution –Poison distribution- Uniform distribution - Normal distribution.

Unit–III

Sampling distribution: Population and sample - Sampling distributions of means (σ known and unknown).

Estimation: Point estimation – interval estimation - one mean –two means (large sample) and one proportion – two proportions (large sample).

Unit–IV

Test of Hypothesis – Large samples: hypothesis concerning one and two means. Test of proportions (one and two).Small samples: t- test.

Unit–V

F-test, $\chi 2$–Tests– goodness of fit, rxc contingency tables.

Text Books:

1. Fundamentals of Mathematical Statistics, S C Gupta and V K Kapoor, Sultan s.chand& sons.
2. A text book of Probability & Statistics, B. V. Ramana, Tata McGraw Hill.

Reference Books:

1. Advanced Engineering Mathematics, Erwin Kreyszig, 8th edition, New Age International (Pvt) Limited.
2. Probability & Statistics, T. K. V. Iyengar, B. Krishna Gandhi and Others, S. Chand & Company.
3. Probability & Statistics for Engineers, Miller and John E. Freund, Prentice Hall of India.

Mode of Evaluation:

Continuous Internal Examination (CIE)		Continuous Evaluation	Semester End Examination (SEE) 70 Marks
Mid1 20 Marks	Mid2 20 Marks	10 Marks	

Course Outcomes & Program Outcomes Mapping:

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

ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES::RAJAMPET
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II Year B. Tech., I Semester

(5G236)ELECTRICAL ENGINEERING AND ELECTRONICS ENGINEERING
(Common for CSE & IT)

Course Objectives:

- To impart the basic knowledge about the Electric circuits.
- To understand the working of various Electrical Machines.
- To know about various electronic devices.
- To understand the various parts of CRO.

Course Outcomes:

After the completion of the course, the student should be able

- Able to apply fundamental concepts to find response of electrical circuits.
- Able to identify the types of DC-Machines and their applications
- Able to calculate the efficiency of DC-Machines.
- Able to explain the principle operation of Transformer, Induction Motor and their application.
- Able to draw the slip-Torque characteristics of Induction motor.
- Able to identify the semi-conductor devices and their applications.
- Able to explain the types of heating
- Able to explain the working principle of CRO.

Unit–I

ELECTRICAL CIRCUITS: Basic definitions, types of elements, ohm's law, resistive, inductive, capacitive networks, Series- parallel circuits, star and delta transformations, and Kirchhoff's laws.

Unit–II

DC MACHINES: DC Generator: Constructional Details of DC machine, Principle of operation, emf equation, types of generators, applications.

DC Motor: principle of operation, torque equation, types, three point starter, losses and efficiency, applications

Testing: brake test, Swinburne's test, and Speed control methods.

Unit–III

AC MACHINES: 1-φTransformers: Principle of operation, emf equation, losses, efficiency and regulation. OC and SC tests.

Alternator: Principle of operation of alternators-Regulation by synchronous impedance method.

3-φ Induction motor: Principle of operation of induction motor-slip-torque characteristics.

Test: Brake Test on 3- φ induction motor.

Unit–IV

DIODE AND TRANSISTORS: Diode: PN junction diode, symbol, V-I characteristics, applications, Half wave, full wave and bridge rectifiers (simple problems).

Transistors: PNP and NPN junction transistors, Characteristics of CE configuration, Transistor as an amplifier, single stage CE amplifier, Frequency response of CE amplifier

Unit–V

ELECTRIC HEATING AND CRO: Induction Heating: Theory of induction heating, applications in industries.

Dielectric heating: Theory of dielectric heating and its industrial application

CRO: Block diagram of CRO, Principle of CRT (cathode ray tube), applications of CRO, voltage, current and frequency measurements.

Text Books:

1. V.K.Mehta, *Principles of Electrical and Electronics Engineering*. S.Chand & Co.
2. T.Thyagarajan, *Fundamentals of Electrical and Electronics Engineering*. SciTech publications, 2007, 5th Ed.

Reference Books:

1. M.S Naidu and S.Kamakshaiah, *Introduction to Electrical Engineering.* TMH Publications.
2. Kothari and Nagrath, *Basic Electrical Engineering*, TMH, 2nd Ed.
3. Mill man and Halkias, *Electriconics devices and circuits*.

Mode of Evaluation:

Continuous Internal Examination (CIE)		Continuous Evaluation	Semester End Examination (SEE) 70 Marks
Mid1 20 Marks	Mid2 20 Marks	10 Marks	

Course Outcomes & Program Outcomes Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11	PO 12	PS O1	PS O2	PS O3
CO1	1	-	-	-	-	-	-	-	-	-	-	-			1
CO2	1	1	-	-	-	-	-	-	-	-	-	-			1
CO3	1	1	-	-	-	-	-	-	-	-	-	-			1
CO4	2	2	-	-	-	-	-	-	-	-	-	-			2
CO5	1	1	-	-	-	-	-	-	-	-	-	-			1
CO 6	1	1	-	-	-	-	-	-	-	-	-	-			1
CO 7	-	-	-	-	-	1	1	-	-	-	-	-			-
CO 8	-	-	-	-	-	1	-	-	-	-	-	-			-

ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES::RAJAMPET
(AN AUTONOMOUS INSTITUTION)

II Year B.Tech., I Semester

(5G131) Advanced Data Structures Through C++
(Common to CSE & IT)

Course Objectives:

The Primary Objectives of This Course are as Follows:

- To learn New & Advanced Data Structures
- To impart the Object Oriented Concepts in C++
- To acquire knowledge on Algorithmic Design and Analysis
- To solve problems Using Different Data Structures and Design Techniques, and Compare their Performance and Tradeoffs
- To implement pattern matching algorithms and Tree Data Structures in C++

Course Outcomes:

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

- Able to understand the basic concepts of C++ and its functions
- Able to understand and apply the Object Oriented Concepts and performance analysis for algorithms
- Able to apply and analyze the abstract data types such as Stacks, Queues, and Dictionaries
- Able to categorize tree data structures such as binary search trees, AVL, Red-black, Splay trees
- Able to determine pattern matching algorithm efficiencies.

Unit–I

INTRODUCTION TO C++: Introduction, Class Overview: Class, Objects, Class Members, I/O Streams, Access Control, Class Scope, Static Class Members: Static Member Variables, Static Member Functions, Static Object, Functions: Parameter Passing Methods, Inline Functions, The Friend Function, This Pointer, Dynamic Memory Allocation and Deallocation: New Operator, Delete Operator, Exception Handling.

Unit–II

OBJECT ORIENTED CONCEPTS: Constructors, Constructor Overloading, Destructors, Function Overloading, Operator Overloading: Plus, Minus, Unary, Inheritance: Base Class Access Control, Types of Inheritance, Reasons for the usage of Inheritance, Polymorphism: Virtual Functions, Pure Virtual Functions, Abstract Classes, Generic Programming with Templates: Function Templates, Class Templates.

Algorithms: Performance Analysis, Space Complexity, Time Complexity: Bubble Sort, Selection Sort.

Unit–III

STACKS AND QUEUES: Stack ADT, Queue ADT, Operations of Stack & Queue ADT

DICTIONARIES: Dictionaries, Linear List Representation, Skip List Representation: Operations, Searching, Insertion, Deletion, Hash Table: Hash Functions, Collisions: Separate Chaining, Open Addressing - Linear Probing, Quadratic Probing, Double Hashing or Rehashing, Extendible Hashing, Comparison of Chaining and Open Addressing.

Unit–IV

BINARY TREES: Binary Trees, Representation of Binary Trees, Binary Trees Operations, Binary Trees Traversals.

PRIORITY QUEUES: Priority Queue ADT, Priority Queue Implementation Using Heaps, External Sorting.

SEARCH TREES (PART I): Binary Search Trees ADT, Representation of Binary Search Tree, Operations on Binary Search Trees: Insertion, Deletion and Searching, AVL Trees, Operations of AVL Trees: Insertion, Deletion and Searching.

Unit–V

SEARCH TREES (PART II): Introduction to Red–Black and Splay Trees, B-Trees, Operations on B-Trees: Insertion, Deletion and Searching, Height of B Tree.

PATTERN MATCHING AND TRIES: Pattern Matching Algorithms, Fixed Pattern Matching Algorithms: Brute Force, Boyer–Moore, Knuth-Morris-Pratt Algorithms, Tries: Standard Tries, Compressed Tries, Suffix Tries.

Text Books:

1. Akepogu Ananda Rao, Palagiri Radhika Raju, Data Structures and Algorithms Using C++, Pearson Education.
2. Sartaj Sahni Data Structures, Algorithms and Applications in C++, Universities Press (India) Pvt. Ltd, 2nd Edition.
3. Mark Allen Weiss, Data Structures and Algorithm Analysis in C++, Pearson Education, 2nd Edition.

Reference Books:

1. Data Structures And Algorithms in C++, Michael T.Goodrich, R.Tamassia and Mount, Wiley Student Edition, John Wiley And Sons.
2. Data Structures and Algorithms in C++, 3rd Edition, Adam Drozdek, Thomson
3. Data Structures Using C and C++, Langsam, Augenstein and Tanenbaum, Phi.
4. Problem Solving With C++, The OOP, 4th Edition, W.Savitch, Pearson Education.

Mode of Evaluation:

Continuous Internal Examination (CIE)		Continuous Evaluation	Semester End Examination (SEE) 70 Marks
Mid1 20 Marks	Mid2 20 Marks	10 Marks	

Course Outcomes mapping with Program Outcomes & PSOs:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	3	-	2	-	-	-	-	-	-	3	2	3	2
CO2	-	-	2	3	-	-	-	-	2	-	2	-	-	-	-
CO3	2	-	3	2	-	-	-	-	-	-	-	-	3	-	3
CO4	3	2	-	-	-	-	-	-	2	-	-	2	-	-	-
CO5	-	2	3	-	-	-	-	-	-	-	3	3	-	2	-

ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES::RAJAMPET
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II Year B.Tech., I Semester

(5G132)DIGITAL LOGIC DESIGN

Course Objectives:

- To understand how data representation and binary logic is defined for digital systems.
- To apply minimization methods of Boolean functions and expressions.
- To understand how logic circuits are analyzed and designed in combinational logic
- To understand how logic circuits are analyzed and designed in sequential logic
- To understand different counters, memory and programmable logic devices.

Course Outcomes:

After the completion of this course, the student will:

- Able to describe the binary number theory, binary codes and Boolean algebra.
- Able to build the given logical functions using Basic gates and Universal gates and to evaluate the Boolean Function using K-maps.
- Able to design various combinational circuits.
- Illustrate the functionality of flip-flops for analysis and design of sequential circuits.
- Able to classify the basic memories and their associated memories.

Unit–I

Introduction to Binary System and Codes: Digital Systems, Binary Numbers, Number Base Conversions, Octal and Hexadecimal Numbers, Complements. Signed Binary Numbers, Binary Codes, Binary Logic.

Boolean algebra and Logic Gates: Basic Definitions, Axiomatic Definition of Boolean Algebra, Basic Theorems and Properties of Boolean Algebra, Boolean Functions, Canonical and Standard Forms, Other Logic Operations.

Unit–II

Gate-Level Minimization: Digital Logic Gates, Integrated Circuits, The Map Method, Four-Variable Map, Five-Variable Map, Product of Sums Simplification, Don't-Care Conditions, NAND and NOR Implementation, Other Two- Level Implementations, Exclusive-OR Function.

Unit–III

Combinational Logic: Combinational Circuits, Analysis Procedure of Combinational Circuits, Design Procedure, Binary Adder, Subtractor, Decimal Adder, Binary Multiplier, Magnitude Comparator, Decoders, Encoders, Multiplexers.

Unit–IV

Synchronous Sequential Logic: Sequential circuits, Latches, Flip-Flops, Analysis of clocked sequential circuits, state reduction and Assignment, Design Procedure

Registers and Counters: Registers, Shift Registers, Ripple Counters, Synchronous Counters, Other Counters.

Unit–V

Asynchronous Sequential Logic: Introduction, Analysis Procedure, Circuits with Latches. Design Procedure, Hazards.

Memory and Programmable Logic: Introduction, Random-Access Memory, Error Detection and Correction, Read-Only Memory, Programmable Logic Array, Programmable Array Logic, Sequential Programmable Devices, Introduction to HDL.

Text Book:

Digital Design, 4th Edition,M.Morris Mano,PearsonEducation,Inc.,2002

Reference Books:

1. Digital Logic Design Principles, Norman Balabanian and Bradley Carlson, John Wiley & Sons(Asia) Pte.Ltd.,2002..
2. Fundamentals of Digital Circuits, A. Ananda Kumar, PHI, 2002.

Mode of Evaluation:

Continuous Internal Examination (CIE)		Continuous Evaluation	Semester End Examination (SEE) 70 Marks
Mid1 20 Marks	Mid2 20 Marks	10 Marks	

Course Outcomes & Program Outcomes Mapping:

	PO 1	PO2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PS O1	PS O2	PS O3
CO1	3														
CO2	3	3											2	2	
CO3	3	3	3										2	2	
CO4		3	3	3	3							3			
CO5			3	3	3							3			

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II Year B.Tech., I Semester

(5G133) PRINCIPLES OF PROGRAMMING LANGUAGES

Course Objectives:

- To understand the main principles of imperative, functional, object oriented and logic oriented programming languages.
- To know an introduction to formalisms for specifying syntax and semantics of programming languages, including an introduction to the theory of formal languages.
- To know various important programming methodologies, such as functional programming, logic programming, programming with abstract data types and object-oriented programming.

Course Outcomes:

After completion of this course, the student will be:

- Able to select the required programming language for their application.
- Able to summarize the principles of data types and expressions.
- Able to make use of control structures and sub programs.
- Able to apply Abstract data types and Exception Handling.
- Able to compare different types of programming languages.

Unit–I

Preliminary Concepts: Reasons for studying, concepts of programming languages, Programming domains, Language Evaluation Criteria, influences on Language design, Language categories.

Programming Paradigms: Imperative, Object Oriented, functional Programming, Logic Programming, Programming Language Implementation-compilation and virtual machines, Programming environments.

Syntax and Semantics: General Problem of describing Syntax and Semantics, formal methods of describing syntax, BNF, EBNF for common programming languages features, parse trees, ambiguous grammars, attribute grammars, Denotational semantics and axiomatic semantics for common programming language features.

Unit–II

Data types: Introduction, primitive, character, user defined, array, associative, record, union, pointer and reference types, design and implementation uses related to these types, Names, Variable, concept of binding, type checking, strong typing, type compatibility, named constants, variable initialization.

Expressions: Arithmetic, relational and Boolean expressions, Short circuit evaluation mixed mode assignment, Assignment Statements.

Unit–III

Control Structures: Compound Statements, Selection, Iteration, Unconditional Statements, guarded commands.

Subprograms and Blocks: Fundamentals of sub-programs, Scope and lifetime of variable, static and dynamic scope, Design issues of subprograms and operations, local referencing environments, parameter passing methods, overloaded sub-programs, generic sub-programs, parameters that are sub-program names, design issues for functions, user defined overloaded operators, co routines.

Unit–IV

Abstract Data types: Abstractions and Encapsulation, introductions to data abstraction, design issues, language examples, C++ parameterized ADT,

Concurrency: Subprogram level concurrency, semaphores, monitors, message passing, Java threads

Exception handling: Exceptions, exception Propagation, Exception handler in Ada, C++ and Java.

Unit–V

Logic Programming Language: Introduction and overview of logic programming, basic elements of prolog, application of logic programming.

Functional Programming Languages: Introduction, fundamentals of FPL, LISP, ML, Haskell, application of Functional Programming Languages and comparison of functional and imperative Languages.

Text Books:

1. Concepts of Programming Languages Robert W. Sebesta, Pearson Education, Eighth Edition 2008.
2. Programming Languages-Louden,second edition, Thomson.

Reference Books:

1. Programming Languages-Ghezzi, 3/e,John Wiley.
2. Programming Languages Design and implementation-Pratt and Zelkowitz, Fourth Edition PHI/Pearson Education.
3. Programming Languages-Watt,WileyDreamtech.
4. LISP, Patric Henry Winston and Paul Horn, Pearson Education.
5. Programming in PROLOG Clocksin, Springer.

Mode of Evaluation:

Continuous Internal Examination (CIE)		Continuous Evaluation	Semester End Examination (SEE) 70 Marks
Mid1 20 Marks	Mid2 20 Marks	10 Marks	

Course Outcomes & Program Outcomes Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11	PO 12	PSO1	PSO2	PSO3
CO1	-	-	3	3	-	-	-	-	3	-	-	3	-	-	-
CO2	-	-	3	3	-	-	-	-	-	-	-	3	-	-	-
CO3	-	3	-	3	-	-	-	-	3	-	-	3	-	-	3
CO4	-	3	3	-	-	-	-	-	3	-	-	-	3	-	3
CO5	-	3	3	3	1	-	-	-	3	-	-	3	3	-	3

ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES::RAJAMPET
(AN AUTONOMOUS INSTITUTION)

II Year B. Tech., I Semester

(5G431) DISCRETE MATHEMATICS
(Common for CSE and IT)

Course Objective:

- To understand how discrete structures actually helped computer engineers to solve problems occurred in the development of programming languages.
- To study the fundamental Graph theory and traversal techniques.
- To understand the basic results of combinatorics, recurrence relations and binomial thermos

Course Outcomes:

Upon successful completion of this course students will be:

- Able to understand the logic statements, expressed in terms of predicate quantifiers and logical connectives and solve using rules of inference.
- Classify algebraic structure and relations for a given mathematical problem.
- To understand the basic results in combinatorics and binomial thermos.
- Able to describe the various types of recurrence relations and apply the methods to find out their solutions.
- Compute Boolean functions using the properties of relations and develop the given problem as graph networks and solve with techniques of Graph theory.

Unit– I

MATHEMATICAL LOGIC: Statements and Notation, Connectives, Statement Formulas and Truth Tables, Conditional and Bi-conditional, Well-Formed Formulas, Tautologies, Equivalence of Formulas, Duality Law, Tautological Implications, Normal Forms, Validity using Truth Tables, Rules of Inference, Consistency of Premises and Indirect Method of Proof, Automatic Theorem Proving, Predicates, The Statement Function, Variables and Quantifiers, Predicate Formulas, Free and Bound Variables, The Universe of Discourse.

Unit–II

RELATIONS AND ALGEBRAIC STRUCTURES: Properties of binary Relations in a Set, Relation Matrix and the Graph of a Relation, Partition and Covering of a Set, Equivalence Relations, Compatibility Relations, Partial Ordering, Hasse Diagram. Functions, Composition of Functions, Inverse Functions, Recursive Functions, Lattice and its Properties, Algebraic Systems, Simple Algebraic Systems and General Properties, Semi Groups and Monoids, Groups, Subgroups, Homomorphism, Isomorphism.

Unit–III

ELEMENTARY COMBINATORICS: Basics of Counting, Combinations and Permutations, Enumeration of Combinations and Permutations, Enumerating Combinations and Permutations with repetitions, Enumerating Permutations with Constrained Repetitions, Binomial Coefficients, The Binomial and Multinomial Theorems, The Principle of Inclusion-Exclusion, Pigeonhole Principle and its Applications.

Unit–IV

RECURRENCERELATIONS: Generating Functions of Sequences, Calculating Coefficients of Generating Functions, Recurrence Relations, Solving Recurrence Relations by Substitution and Generating Functions, The Method of Characteristic Roots, Solutions of Inhomogeneous Recurrence Relations.

Unit– V

GRAPH THEORY: Basic Concepts, Representation of Graphs, Isomorphism and Subgraphs, Depth First Search, Breadth First Search, Trees and Their Properties, Spanning

Trees, Binary Trees, Planar Graphs, Euler's Formula, Multigraphs and Euler circuits, Hamiltonian Graphs, Chromatic Numbers, The Four-Color Problem.

Text Books:

1. J.P.Tremblay, R.Manohar, Discrete Mathematical Structures with Applications to Computer Science. TMH (UNITS 1 & 2).
2. J.L.Mott,A.Kandel, T.P.Baker,Discrete Mathematics for Computer Scientists &Mathematicians. Prentice Hall (UNITS 3,4 & 5)

Reference Books:

1. Thomas Koshy, Discrete Mathematics with Applications. Elsevier.
2. N. Chandrasekaran, M. Umaparvathi, Discrete Mathematics,PHI Learning Pvt. Ltd.
3. BernandKolman, Roberty C. Busby, Sharn Cutter Ross, Discrete Mathematical Structures. Pearson Education/PHI.
4. Malik &Sen, Discrete Mathematical Structures Theory and application.
5. Garry Haggard and others, Discrete Mathematics for Computer science, Thomson.

Mode of Evaluation:

Continuous Internal Examination (CIE)		Continuous Evaluation	Semester End Examination (SEE) 70 Marks
Mid1 20 Marks	Mid2 20 Marks	10 Marks	

Course Outcomes & Program Outcomes Mapping:

	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO 10**	**PO 11**	**PO 12**	**PSO1**	**PSO2**	**PSO3**
CO1	3	3	3	3								3	3	3	
CO2	3	3	3	3								3	3	3	
CO3	3	3	3	3								3	3	3	
CO4	3	3	3	3								3	3	3	
CO5	3	3	3	3								3	3	3	

ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES::RAJAMPET
(AN AUTONOMOUS INSTITUTION)

II Year B. Tech. I Semester

(5GC35) APTITUDE AND REASONING SKILLS
(Common to CE, ME & CSE)

Course Outcomes:

- The student will be able to apply the knowledge of general mathematical models discussed to solve a variety of problems pertaining to Quantitative functions
- The Student will be able to read between the lines and understand various mathematical and reasoning concepts, puzzles, charts and interpret their logic

Quantitative Aptitude:

Number Systems, Averages, Problems on ages, Allegations, Percentages, Profit and loss, Simple interest and Compound interest, Ratio and Proposition and variation, Time and Work, Time and Distance, Mensuration, Permutation and Combinations.

Progressions, Inequalities, Logarithms, HCF and LCM, Decimal Fractions, Simplification, Square Roots and Cube Roots, Pipes and Cisterns, Area, Volume and Surface Areas, Calendar, Clocks, True Discount, Banker's Discounts, Data Interpretation– Tabulation, Bar Graphs, Pie charts, Line Graphs

Reasoning:

Directions, Blood Relations, Problems on Cubes, Series and Sequences, Odd man out, Coding and Decoding, Data sufficiency, Logical deductions, Arrangements and Combinations, Groups and Teams, Puzzles to Puzzle you. More puzzles, Brain Teasers, Puzzles and Teasers

Text Books:

1. R.S. Agarwal, Quantitative Aptitude, S. Chand Publishers, New Delhi, 2005.
2. R.S.Agarwal, Verbal and Non-Verbal Reasoning, S.Chand Publishers, New Delhi, 1998.

Reference Books:

1. Arun Sharma, How to Prepare for Quantitative Aptitude, TMH Publishers, New Delhi, 2003.
2. Sharon Weiner-Green, IrnK.Wolf, Barron's GRE, Galgotia Publications, New Delhi, 2006.
3. Shakuntala Devi, Puzzles to Puzzle you, Orient Paper Backs Publishers(OPB), New Delhi, 2005.
4. Shakuntala Devi, More Puzzles, OPB, New Delhi, 2006.
5. Ravi Narula, Brain Teasers, Jaico Publishing House, New Delhi, 2005.
6. George J Summers, Puzzles and Teasers, Jaico Publishing House, Mumbai, 2005.

Library:

1. Mittal.U Puzzles to puzzle you (Book-I & II).
2. Aptitude (Quantitative, Analytical, Logical), By Globarena.
3. Aptitude – Student work book, Part-I &II, By Globarena.
3. Material for Soft Skills, By Globarena

Mode of Evaluation:

Continuous Internal Examination (CIE)		Continuous Evaluation	Semester End Examination (SEE) 70 Marks
Mid1 20 Marks	Mid2 20 Marks	10 Marks	

Course Outcomes & Program Outcomes Mapping:

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

ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES::RAJAMPET
(AN AUTONOMOUS INSTITUTION)

II Year B. Tech., I Semester

(5G23A)ELECTRICAL ENGINEERING AND ELECTRONICS ENGINEERING LAB
(Common for CSE & IT)

Course Outcomes:

1. Ability to conduct testing and experimental procedure on DC Machines.
2. Ability to find the performance Characteristics of three Phase induction motor.
3. Ability to test the single phase transformer to know the performance.
4. The capability to analyze the operation characteristics of electrical machines under different loading conditions.
5. Ability to plot the VI characteristics of Diode and Transistor.
6. Ability to measure various parameters(Frequency, Peak-Peak Voltage, Time period) of signals using CRO.

Any **ten** Experiments to be conducted.

Electrical Engineering Lab

1. Swinburne's test on D.C shunt machine (pre determination of efficiency of a given D.C shunt machine working as generator and motor).
2. OC and SC tests on single phase transformer (pre determination of efficiency and regulation at a given power factors).
3. Brake test on three phase induction motor (determination of performance characteristics).
4. Regulation of alternator by synchronous impedance method.
5. Speed control of D.C shunt motor by
   (a) Armature control method (b) field flux control method.
6. Brake test on D.C shunt motor (determination of performance characteristics).

Electronics Engineering Lab

1. Study of CRO (Measurement of voltage frequency and phase of periodic signals).
2. V-I Characteristics of PN junction diode.
3. Full wave rectifier with and without capacitive filter.
4. Input and output characteristics of Common Emitter (CE) Configuration.
5. Frequency response of a single stage CE amplifier.
6. Sinusoidal signal generation using RC phase shift oscillator circuit.

Mode of Evaluation:

Day to Day Evaluation	Internal lab Evaluation	Semester End lab Examination (SEE) 70 Marks
20 Marks	10 Marks	

Course Outcomes & Program Outcomes Mapping:

	PO 1	PO 2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO1 1	PO1 2
CO 1			3									
CO 2			3									
CO 3			3			2						
CO 4			3									
CO 5			3									3
CO 6			3									3

ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES::RAJAMPET
(AN AUTONOMOUS INSTITUTION)

II Year B. Tech., I Semester

(5G134) ADVANCED DATA STRUCTURES LAB THROUGH C++
(Common to CSE and IT)

Course Objectives:

- To make the student learn an object oriented way of solving problems.
- To make the student write ADTS for all data structures.
- To make the student learn different algorithm design techniques.

Course Outcomes:

Upon successful completion of this Lab the student will be:

- Able to know about Object oriented programming concepts like Encapsulation, Constructors & Destructor, function overloading
- Able to construct OOP concepts like Operator overloading, inheritance, and polymorphism
- Able to use Abstract Data Types for data structures with templates
- Able to design the different trees and their operations
- Able to understand the implementation of Pattern Matching Algorithm

Week1: a). Write a C++ program to implement the access control.
b). Write a C++ program to implement the static member function.
c). Write a C++ program to implement the parameter passing.

Week2: a). Write a C++ program to implement the friend function.
b). Write a C++ program to implement the inline method.
c)Write a C++ program to implement the dynamic memory allocation and deallocation.

Week 3: a). Write a C++ program to implement the exception handling.
b). Write a C++ program to implement the constructor overloading.
c). Write a C++ program to implement the function overloading.

Week4: a). Write a C++ program to implement the Operator overloading.
b). Write a C++ program to implement the simple inheritance.
c). Write a C++ program to implement the multiple inheritance.

Week5: a). Write a C++ program to implement the virtual function.
b). Write a C++ program to implement the abstract class.
c). Write a C++ program to implement the class template.

Week6: Write a C++ programs to implement the following using an array.
a) Stack ADT b)Queue ADT

Week7: Write a C++ programs to implement the following using a singly linked list.
a) Stack ADT b)Queue ADT

Week8: Write a C++ program to implement all the functions of a dictionary ADT using hashing.

Week9: Write a C++ program to perform the following operations on Binary Trees.
a) Insertion b) Deletion c) Searching

Week10: Write C++ programs to perform the traversals for the given binary tree.

a) Preorder b) inorder c) postorder

Week11: Write C++ programs for priority queue implementation using Heaps.

a) Min Heap Insertion b) Min Heap Deletion c) Max Heap Insertion d) Max Heap Deletion

Week12: Write a C++ program to perform the following operations on Binary Search Trees.

a) Insertion b) Deletion c) Searching

Week13: Write a C++ program to perform the following operations on B-Trees.

a) Insertion b) Deletion c) Searching

Week14: Write a C++ program to perform the following operations on AVL Trees.

a) Insertion b) Deletion c) Searching

Week15: Write a C++ Program to implement Boyer-Moore pattern matching algorithm.

Week16: Write a C++ Program to implement Knuth-Morris-Pratt pattern matching algorithm.

(Note: Use Class Templates for the above Data Structure Programs)

TEXT BOOKS:

1. Adam Drozdek, *Thomson. Data Structures and Algorithms in C++*. 2007-2008, 3rd Ed. Page 36 of 95.
2. D.S. Malik, *Data Structures using C++*. Thomson.

Mode of evaluation:

Day to Day Evaluation	Internal lab Evaluation	Semester End lab Examination (SEE) 70 Marks
20 Marks	10 Marks	

Mapping of COs and Pos and PSOs:

Course Outcomes	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**	**PO 12**	**PSO 1**	**PS0 2**	**PSO 3**
CO1	3	-	3	-	-	-	-	-	-	-	-	3	3	-	-
CO2	3	3	3	2	-	-	-	-	3	-	-	-	3	-	-
CO3	3	3	3	-	-	-	-	-	-	-	-	3	-	3	3
CO4	3	-	3	-	-	-	-	-	3	-	-	-	-	3	3
CO5	3	3	3	2	-	-	-	-	3	-	-	-	-	3	3

ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES::RAJAMPET
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II Year B.Tech., II Semester

(5GC43) ENVIRONMENTAL SCIENCE
(Common to CSE,ME & CE)

Course Objectives:

- Understand & appreciate the importance of Environmental Science.
- In order to make the students environmentally educated
- To protect the environment by preventing environmental pollution& degradation.

Course Outcomes:

- The student will understand the importance of environment.
- The student develops critical thinking to conserve natural resources.
- The student will understand the concept of ecosystem and biodiversity and its conservation.
- The student knows about different types of pollutions, their sources, effects and control measures.
- The student will apply the knowledge to solve the social issues and human population issues related to environment.

Unit– I

Multidisciplinary nature of environmental studies - Scope & Importance of environmental studies - Need for public awareness - Global environmental crisis (over-exploitation of natural resources, decline of ecosystems, loss to biodiversity, environmental pollution, and population growth) – People in environment – Institutions in environment

Unit– II

Renewable & non-renewable natural resources. Forest resources: Use – deforestation, case studies - dams & their effects on forest & tribal people Water resources: Use - floods, drought- conflicts over water. Mineral resources: Use - environmental effects of extracting mineral resources, case studies. Food resources: Impacts of over grazing, traditional agriculture and modern agriculture, Energy resources: Renewable and non – renewable energy resources - use of alternate energy resources. Land resources: Land as a resource, land degradation, soil erosion. Role of an individual in the conservation of natural resources.

Unit–III

ECOSYSTEMS: Producers, consumers & decomposers - Food chains, food webs & ecological pyramids - Energy flow in the ecosystem- Cycling of nutrients (Bio geo chemical cycles-water, oxygen, carbon, nitrogen & energy cycles) – Types and characteristic features of the following ecosystems :(a)Forest ecosystems (b) Grass land ecosystems (c) Desert ecosystems (d) Aquatic ecosystems (lakes, rivers, oceans, estuaries)

BIODIVERSITY AND ITS CONSERVATION: Definition - Values of biodiversity: consumptive value, productive value, social value, ethical value, aesthetic value & option values - Hot spots of biodiversity - Threats to biodiversity: habitat loss, poaching of wild life - Conservation of biodiversity: In –situ & Ex-situ conservation

Unit– IV

ENVIRONMENTAL POLLUTION: Definition, causes, effects & control measures of: Air pollution, Water pollution, Soil pollution, Noise pollution, Thermal pollution, Marine pollution, Nuclear hazards - Solid waste management: Causes, effects and control measures of urban wastes.

Unit– V

SOCIAL ISSUES AND THE ENVIRONMENT: Rain water harvesting - Environmental ethics: Issues & possible solutions - Global warming - Acid rain - Ozone layer depletion – Wasteland reclamation - Environment protection Act.-Air (Prevention & Control of Pollution) Act.-Water (Prevention & Control of Pollution) Act.-Wildlife Protection Act-Forest Conservation Act.

HUMAN POPULATION & ENVIRONMENT: Population explosion – Family Welfare Program -Environment & human health - Human Rights (in relation to environment) - Value Education (environmental values) - HIV/AIDS.

Text Books:

1. Text book of Environmental Studies for Undergraduate Courses by Erach Bharucha for University Grants Commission, University press.
2. Environmental Studies by R. Rajagopalan Oxford University Press.
3. Perspectives in Environmental Studies by AnubhaKaushik and C.P.kaushik, New Age International Publishers.

Reference Books:

1. Comprehensive Environmental Studies by J.P.Sharma, Laxmi Publications.
2. Environmental Studies by AninditaBasak – Pearson education.
3. Environmental Studies by Benny Joseph, Mc.graHill Publications.

Mode of Evaluation:

Continuous Internal Examination (CIE)		Continuous Evaluation	Semester End Examination (SEE) 70 Marks
Mid1 20 Marks	Mid2 20 Marks	10 Marks	

Course Outcomes & Program Outcomes Mapping:

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

ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES::RAJAMPET
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II Year B.Tech., II Semester

(5G141) COMPUTER ORGANIZATION

Course Objectives:

The objective of this course is to make the students to

- Understanding of the basic structure and operation of a digital computer.
- Learn in detail the operation of the arithmetic unit and the current state of art in memory system design
- To impart the knowledge on micro programming
- Understand the operations on fixed and floating point values andunderstand the concepts of cache memory and virtual memory.
- To provide the knowledge about instruction level parallelism, concepts of pipeline techniques.

Course Outcomes

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

- Show the basic structure and operation of a computer.
- Illustrate register-transfer-level language and able to identify state of art in memory
- Demonstrate control memory and micro programs.
- Perform arithmetic operations and analyze memory organization.
- Assess the basic foundations for parallel processing techniques.

Unit– I

DIGITAL COMPUTERS: Digital computers, Logic gates, Boolean algebra, Map simplification, Combinational Circuits, Data Representation. Data Types, Complements, Fixed Point Representation. Floating – Point Representation, Error Detection codes.

Unit–II

REGISTER TRANSFER LANGUAGE AND MICROOPERATIONS: Register Transfer language, register Transfer Bus and memory transfers, Arithmetic Micro operations, logic micro operations, shift micro operations, Arithmetic logic shift Unit–, Instruction codes, computer registers, and Computer instructions – Instruction cycle.

Memory – Reference Instructions, Input – Output and Interrupt, STACK organization, Instruction format, addressing modes, DATA Transfer and manipulation, Program control, Reduced Instruction set computer.

Unit– III

MICRO PROGRAMMED CONTROL: Control memory, Address sequencing, micro program example, design of control Unit, Hardwired control. Micro programmed control

Unit– IV

COMPUTER ARITHMETIC: Algorithms for fixed point and floating point addition, subtraction, multiplication and division operations, hardware implementation of arithmetic and logical operations.

MEMORY ORGANIZATION: Memory hierarchy, main memory, Auxiliary Memory, Cache Memory, Virtual Memory.

Unit–V

INPUT-OUTPUT ORGANIZATION: Peripheral Devices, Input-Output Interface, Asynchronous data transfer Modes of Transfer, Priority Interrupt Direct memory Access, Input – Output Processor (IOP) Serial communication. **PIPELINE AND VECTOR PROCESSING:** Parallel Processing, Pipelining, Arithmetic Pipeline, Instruction Pipeline, RISC Pipeline Vector Processing, Array Processors.

Text Book:

1. M.MorrisMano, *Computer Systems Architecture.* Pearson/PHI, 3rdEd.

Reference Books:

1. William Stallings, *Computer Organization and Architecture.* Pearson/PHI, 6thEd.
2. Carl Hamacher, ZvonksVranesic, SafeaZaky, *Computer Organization*. McGraw Hill, 5thEd.
3. Andrew S. Tanenbaum,*Structured Computer Organization*. PHI/Pearson, 4thEd.
4. SivaraamaDandamudi, *Fundamentals or Computer Organization and Design.* Springer Int. Edition.

Mode of Evaluation:

Continuous Internal Examination (CIE)		Continuous Evaluation	Semester End Examination (SEE) 70 Marks
Mid1 20 Marks	Mid2 20 Marks	10 Marks	

Course Outcomes & Program Outcomes Mapping:

	P O 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO2	PSO3
CO1	3	-	3	2	-	-	-	-	-	-	-	3	3	3	-
CO2	3	3	3	-	-	-	-	-	-	3	1	-	3	3	-
CO3	3	3	-	2	-	-	-	-	-	-	-	3	-	3	-
CO4	3	3	3	-	3	-	-	-	-	-	-	3	3	3	-
CO5	-	3	-	2	3	-	-	-	-	3	-	3	-	-	1

ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES::RAJAMPET
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II Year B.Tech., II Semester

(5G142) DESIGN AND ANALYSIS OF ALGORITHMS
(Common to CSE and IT)

Course Objective:

- To analyze the asymptotic performance of algorithms.
- To study various algorithmic design techniques of divide and conquer and greedy method.
- To utilize data structures and/or algorithmic design techniques in solving new problems with dynamic programming method.
- To study various algorithmic design techniques of back tracking and branch and bound.
- To know and understand basic computability concepts and the complexity classes P, NP, and NP-Complete and study some techniques for solving hard problems

Course Outcomes:

- Able to state and understand different notations for time complexity of the algorithms.
- Able to classify and apply divide and conquer, greedy techniques to solve the problems.
- Able to use dynamic programming technique to solve the problems.
- Able to understand and solve different applications of backtracking, and branch and bound techniques.
- Able to identify that a given problem is NP-Complete or not.

Unit– I

INTRODUCTION: Algorithm, Pseudo Code for algorithms, performance analysis-Space complexity, Time Complexity, Asymptotic Notation-Big Oh Notation, Omega Notation, Theta notation and Little Oh notation, Amortized complexity, Sets-Disjoint set operations, Union and Find algorithms.

Unit– II

DIVIDE AND CONQUER: General Method, applications- Binary Search, Quick sort, Merge Sort, Strassen's Matrix multiplication.

GREEDY METHOD: General Method, applications-Job sequencing with dead-lines, knapsack problem, Minimum-cost Spanning trees, Single source shortest path.

Unit– III

DYNAMIC PROGRAMMING: General Method, applications- Matrix Chain multiplication, Optimal Binary search trees, 0/1 Knapsack, All pairs shortest path, The Travelling person problem, Reliability design.

Unit– IV

BACKTRACKING: General Method, applications- 8- queen problem, sum of subsets, graph coloring, Hamiltonian cycles.

BRANCH AND BOUND: General Method, applications-Travelling Sales Person (*), and 0/1 knapsack problem-LC Branch and Bound Solution, FIFO Branch and Bound solution.

Unit– V

NP-HARD AND NP-COMPLETE PROBLEMS: Basic Concepts, nondeterministic algorithms, the classes-NP-Hard and NP Complete, Cook's Theorem

Text Books:

1. Ellis Horowitz, SartajSahni and Rajasekharam, Fundamentals of Computer Algorithms. Galgotia publications Pvt. Ltd.
2. ParagHimanshu Dave, HimanshuBhalchandra Dave, Design and Analysis Algorithms. Pearson.
3. M.T. Goodrich and R.Tomassia,Algorithm Design: Foundations, Analysis and Internet Example.Johnwiley and sons.

Reference Books:

1. R.C.T.Lee,S.S .Tseng,R.C.Chang and T.Tsai, Introduction to Design and analysis of Algorithms,A strategic approach.McGraw Hill.
2. Aho,Ullman and Hopcroft,Design and Analysis of algorithms.Pearson Education.

Mode of evaluation:

Continuous Internal Examination (CIE)		Continuous Evaluation	Semester End Examination (SEE) 70 Marks
Mid1 20 Marks	Mid2 20 Marks	10 Marks	

Course Outcomes & Program Outcomes Mapping:

	P O 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	PSO2	PSO3
CO1	2	1	-	-	-	-	-	-	-	-	2	3	3	3	2
CO2	2	3	2	1	-	-	-	-	-	-	-	2	3	3	2
CO3	2	3	2	1	-	-	-	-	-	-	-	2	-	-	2
CO4	2	3	2	1	-	-	-	-	-	-	-	2	-	-	-
CO5	2	2	-	-	-	-	-	-	-	-	-	2	2	2	2

ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES::RAJAMPET
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II Year B.Tech., II Semester

(5G143) FORMAL LANGUAGES AND AUTOMATA THEORY

Course Objectives:

- Students will demonstrate knowledge of basic mathematical models of computation and describe how they relate to formal languages
- Prove the equivalence of languages described by finite state machines and regular expressions.
- To Identify a language's location in the Chomsky hierarchy (regular sets, context-free, context-sensitive, and recursively enumerable languages)
- Be able to prove the equivalence of languages described by pushdown automata and context free grammars.
- Understand basic properties of Turing machines and computing with Turing machines and tractability and decidability, and the challenges for Theoretical Computer Science

Course Outcomes:

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

- Apply knowledge of computing and mathematics appropriate to the discipline.
- Understand and solve Regular Expressions in Real Time Applications
- Relate the concept of the grammar with the concept of programming language.
- Design solutions for the problems related to Finite Automata, RE, CFG, PDA and Turing Machine.
- Acquire a fundamental understanding of core concepts relating to the theory of computation and computational models including decidability and intractability

Unit– I

Introduction: Strings, Alphabet, Language, Operations, Finite state machine, definitions, finite automaton model, acceptance of strings, and languages, deterministic finite automaton and non-deterministic finite automaton, Chomsky hierarchy of languages, transition diagrams and Language recognizers.

Finite Automata: NFA with Є transitions - Significance, acceptance of languages. Conversions and Equivalence : Equivalence between NFA with and without Є transitions, NFA to DFA conversion, minimization of FSM, equivalence between two FSMs, Finite Automata with output- Moore and Melay machines.

Unit–II

Regular Languages: Regular sets, regular expressions, identity rules, Constructing finite Automata for a given regular expressions, Conversion of Finite Automata to Regular expressions. Pumping lemma of regular sets, closure properties of regular sets **(proofs not required).**

Unit–III

Grammar Formalism: Regular grammars-right linear and left linear grammars, equivalence between regular linear grammar and FA, inter conversion, Context free grammar, derivation trees, and sentential forms. Right most and leftmost derivation of strings.

Context Free Grammars: Ambiguity in context free grammars. Minimisation of Context Free Grammars, Chomsky normal form, Greibatch normal form, Pumping Lemma for Context Free Languages. Enumeration of properties of CFL **(proofs omitted).**

Unit– IV

Push down Automata: Push down automata, definition, model, acceptance of CFL, Acceptance by final state and acceptance by empty state and its equivalence. Equivalence of CFL and PDA, inter conversion. **(Proofs not required)**. Introduction to DCFL and DPDA.

Unit– V

Turing Machine: Turing Machine, definition, model, design of TM, Computable functions, recursively enumerable languages. Church's hypothesis, counter machine, types of Turing machines (proofs not required).

Computability Theory: Linear bounded automata and context sensitive language, LR (0) grammar, decidability of, problems, Universal Turing Machine, undecidability of posts. Correspondence problem, Turing reducibility.

Text Books:

1. "Introduction to Automata Theory Languages and Computation". Hopcroft H.E. and Ullman J. D. Pearson Education.
2. Introduction to Theory of Computation - Sipser 2nd edition Thomson

Reference Books:

1. Introduction to Computer Theory, Daniel I.A. Cohen, John Wiley.
2. Introduction to languages and the Theory of Computation, John C Martin, TMH
3. "Elements of Theory of Computation", Lewis H.P. &Papadimition C.H. Pearson /PHI.
4. Theory of Computer Science and Automata languages and computation -Mishra and Chandrashekaran, 2nd edition, PHI.
5. Theory of Computation, By K.V.N. SUnitha and N.Kalyani

Mode of Evaluation:

Continuous Internal Examination (CIE)		Continuous Evaluation	Semester End Examination (SEE) 70 Marks
Mid1 20 Marks	Mid2 20 Marks	10 Marks	

Course Outcomes & Program Outcomes Mapping:

Course Outcomes	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO9	PO10	PO11	PO12	PSO 1	PSO 2	PSO 3
CO1	3	3	3	-	-	-	-	-	-	-	-	-	3	-	-
CO2	3	3	-	-	-	-	-	-	-	-	-	2	3	-	-
CO3	3	-	-	3	-	-	-	-	-	-	-	-	-	-	-
CO4	3	-	3	3	-	-	-	-	-	-	-	-	-	2	-
CO5	3	3	3	3	1	-	-	-	-	-	-	2	-	2	1

ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES::RAJAMPET
(AN AUTONOMOUS INSTITUTION)

II Year B.Tech., II Semester

(5G144)OBJECT ORIENTED PROGRAMMING
(Common to CSE and IT)

Course Objectives:

- Student will understand and apply the concepts of OOP's using java and create console based applications.
- Student will understand and apply the concepts of AWT, SWINGS to develop window based applications.
- Student will understand and apply the networking concepts to develop client/server environment applications.

Course Outcomes:

- Ability to understand and apply the fundamentals of object-oriented programming through Java Programming Language.
- Ability to develop java programs for Inheritance, interfaces and packages.
- Ability to illustrate multithreading and exception handling in java Programming Language
- Ability to design windows-based applications using AWT and swings in java along with Collection framework.
- Ability to explain network programming in Java.

Unit–I

OBJECT ORIENTED THINKING: History of Java, Java Buzzwords, Overview of Java, Data Types, Variables, Type Conversion and Casting, Arrays, Operators, Review of Control Statements, Simple Java Program,

CLASSESAND OBJECTS: Introduction to Classes, Objects, Methods, Constructors, Access Control, this Keyword, Garbage Collection, Finalize() Method, Overloading of Methods and Constructors, Parameter Passing, Recursion, String Handling.

Unit– II

INHERITANCE: Inheritance Basics, Using Super, Multilevel Hierarchy, Method Overriding, Dynamic Method Dispatch, Abstract Classes, Using final with Inheritance, Object Class.

PACKAGES AND INTERFACES: DefiningaPackage, Finding Packages and CLASSPATH, Importing Packages. Defining an Interface, Implementing Interface, Applying Interface, Variables in Interfaces, Interfaces can be Extended, Differences Between Classes and Interfaces.

Unit–III

EXCEPTION HANDLING: Exception Handling Fundamentals, Exception Types, Uncaught Exceptions, Using try and catch, Multiple catch Clauses, Nested try Statements, throw, throws, finally, Java's Built in Exceptions, Creating Own Exception Sub Classes, Benefits of Exception Handling.

MULTITHREADING: Java Thread Model, The Main Thread, Thread Life Cycle, Creating Multiple Threads, Using isAlive() and join(), Suspending, Resuming and Stopping Threads, Differences Between Multithreading and Multitasking.

Unit–IV

COLLECTION FRAMEWORK: Collection Overview, Collection Interfaces: The Collection Interface, the List Interface, The Set Interface, The SortedSet Interface and Collection Classes: Array List Class, Linked List Class, Accessing a Collection via an Iterator, StringTokenizer.

AWT: AWTClasses, Window Fundamentals, AWT Controls, Layout Managers.

APPLETS: Applet Basics, Life Cycle of an Applet, Types of Applets, Creating Applets, Passing Parameters to Applets, Differences Between Applets and Applications.

Unit–V

EVENT HANDLING: Delegation Event Model: Events, Event Sources, Event Listeners, Event Classes, Event Listener Interfaces, Handling Mouse Events and Keyboard Events, Adapter Classes, Inner Classes.

SWING: Introduction, Limitations of AWT, MVC Architecture, Components, Containers, JApplet, JFrame,JComponent, Icons, Labels, Text Fields, Buttons: JButton Class, Check Boxes Class, Radio Buttons, Combo Boxes.

NETWORKING: Networking Basics, Java and the Net, InetAddress, TCP/IP Client Sockets, URL Connection, TCP/IP Server Sockets, Datagrams, Simple Client Server Program using TCP/IP Sockets and UDP Datagrams.

Text Book:

1. Herbert Schildt.Java. The complete reference, TMH. 7thEdition.

Reference Books:

1. J.Nino and F.A. Hosch, An Introduction to programming and OO design using Java, John Wiley&sons.
2. Y. Daniel Liang, Introduction to Java programming, Pearson Education. 6th Edition
3. R.A. Johnson- Thomson, An introduction to Java programming and object oriented application development,
4. Cay.S.Horstmann and Gary,Cornell, Core Java 2, Vol. 1, Fundamentals, Pearson Education. 7thEdition,
5. Cay.S.Horstmann and GaryCornell Core Java 2, Vol 2, Advanced Features, Pearson Education. 7th Edition,
6. P. Radha Krishna, Object Oriented Programming through Java,University Press.

Mode of Evaluation:

Continuous Internal Examination (CIE)		Continuous Evaluation	Semester End Examination (SEE) 70 Marks
Mid1 20 Marks	Mid2 20 Marks	10 Marks	

Mapping of COs and Pos and PSOs: and PSOs:

Course Outcomes	Program Outcomes												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
1	3	3	3		3	-	-	-	-	3	-	3	2	-	-
2	3	3	3	3	3	-	-	-	-	3	-	3	2	3	-
3	3	3	3	3	3	-	-	-	-	3	-	3	2	3	3
4	3	3	3	3	3	-	-	-	-	3	-	3	-	3	3
5	3	3	3	3	3	-	-	-	-	3	-	-	2	-	-

ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES::RAJAMPET
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II Year B.Tech., II Semester

(5G441) DATABASE MANAGEMENT SYSTEMS
(Common to CSE and IT)

COURSE OBJECTIVES:

- To Define Data Base Management concepts and to give describe the structure of Data Base systems.
- To Understand concepts of ER model and prepare the database through normalization
- To discover the features of various models of data and query representations.
- To use the concepts related to database normalization techniques.
- To analyze detailed knowledge of transaction, concurrency and recovery strategies of DBMS.

Course Outcomes:

- Able to Explain the underlying concepts of database system architecture and technologies
- Able to Apply database schema for a given scenario using ER model and normalization
- Able to Devise queries using relational algebra, Relational Calculus and SQL
- Able to Identify and eliminate redundancies in a database schema using normalization.
- Able to Analyze the concepts of transaction processing, concurrency control, recovery and data storage techniques

Unit– I

INTRODUCTION: Database-System Applications, Purpose of Database Systems, View of Data, Database Languages, Relational Databases, Data Storage and Querying, Transaction Management, Data Base Architecture, Database Users and Administrators, History of Database Systems.

Unit–II

DATABASE DESIGN: Database Design and ER Diagrams, Entities, Attributes and Entity Sets, Relationships and Relationship Sets, Additional Features of the ER Model, Conceptual Design with the ER Model, Case study: The Internet Shop.

THE RELATIONAL MODEL: Introduction to the Relational Model, Integrity Constraints over Relations, Enforcing Integrity Constraints, Querying Relational Data, Logical Data Base Design: ER to Relational.

Unit–III

SQL AND PL/SQL: Introduction to SQL, Data Definition Commands, Data Manipulation Commands, Select Queries, Virtual Tables: Creating View, Altering View, Updating View, Destroying View, Relational Set Operators, SQL Join Operators, Sub Queries and Correlated Queries, Aggregate Functions, Procedural SQL: Stored Procedures, Stored Functions, Triggers, Cursors.

Unit–IV

SCHEMA REFINEMENT AND NORMAL FORMS: Introduction to Schema Refinement: Problems Caused by Redundancy, Decompositions, Problems Related to Decomposition, Functional Dependencies, Reasoning about FDs, Normal Forms:1 NF, 2 NF, 3 NF, BCNF, Properties of Decomposition: Lossless Join Decomposition, Dependency Preserving Decomposition, Multivalued Dependencies, 4 NF.

Unit–V

OVERVIEW OF TRANSACTIONS MANAGEMENT: ACID Properties: Consistency and Isolation, Atomicity and Durability, Transactions and Schedules, Concurrent Execution of Transactions, Transaction Support in SQL.

OVERVIEW OF STORAGE AND INDEXING: Data On External Storage, File Organizations and Indexing, Index Data Structures.

TREE-STRUCTURED INDEXING: Intuition for Tree Indexes, Indexed Sequential Access Methods(ISAM), B^+ Trees: A Dynamic Index Structure.

Text Books:

1. Silberschatz, Korth,Sudarshan, Database System Concepts. McGraw Hill, 5^{th} Edition.
2. RaghuRamaKrishnan, Johannes Gehrke, Database Management Systems, McGraw Hill, Third Edition.
3. Peter Rob, A. Ananda Rao, Carlos Coronel, Database Management Systems, CENGAGE Learning.

Reference Books:

1. Elmasri,Navate, Fundamentals of Database Systems. Pearson Education.
2. C.J.Date, Introduction to Database Systems. Pearson Education.

Mode of Evaluation:

Continuous Internal Examination (CIE)		Continuous Evaluation	Semester End Examination (SEE) 70 Marks
Mid1 20 Marks	Mid2 20 Marks	10 Marks	

Course Outcomes & Program Outcomes Mapping:

	PO1	PO 2	P O3	P O4	P O5	P O6	P O7	P O8	P O9	PO 10	PO 11	PO 12	PS O1	PS O2	PS O3
CO1	3	3	-	3	-	1	-	-	-	-	-	3	2		1
CO2	3	3	3	-	-	-	-	-	-	-	-	3		2	
CO3	3	3	3	3	-	-	-	-	3	-	3	3		2	
CO4	-	-	-	-	3	-	-	-	3	-	3	3	2		1
CO5	3	3	-	3	3	-	-	-	3	-	3	3	2		

ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES::RAJAMPET
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II Year B.Tech., II Semester

(5G146) JAVA LAB
(Common to CSE and IT)

Course Objectives:

- To develop and illustrate the java programs on object-oriented Features
- To explain the usage of inheritance, interface, packages and multi-threading
- To demonstrate the window-based applications

Course Outcomes:

- Able to Design and implement the programs to demonstrate classes, objects and encapsulation.
- Able to Demonstrate and implement the principles of inheritance, polymorphism, constructor overloading, and method overloading
- Able to Develop packages, importing the packages and the importance of the collection of frameworks
- Able to implement multithread programming, Thread Priority, Exception Handling and Creation of own Exceptions.
- Able to Implement and demonstrate Simple Applet, Applet Communication, Client Server Communication, and Swings for Windows GUI-Applications.

Recommended Systems/Software Requirements:

- Intel based desktop PC with minimum of 166 MHZ or faster processor with atleast 64 MB RAM and 100 MB free disk space
- JDK Kit. Recommended

Week1:

a) Write a Java program to display Fibonacci series between 1 to n.
b) Write a Java program to perform the arithmetic operations using switch case statement.
c) Write a Java program to calculate sum of 5 subjects and find percentage.

Week 2:

a) Write a Java program to display all strong numbers between 1 to n.
b) Write a Java program to find multiplication of two matrices.
c) Write a Java program to convert temperature from Centigrade to Fahrenheit and Fahrenheit to Centigrade.

Week 3:

a) Write a Java program to implement the access control.
b) Write a Java program to implement the constructor overloading.
c) Write a Java program to implement the method overloading.

Week 4:

a) Write a Java program to find the factorial of a given number using recursion.
b) Write a Java program to find whether the given string is palindrome or not.
c) Write a Java program that reads a file and displays the file on the screen, with a line number before each line.

Week 5:

a) Write a Java program to implement the method overriding.
b) Write a Java program to implement the multilevel inheritance.

c) Write a Java program to implement dynamic method dispatch.

Week 6:

a) Write a java program for abstract class implementation.

Note: - class Shape that contains an empty method named numberOfSides(). 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 only the method numberOfSides() that shows the number of sides in the given geometrical figures.

b) Write a Java program to implement the package concept.

c) Write a Java program to implement the multiple inheritance using interface.

Week 7:

a) Write a Java program to implement the exception handling mechanism.

b) Write a Java program to implement the nested try statement.

c) Write a Java program to implement the own exception class.

Week 8:

a) Write a Java program for multi-thread implementation.

Note: 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 to implement producer consumer problem using inter-thread communication mechanism.

c) Write a Java program to use the isAlive() and join() methods.

Week 9:

a) Write a Java program to display the sum of all the integers of given line of integers using StringTokenizer class.

b) Write a Java program to implement stack ADT.

Week 10:

a) Write a Java program to converts infix expression into postfix form

b) Write a Java program to evaluate the postfix expression.

Week 11:

a) Write a Java program to build a simple calculator using grid layout manager.

Note: -Use buttons for digits and for operators (i.e. +, -, *, /, %) add a text field to display the result.

b) Write a Java program that creates a user interface to perform integer division operation.

Note: -The user enters two numbers in the two text fields (i.e. Num1 and Num2). The division of Num1 and Num2 is displayed in the result text field when the Division button is clicked. If Num1 or Num2 are not an integer, the program would throw a Number Format Exception and if Num2 is zero, then the program would throw an Arithmetic Exception and display the exception in a message dialog box.

Week 12:

a) Write a Java applet program for displaying a message in the applet window.

b) Write a Java applet program to compute the factorial of given integer.

Note: - Applet receives an integer in one text field, and computes its factorial value and returns the result in another text field, when the button named "Compute" is clicked.

c) Write a Java applet program to draw lines, rectangles, squares, circles and ovals.

Week 13:

a) Write a Java program for handling keyboard events.

b) Write a Java program for handling mouse events.

c) Write a Java program to implement the inner classes.

Week 14:

a) Write a Java swing program that simulates a traffic light.

Note: - 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 to implement a simple client/server communication using client and server sockets.

Note: - The client sends data to a server. The server receives the data and uses it to produce a result, and then sends the result back to the client. The client displays the result on the console. **Example:** 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.

TEXT BOOKS:

1. H.M.Dietel and P.J.Dietel, Java How to Program 6thEdition, Pearson Education/PHI
2. Y.DanielLiang,Introduction to Java programming, Pearson Education, 6thEdition.
3. Cay Horstmann,Big Java, 2ndedition, Wiley Student Edition, Wiley India Private Limited.

Mode of Evaluation:

Day to Day Evaluation	Internal lab Evaluation	Semester End lab Examination (SEE) 70 Marks
20 Marks	10 Marks	

Mapping of COs and Pos and PSO's:

Course Outcomes	Program Outcomes												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
1	3	3	3		3	-	-	-	-	3	-	3	2	-	-
2	3	3	3	3	3	-	-	-	-	3	-	3	2	3	-
3	3	3	3	3	3	-	-	-	-	3	-	3	2	3	3
4	3	3	3	3	3	-	-	-	-	3	-	3	-	3	3
5	3	3	3	3	3	-	-	-	-	3	-	-	2	-	-

ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES::RAJAMPET
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II Year B.Tech., II Semester

(5G443) DATA BASE MANAGEMENT SYSTEMS LAB
(Common to CSE and IT)

Course Objectives

- To Provide the fundamental concepts of database creation
- To implement the concepts of Data manipulation.
- To Develop procedures for querying Multiple tables
- To Understand the concepts of Procedural / SQL

Course Outcomes:

- Able to draw ER-Diagrams for Various Applications
- Able to Apply Integrity constraints for creating consistent RDBMS environment
- Able to Implement SQL functions using the DUAL table
- Able to maintain and Manipulate and the Data through SQL commands
- Able to Develop Triggers, query through PL /SQL structures

Week1:

Draw **Relational Databases** and **ER Diagrams** for the following applications.

a) **Student Information System**

Student(Student No, Student Name, Address, Mobile No, Email ID, Institute Name, Branch Name, Fee, Mark1, Mark2, Mark3, Mark4, Mark5,TotalMarks,Percentage,Grade)

b) **Employee Information System**

Employee (Employee ID, Employee Name, Address, Mobile No, Email ID, Organization Name, Employee Designation, Basic Salary, DA, HRA, Gross Salary, Deductions, Net Salary)

c) **Customer Information System**

Customer (Customer ID, Customer Name, Address, Mobile No, Email ID, Shop Name, Product Code, Product Name, Quantity, Cost per Unit, Total Bill, Discount, Net Bill)

Week 2:

Write SQL queries to **CREATE TABLES** for various databases using **DDL** commands (**i.e.** CREATE, DESCRIBE, ALTER, DELETE, DROP).

Week 3:

Write SQL queries to **MANIPULATE TABLES** for various databases using **DML** commands (**i.e.** INSERT, SELECT, UPDATE, DELETE, TRUNCATE).

Week 4:

Write SQL queries to create **VIEWS** for various databases (**i.e.** CREATE VIEW, UPDATE VIEW, ALTER VIEW, DELETE VIEW).

Week 5:

Write SQL queries to perform **RELATIONAL SET OPERATIONS** (**i.e.** UNION, UNION ALL, INTERSECT, MINUS, CROSS JOIN, NATURAL JOIN).

Week 6:

Write SQL queries to perform **SPECIAL OPERATIONS** (**i.e.** ISNULL, BETWEEN, LIKE, IN, EXISTS)

Week 7:

Write SQL queries to perform **JOIN OPERATIONS** (**i.e.** CONDITIONAL JOIN, EQUIJOIN, LEFT OUTER JOIN, RIGHT OUTER JOIN, FULL OUTER JOIN)

Week 8:

Write SQL queries to perform **AGGREGATE OPERATIONS** (**i.e.** SUM, COUNT, AVG, MIN, MAX).

Week 9:

Write SQL queries to perform **ORACLE BUILT-IN FUNCTIONS (i.e.** DATE, TIME).

Week 10:

Write **PL/SQL** programs for

a) Calculating the factorial of given number.
b) Finding the given number is Prime Number or not.
c) Displaying the Fibonacci series up to an integer.

Week 11: Write PL/SQL program to implement **Stored Procedure** on table.

Week 12: Write PL/SQL program to implement **Stored Function** on table.

Week 13: Write PL/SQL program to implement **Trigger** on table.

Week 14: Write PL/SQL program to implement **Cursor** on table.

Text Books:

1. RaghuramaKrishnan,JohannesGehrke, *Data base Management Systems.*TataMcGrawHill.
2. Peter Rob,AnandaRao and Carlos Corone,*Database Management Systems.* Cengage Learning.
3. Rick F.VanderLans, *Introduction to SQL*.Pearson Education.
4. B.RosenZweig and E.Silvestrova,*Oracle PL/SQL*. Pearson Education.
5. Steven Feuerstein.*Oracle PL/SQL Programming.*
6. Dr. P. S. Deshpande, *SQL & PL/SQL for Oracle 10g*. Black Book, DreamTech.
7. J. J. Patrick, *SQL fundamentals*. Pearson Education.

Mode of Evaluation:

Day to Day Evaluation	Internal lab Evaluation	Semester End lab Examination (SEE) 70 Marks
20 Marks	10 Marks	

Course Outcomes & Program Outcomes Mapping:

Course Outcomes	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO9	PO10	PO11	PO12	PSO 1	PSO 2	PSO 3
CO1	2	3	3	3		1	-	-		-	3	3	2		
CO2	2	3		3	3		-	-		-				3	2

CO3			3	3	3		-	-	3	-	3	3		3	
CO4			3	3	3		-	-	3	-	3	3		3	2
CO5				3	3		-	-	3	-	3	3	2		

ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES::RAJAMPET
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III Year B.Tech., I Semester

(5G151) COMPILER DESIGN

Course Objectives:

- To describe the phases of complier.
- To demonstrate top down parser.
- To organize bottom parser and syntax directed translation.
- To evaluate conversion of popular programming language constructs into Intermediate code forms and symbol table format.
- To design object code generation algorithms.

Course Outcomes

- Able to define the complier implementation.
- Able to implement top down parser.
- Able to examine syntax directed translation.
- Able to justify the intermediate code forms and symbol table.
- Able to develop code generation algorithms.

Unit– I

Overview of Compilation: Phases of Compilation – Lexical Analysis, Regular Grammar and Regular Expression for common programming language features, pass and Phases of translation, Interpretation, Bootstrapping, data structures in compilation – LEX lexical analyzer generator.

Unit–II

Top down Parsing: Context free grammars, Top down parsing – Backtracking, LL(1), Recursive Descent Parsing, Predictive parsing, Preprocessing steps required for predictive parsing.

Unit– III

Bottom up parsing: Operator precedence, Shift Reduce parsing, SLR, CLR and LALR parsing, Error recovery in parsing, handling ambiguous grammar, YACC – automatic parser generator.

Semantic analysis: Attributed grammars, Syntax directed translation, L-attributed definition, Top Down & Bottom Up evaluation of expressions, Type checking.

Unit–IV

Intermediate code: Intermediate forms of source Programs – abstract syntax tree, polish notation and three address codes. Conversion of popular Programming language Constructs into Intermediate code forms.

Symbol Tables: Symbol table format, organization for block structures languages, hashing, tree structures representation of scope information. Block structures and non block structure storage allocation: static, Runtime stack and heap storage allocation, storage allocation for arrays, strings and records.

Unit–V

Code optimization: Consideration for Optimization, Scope of Optimization, local optimization, loop optimization, frequency reduction, folding, DAG representation. Data flow analysis **:** Flow graph, data flow equation, global optimization, redundant sub expression elimination, Induction variable elements, Live variable analysis, Copy propagation, Machine dependent code optimization,

Object code generation: Object code forms, register allocation and assignment generic code generation algorithms, DAG for register allocation.

Text Books:

1. Principles of compiler design -A.V. Aho. J.D.Ullman; Pearson Education.

2. Modern Compiler Implementation in C- Andrew N. Appel, Cambridge University Press.

Reference Books:

1. Lex&yacc – John R. Levine, Tony Mason, Doug Brown, O'reilly
2. Modern Compiler Design- Dick Grune, Henry E. Bal, Cariel T. H. Jacobs, Wiley dreamtech.
3. Engineering a Compiler-Cooper & Linda, Elsevier.
4. Compiler Construction, Louden, Thomson.
5. "Principles of Compiler Design", Aho. A.V & Ullman J.D, Narosa publications, 1985.

Mode of Evaluation

Continuous Internal Examination (CIE)		Continuous Evaluation	Semester End Examination (SEE) 70 Marks
Mid1 20 Marks	Mid2 20 Marks	10 Marks	

Course Outcomes & Program Outcomes Mapping:

	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO11	PO12	PS O1	PSO2	PSO3
CO1	3	-	-	-	2	2	3	-	-	1	2	2	3	2	3
CO2	-	3	-	3	-	2	-	-	-	-	2	-	-	2	-
CO3	3	3	-	3	-	-	3	-	-	-	-	-	3	-	3
CO4	3	3	3	3	-	-	3	-	-	-	-	-	3	-	3
CO5	3	-	3	3	2	2	3	1	1	-	-	-	-	2	-

ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES::RAJAMPET
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III Year B.Tech., I Semester

(5G152)COMPUTER NETWORKS
(Common to CSE and IT)

Course Objectives:

- To understand the fundamental concepts of computer networking.
- To illustrate Error handling mechanism in DLL and Channel allocation for users.
- To focus on routing algorithms in Computer Networks.
- To choose Transport protocols in computer networks.
- To organize Application Layer in computer networks.

Course Outcomes:

After completion of the course student is able:

- To understood the fundamental concepts of computer networking.
- To illustrate Error handling mechanism in DLL and Channel allocation for users.
- To select routing algorithms in Computer Networks.
- To choose Transport protocols in computer networks.
- To organize Application Layer in computer networks

Unit–I

INTRODUCTION: Network Hardware, Network Software, Reference Models-OSI, TCP/IP, Examples of Networks-The Internet, 3G Mobile Phone Networks, RFID and Sensor Networks.

PHYSICAL LAYER: Guided Transmission, Wireless Transmission, Public switched telephone networks-Structure of the telephone system, FDM, TDM, CDM Switching.

Unit– II

DATA LINK LAYER: Design issues, Error Detection and Correction, Elementary data link Protocol, Sliding Window protocols, Internet.

MEDIUM ACCESS SUB LAYER: The Channel Allocation Problem, Multiple access protocols, IEEE 802.X Standard Ethernet, Wireless LANS.

Unit– III

NETWORK LAYER: Network layer Design Issues, Routing Algorithms-Shortest path routing, Flooding, Hierarchical routing, Broadcast, Multicast, Distance vector routing, Link state routing, Congestion Control Algorithms. Quality of Service, The Network layer in the Internet-The IP-protocol, IP-addresses, Internet control protocols, Internet multicasting, IPV6.

Unit– IV

TRANSPORT LAYER: Transport Services, Elements of Transport protocols, Simple Transport Protocol, The Internet Transport Protocols-TCP and UDP protocols, Delay-Tolerant Networking.

Unit– V

APPLICATION LAYER:

DOMAIN NAME SYSTEM: The DNS Name Space, Domain Resource Records, Name Servers.

STREAMING AUDIO & VIDEO: Digital Audio, Digital Video, Streaming Stored Media, Streaming Live Media, Real-Time Conferencing.

CONTENT DELIVERY: Content and Internet Traffic, Server Farms and Web Proxies, Content Delivery Networks, Peer-to-Peer Networks.

Text Book:

Andrew S Tanenbaum, *Computer Networks*. Pearson Education / PHI, 5thEd.

Reference Books:

1. Behrouz A. Forouzan,*Data Communications and Networking*. TMH, 3rdEd.

2. S.Keshav, *An Engineering Approach to Computer Networks*. Pearson Education, 2nd Ed.
3. W.A. Shay, *Understanding communications and Networks*. Thomson, 3rd Ed.

Mode of Evaluation

Continuous Internal Examination (CIE)		Continuous Evaluation	Semester End Examination (SEE) 70 Marks
Mid1 20 Marks	Mid2 20 Marks	10 Marks	

Course Outcomes & Program Outcomes Mapping:

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PS O1	PS O2	PSO3
CO1			3				2					3	2		
CO2		3	3	3										3	
CO3		3	3	3										3	
CO4		3	3											3	
CO5						1					1	3		3	1

ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES::RAJAMPET
(AN AUTONOMOUS INSTITUTION)

III Year B.Tech., I Semester

(5G153) OPERATING SYSTEMS

Course Objectives:

- To Explain the structure of OS, concepts of process and CPU scheduling algorithms
- To illustrate different problems and solutions related to process synchronization.
- To understand deadlock, memory management and various page replacement algorithms.
- To analyze various file systems, disk structure and disk scheduling.
- To define I/O systems, protection and security mechanisms

Course Outcomes:

After completion of the course student will be

- Able to understand operating system functionalities, process concepts, and scheduling algorithms.
- Able to analyze thread, process synchronization and the various approaches for solving the problems of mutual exclusion.
- Able to apply various concepts related with Deadlock to solve problems related with Resources allocation.
- Able to compare the time complexities of various disk scheduling algorithms and to analyze files systems, mass storage.
- Able to make use of better protection and security method for the operating system

Unit–I

Operating Systems Overview: Introduction, what operating systems do? Computer system Organization & architecture, Operating system operations, distributed systems, special purpose systems. **Systems structures:** operating system services, systems calls, types of System calls, system programs, operating system structure and generation.

Process Management: Process concepts, process Scheduling, operations on process, Process Scheduling Basic Concepts, Scheduling Criteria, scheduling algorithms, IPC, communication in Client-Server systems.

Unit– II

Multithreaded Programming: Overview, Multithreading models, thread libraries, thread issues and thread scheduling, multiprocessor scheduling.

Concurrency: Process synchronization, the critical-section problem, Peterson‘s Solution, synchronization Hardware, semaphores, classic problems of synchronization, monitors, Synchronization examples, atomic transactions.

Unit– III

Principles of deadlock: system model, deadlock characterization, deadlock prevention, detection and avoidance, recovery form deadlock.

Memory Management: Swapping, contiguous memory allocation, paging, structure of the page table, segmentation.

Virtual Memory Management: Demand paging, page-replacement algorithms, Allocation of frames, Thrashing, Memory mapped files, Allocating Kernel Memory.

Unit– IV

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.

Mass-storage structure: overview of Mass-storage structure, Disk structure, disk attachment, disk scheduling, swap-space management, RAID structure, stable-storage implementation, Tertiary storage structure.

Unit–V

I/O Systems: I/O Hardware, Application I/O interface, Kernel I/O Subsystem, Transforming I/O requests to hardware operations.

Protection: Protection, Goals of Protection, Principles of Protection, Domain of protection Access Matrix, Implementation of Access Matrix, Access control, Revocation of Access Rights, Capability- Based systems, Language – Based Protection. **Security:** The Security problem, program threats, system and network threats cryptography as a security tool, user authentication, implementing security defenses, firewalling to protect systems and networks, computer –security classifications.

Text Books:

1. Operating System Concepts, Abraham Silberchatz, Peter B. Galvin, Greg Gagne, Eighth edition, John Wiley.
2. Operating Systems, A Concept based Approach-D.M.Dhamdhere, Second Edition, TMH.

Reference Books:

1. Operating Systems: Internals and Design Principles, Stallings, Sixth Edition–2009, Pearson Education.
2. Modern Operating Systems, Andrew S Tanenbaum, Second Edition, PHI.
3. Operating Systems, S.Haldar, A.A.Aravind, Pearson Education.
4. Principles of Operating Systems, B.L.Stuart, Cengage learning, India Edition.
5. Operating Systems, A.S.Godbole, Second Edition, TMH.
6. An Introduction to Operating Systems, P.C.P. Bhatt, PHI.
7. Operating Systems, G.Nutt, N.Chaki and S.Neogy, Third Edition, Pearson Education.
8. Operating Systems, R.Elmasri, A,G.Carrick and D.Levine, McGraw Hill.

Mode of Evaluation

<table>
<tr><td colspan="2">Continuous Internal Examination (CIE)</td><td>Continuous Evaluation</td><td rowspan="2">Semester End Examination (SEE)
70 Marks</td></tr>
<tr><td>Mid1
20 Marks</td><td>Mid2
20 Marks</td><td>10 Marks</td></tr>
</table>

Course Outcomes & Program Outcomes Mapping:

Course Outcomes	PO 1	O 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	-	3	-	2	-	-	-	-	-	-	3	2	-	3
CO2	3	3	-	-	2	-	-	-	-	-	-	-	2	-	3
CO3	-	3	3	-	-	-	-	-	-	-	-	3	-	1	-
CO4	3	3	-	3	-	-	-	-	-	-	-	-	-	-	-
CO5	-	3	3	3	-	-	-	-	-	-	-	3	-	-	3

ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES::RAJAMPET
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III Year B.Tech., I Semester

(5G154)SOFTWARE ENGINEERING

Course Objectives:

- Identifying software life cycle, and various process models.
- Defining the Requirements and their importance
- Understand the needs of Designs at different levels
- summarize various testing strategies and interfaces
- Analyzing the development and maintenance of a project.

Course Outcomes:

After completion of the course the student is able to

- Analyze software process models importance.
- Get the Knowledge on software requirements.
- Examine the software architecture with various design approaches.
- Know the testing strategies.
- Understand the maintenance of a software project

Unit– I

Software and Software Engineering: The Nature of Software, The Unique Nature of WebApps, Software Engineering, Software Process, Software Engineering Practice, Software Myths.

Process Models: A Generic Process Model, Process Assessment and Improvement, Prescriptive Process Models, Specialized Process Models, The Unified Process, Personal and Team Process Models, Process Terminology, Product and Process.

Unit– II

Understanding Requirements: Requirements Engineering, Software Requirement Specification, Establishing the Groundwork, Eliciting requirements, Developing Use Cases, Building the Requirements Model, Negotiating Requirements, and Validating Requirements.

Requirements Modeling: Requirements Analysis, Scenario-Based Modeling, UML Models That Supplement the Use Case, Data Modeling Concepts, Class-Based Modelling.

Unit– III

Design Concepts: Design within the Context of Software Engineering, Design Process, Design Concepts, The Design Model.

Architectural Design: Software Architecture, Architectural Genres, Architectural Styles, Architectural Design.

Component-Level Design: What is a Component, Designing Class-Based Components, Conducting Component-Level Design, and Component-Level Design for WebApps.

Unit– IV

User Interface Design: The Golden Rules, User Interface Analysis and Design, Interface Analysis, Interface Design Steps, Design Evaluation.

Coding and Testing: Coding, Code Review, Software Documentation, Testing, Testing in the Large versus Testing in the Small, Unit Testing, Black-Box Testing, White-Box Testing, Debugging, Program Analysis Tools, Integration Testing, Testing Object-Oriented Programs, System Testing.

Unit– V

Software Project Management: Responsibilities of a Software Project Manager, Project Planning, Metrics for Project Size Estimation, Project Estimation Techniques, Staffing Level Estimation, Scheduling, Organization and Team Structures, Staffing, Risk Management, Software Configuration Management

Software Reliability and Quality Management: Software reliability, Software Quality, Software Quality Management System.

Software Maintenance: Characteristics of Software Maintenance, Software Reverse Engineering, Software Maintenance Process Models, and Estimation of Maintenance cost.

Text Books:

1. Software Engineering A practitioner's Approach, Roger S. Pressman, Seventh Edition, 2009,McGrawHill International Edition.
2. Fundamentals of Software Engineering, Rajib Mall, Fourth Edition, 2014, PH

Reference Books:

1. Software Engineering, Ian Sommerville, Ninth edition, Pearson education.
2. Software Engineering : A Primer, Waman S Jawadekar, Tata McGraw-Hill, 2008
3. Software Engineering, A Precise Approach, Pankaj Jalote, Wiley India,2010.
4. Software Engineering, Principles and Practices, Deepak Jain, Oxford University Press.
5. Software Engineering: Abstraction and Modeling, Diner Bjorner, Springer International edition, 2006.

Mode of Evaluation

Continuous Internal Examination (CIE)		Continuous Evaluation	Semester End Examination (SEE) 70 Marks
Mid1 20 Marks	Mid2 20 Marks	10 Marks	

Course Outcomes & Program Outcomes Mapping:

Course Outcomes	PO1	PO2	PO3	PO4	PO 5	PO6	PO7	PO 8	PO9	PO10	PO11	PO12	PSO 1	PSO 2	PSO 3
CO1	3	-	3	3	-	-	-	-	-	-	3	-	-	-	-
CO2	-	2	-	3	-	-	-	-	3	3	3	-	-	-	-
CO3	-	-	3	3	2	-	-	-	3	3	3	-	3	1	-
CO4	3	2	-	-	2	-	3	-	3	-	3	-	-	-	2
CO5	3	-	-	-	-	-	3	-	3	3	3	-	-	-	-

ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES::RAJAMPET
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III Year B.Tech., I Semester

(5G155) WEB TECHNOLOGIES

Course Objectives:

- To understand the access of data bases using java
- To understand how to communicate over a network using java
- To know how to do design server side programs and access them from client side

Course Outcomes:

Upon the completion of the subject, students will be:

- Able to know the WWW technical concepts: IP addressing, routing, client-server interaction.
- Able to understand basic HTTP server functionality.
- Able to understand the basic Web Programming: including HTML programming (manual and tool-assisted),
- Able to understand JavaScript programming of reactive web pages elements.
- Able to understand the database programming using java

Unit– I

HTML Common tags: List, Tables, images, forms, Frames, Cascading Style sheets, Introduction to Java Script: Objects in Java Script

Unit– II

Dynamic HTML with Java Script **XML**: Document type definition, XML Schemas, Document Object model, Presenting XML, Using XML Processors: DOM and SAX.

Unit–III

JDBC-Introduction, Database Drivers, java.sql package-Connection Management, Database Access, Datatypes, database Metadata, exceptions and warnings, Loading Database, Driver and Operating connections, jdbc urls, Driver Manager, Driver establishing a connection, creating and executing SQL statements, quering database, prepared statements, javax.sql package, sample JDBC programs.

Unit– IV

Web Servers and Servlets: Tomcat web server, Introduction to Servlets: Lifecycle of a Servlet, JSDK, The Servlet API, The javax.servelet Package, Reading Servlet parameters, Reading Initialization parameters, The javax.servlet HTTP package, Handling Http Request & Responses, Using Cookies-Session Tracking, Database access using servlets.

Unit–V

Introduction to JSP: The Problem with Servlet, The Anatomy of a JSP Page, JSP Processing. **JSP Application Development:** Generating Dynamic Content, Using Scripting Elements Implicit JSP Objects, Conditional Processing – Displaying Values Using an Expression to Set an Attribute, Declaring Variables and Methods Error Handling and Debugging Sharing Data between JSP pages, Requests, and Users Passing Control and Date between Pages – Sharing Session and Application Data, Database access with JSP.

Text Books:

1. Chris Bates, Web Programming, building internet applications. Wiley Dreamtech (UNITS 1,2) 2nd Ed.
2. Patrick Naughton and Herbert Schildt, The complete Reference Java2 5th Ed. TMH (Chapters: 25,27) (UNIT 3,4).
3. Hans Bergsten, Java Server Pages. SPD O'Reilly (UNIT 5)

Mode of Evaluation

Continuous Internal Examination (CIE)		Continuous Evaluation	Semester End Examination (SEE) 70 Marks
Mid1 20 Marks	Mid2 20 Marks	10 Marks	

Course Outcomes & Program Outcomes Mapping:

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	-	-	-	-	-	-	-	-	-	-	-	-	3	-	3
CO2	-	-	3	3	-	3	-	-	3	-	3	3	3	-	3
CO3	-	3	3	3	3	-	-	-	3	-	3	3	3	1	3
CO4	-	3	3	3	3	3	-	-	3	-	3	3	3	-	3
CO5	-	3	3	3	3	3	-	-	3	-	3	3	3	-	3

ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES::RAJAMPET
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III Year B.Tech., I Semester

(5G356) MICROPROCESSORS & INTERFACING
(Common to CSE and IT)

Course Objectives:

The course aims to provide the student with the ability

- To know the basic concepts of first 16 bit general purpose microprocessor
- To learn the programming and Interfacing Concepts of Microprocessors.

Course Outcomes:

Upon completion of the course, students will

- Know the Architectural features and programming of 8086.
- Ability to Interface various Intel devices with 8086.
- Understand the Interrupt structure of 8086 and servicing the interrupts using interrupt controller.
- Know the Salient features of advanced microprocessors.

Unit–I

8086 ARCHITECTURE & PROGRAMMING: Architecture of 8086 microprocessor, Register organization, Memory organization, Pin diagram of 8086-Minimum mode and maximum mode of operation, Timing diagrams, Machine language instruction formats of 8086, Addressing modes of 8086, instruction set of 8086, Assembler directives, Assembly language programs involving logical, branch and call instructions, sorting, evaluation of arithmetic expressions, string manipulation, Procedure and Macros.

Unit–II

MEMORY & I/O INTERFACING: I/O Interfacing methods – I/O mapped I/O, Memory mapped I/O, Basic structure of SRAM and DRAM cell, Memory interfacing to 8086 (static RAM and EPROM). Interfacing I/O ports – latches and buffers.8255 PPI-various modes of operation and interfacing to 8086. Seven segment Displays, stepper motor, D/A, A/D converter

Unit–III

DMA &PIC: Need for DMA, Architecture of 8257 and interfacing with 8086.Data transfer methods-Programmed I/O; interrupt driven I/O, Interrupt structure of 8086, Vector interrupt table. Interrupt service routines. 8259 PIC architecture and interfacing, cascading of interrupt controller.

Unit–IV

PROGRAMMABLE INTERVAL TIMER/ COUNTER & COMMUNICATION INTERFACE: Architecture of 8253 programmable interval timer/counter, mode of operations, interfacing with 8086. Asynchronous and synchronous data transfer schemes. Necessity of communication interfaces, 8251 USART architecture and interfacing. Serial communication standards-, RS-232C, 20mA current loop. TTL to RS232C and RS232C to TTL conversion.

Unit–V

ADVANCED MICROPROCESSORS: Introduction to 80286.salient features of 80386, Real and protected mode segmentation and paging, salient features of Pentium and Pentium pro processors.

Text Books:

1. A.K. Ray and K.M.Bhurchandi - Advanced microprocessor and peripherals, 2nd edition, TMH, 2000.

2. Douglas V.Hall - Microprocessors Interfacing, 2nd edition, 2007.

Reference Books:

1. Liu and GA Gibson - Micro computer system 8066/8088 family Architecture, programming and Design, PHI, 2nd Ed.
2. Bhupendrasinghchabra - Intel 8086/8088 microprocessor architecture, programming, design and interfacing, Dhanpatrai publications.
3. Barry B.Brey.

Mode of Evaluation:

Continuous Internal Examination (CIE)		Continuous Evaluation	Semester End Examination (SEE) 70 Marks
Mid1 20 Marks	Mid2 20 Marks	10 Marks	

Course Outcomes & Program Outcomes Mapping:

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

ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES::RAJAMPET
(AN AUTONOMOUS INSTITUTION)

III Year B.Tech., I Semester

(5GC52) ENGLISH FOR COMPETITIVE EXAMINATIONS
(Common to CSE, IT, ME & CE)

Course Objectives:

- To allow the students learn Advanced Grammar and English Comprehension
- To expose the students to various kinds of competitive exam papers in English

Course Outcomes:

- The student will be successful in recruitment drives
- The student will get through competitive examination in public/private sector

English for Competitive Examinations

Correct English Usage: Articles - Prepositions - Tenses - Voice - Error spotting and correcting - Sentence improvement

Vocabulary: Synonyms - Antonyms - Analogy - Words often confused

English Proficiency: One-word substitutions - Idioms and Phrases - Homonyms - Spellings

Logic-based English Language: Rearrangement of jumbled words and jumbled sentences - word pairs - sentence completion

Comprehension Ability: Reading comprehension – Cloze tests

Note: In each lecture class, one practice paper containing objective questions on the said aspects will be discussed thoroughly by the trainer. At the end of the semester, a minimum of 20 papers will have been practiced by students.

As regular method of external assessment is not found suitable, 100 marks will be awarded for internal examinations (30 marks from the average of two Internal Mid Exams and 70 for Internal End Exam

Reference Books:

1. R. S. Agarwal, “Objective English”, S. Chand Publishers
2. Hari Prasad, “Objective English for Competitive Exams”, TMH
3. Collins Cobuild, “English Guides: Confusable Words”

Mode of evaluation:

Day to Day Evaluation	Internal lab Evaluation	Semester End lab Examination (SEE) 70 Marks
20 Marks	10 Marks	

ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES::RAJAMPET
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III Year B.Tech., I Semester

(5G156) SYSTEM PROGRAMMING LAB

Course Objectives:

- To understand the functionalities of computer networks
- To analyze operating system implementation
- To design compiler components
- To generalize system programming concepts

Course Outcomes

After completion of course the student is able

- To understood the functionalities of computer networks
- To analyze operating system implementation
- To design compiler components
- To generalize system programming concepts

Part – A (COMPUTER NETWORKS)

1. Implement the data link layer framing methods such as character, character stuffing and bit stuffing.
2. Implement on a data set of characters the three CRC polynomials – CRC 12, CRC 16 and CRC CCIP.
3. Implement Dijkstra‘s algorithm to compute the Shortest path through a graph.
4. Take an example subnet of hosts. Obtain broadcast tree for it.
5. Take a 64 bit playing text and encrypt the same using DES algorithm.
6. Using RSA algorithm Encrypt a text data and Decrypt the same.

Part –B (OPERATING SYSTEMS)

1. Simulate the following CPU scheduling algorithms
    i. a) Round Robin b) SJF c) FCFS d) Priority
2. Simulate process Synchronization using Semaphores.
3. Simulate
    a. a)Bankers Algorithm for Dead Lock Avoidance
    b. b)Dead Lock Detection.
4. Simulate all page replacement algorithms
    i. a) FIFO b) LRU c) LFU Etc.
5. Simulate Paging Technique of memory management.
6. Simulate all File Organization Techniques
    a. a) Single level directory b) Two level c) Hierarchical d) DAG

PART –C (COMPILER DESIGN)

1. Construct a Lexical Analyzer for validating identifiers, operators, comments, looping statements, key words.
2. Write a program to compute FIRST of non-terminals.
3. Write a program to compute FOLLOW of non-terminals.
4. Write a program to construct a Recursive Descent Parse
5. Write a program to remove left factoring.

Mode of Evaluation:

Day to Day Evaluation	Internal Evaluation	Semester End lab Examination (SEE) 70 Marks
20 Marks	10 Marks	

Course Outcomes & Program Outcomes Mapping:

course Outcomes	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	-	3	3	3	-	-	-	-	-	-	-	-	3	-	3
CO2	-	3	-	3	-	-	-	-	-	-	-	-	3	-	3
CO3	-	3	3	-	-	-	-	-	-	-	-	-	3	-	3
CO4	-	3	3	-	-	-	-	-	-	-	-	-	3	-	3

ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES::RAJAMPET
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III Year B.Tech., I Semester

(5G157)WEB TECHNOLOGIES LAB &MICRO PROCESSORS AND INTERFACING LAB

PART –A

WEB TECHNOLOGIES LAB:

Course Objectives:

- To learn different types of scripting languages :HTML,XML.
- To understand and use different DOM and SAX based java scripting languages.
- To understand different drivers to communicate different Databases.
- To understand how to communicate over a network using java technologies.
- To understand different server side programs and access them from server side technologies like servlets and jsp.

Course Outcomes:

Upon the completion of the subject, students will be:

- Able to define the basic Web Scripting languages : including HTML , XML scripting (manual and tool-assisted) and java script
- Able to understand different WWW technical concepts: IP addressing, routing, client- server interaction.
- Able to work with different types of Drivers to connect different database through java.
- Able to discuss different Servers technologies and java technologies to create dynamic web pages.
- Able to distinguish different java technologies to develop dynamic web pages using : Servlets and JSP

HARDWARE AND SOFTWARE REQUIRED:

1. A working computer system with either Windows or Linux
2. A web browser either IE or Firefox
3. Tomcat web server and Apache web server
4. XML editor like Altova Xml-spy [www.Altova.com/XMLSpy – free], Stylus studio, etc.
5. A database either Mysql or Oracle
6. JVM (Java virtual machine) must be installed on your system

Week 1:

Design the following static web pages required for an online book store web site.

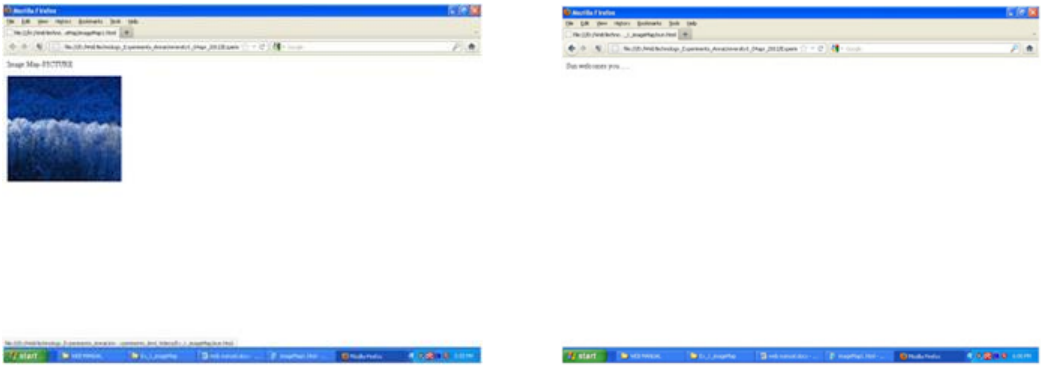
Create a web page with the following using HTML

i). To embed an image map in a web page

ii). To fix the hot spots

iii). Show all the related information when the hot spots are clicked.

Output:



WEEK-2: Create a web page with all types of Cascading style sheets.

i) i)Inline style sheets
ii) Internal style sheets
iii) External style sheets

WEEK 3:

VALIDATION: Client Side Scripts for Validating Web Form Controls using DHTML

1. Name (Name should contains alphabets and the length should not be less than 6 characters).
2. Password (Password should not be less than 6 characters length).
3. E-mail id (should not contain any invalid and must follow the standard pattern name@domain.com)
4.Phone number (Phone number should contain 10 digits only).

WEEK 4:

Write programs in Java to create applets incorporating the following features:

i) Create a color palette with matrix of buttons
ii) Set background and foreground of the control text area by selecting a color from color palette.
iii) In order to select Foreground or background use check box control as radio buttons to set background images

Week 5: Write programs in Java using Servlets:

i) To invoke servlets from HTML forms
ii) To invoke servlets from Applets

Week 6:

i) Install TOMCAT web server and APACHE. While installation assign port number 4040 to TOMCAT and 8080 to APACHE. Make sure that these ports are available i.e., no other process is using this port.
ii) Access the above developed static web pages for books web site, using these servers by putting the web pages developed in week-1 and week-2 in the document root.

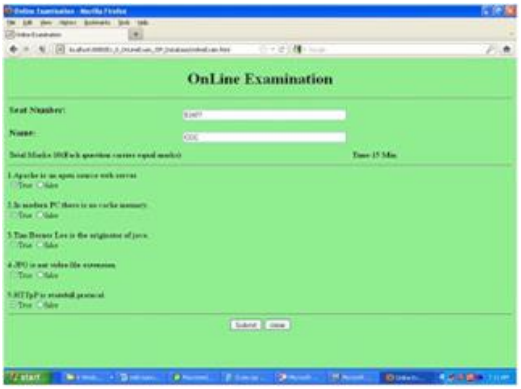
Access the pages by using the urls:

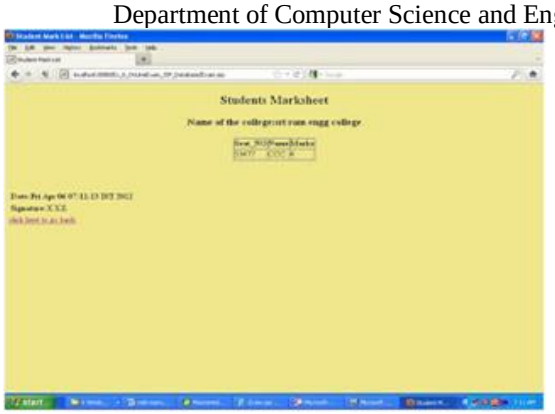
http://localhost:4040/rama/books.html (for tomcat)

http://localhost:8080/books.html (for Apache)

Week 7:

Write programs in Java to create three-tier applications using JSP and Databases for conducting on-line examination. for displaying student mark list. Assume that student information is available in a database which has been stored in a database server.





Week 8:

Programs using XML – Schema – XSLT/XSL

Week 9:

Write a JSP which does the following job:

Insert the details of the 3 or 4 users who register with the web site (week9) by using registration form. Authenticate the user when he submits the login form using the user name and password from the database (similar to week8 instead of cookies).

Week 10:

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 JDBC.

Week 11:

HTTP is a stateless protocol. Session is required to maintain the state. The user may add some items to cart from the catalog page. He can check the cart page for the selected items. He may visit the catalogue again and select some more items. Here our interest is the selected items should be added to the old cart rather than a new cart. Multiple users can do the same thing at a time(i.e., from different systems in the LAN using the ip-address instead of localhost). This can be achieved through the use of sessions. Every user will have his own session which will be created after his successful login to the website. When the user logs out his session should get invalidated (by using the method session.invalidate()).

Course Objectives:

- To learn Assembly Language programming.
- To understand programmable peripheral devices and their Interfacing.

1. Unsigned Arithmetic operations
2. Signed Arithmetic operations
3. ASCII – arithmetic operation.
4. Addition of two BCD numbers(4-digits each)
5. Logical Operations
   a) Code conversion.
   b) Identify the parity (even/Odd) of a given byte/word.
6. String Operations
   a) Relocate a string of N words/bytes.
   b) Reverse String.
   c) Length of the String
   d) String Insertion
   e) String Deletion
   f) Scanning a byte/ word.
7. Sorting using near procedure
8. Interfacing with 8255 PPI
   a) DAC Interfacing:
      i) PWM generation in BSR mode
      ii) Triangular, sinusoidal and square wave generation in I/O mode.
   b) Stepper Motor Interfacing: Rotation in Clock wise and Anti-clock wise direction.
9. 8259 – Interrupt Controller.
10. 8251 - USART Interfacing

Mode of Evaluation:

Day to Day Evaluation	Internal Evaluation	Semester End lab Examination (SEE) 70 Marks
20 Marks	10 Marks	

Course Outcomes & Program Outcomes Mapping (PART-A):

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

Course Outcomes & Program Outcomes Mapping (PART-B):

	P O 1	P O2	P O3	P O4	P O5	P O6	P O7	P O8	P O9	PO10	PO11	PO 12	PS O1	PS O2	PS O3
CO1	3	3	-	-	3	-	-	-	-	-	-	3	3	-	-
CO2	3	-	-	-	3	-	-	-	-	-	-	3	3	-	3
CO3	3	3	-	2	3	-	-	-	-	-	-	3	3	2	-

ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES::RAJAMPET
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III Year B. Tech., I Semester

STRESS MANAGEMENT
(AUDIT COURSE)

Course Objective:

This course examines different sources from where individuals experience a stress response. Through diligent individual and group study, students will be able to learn to apply stress management principles in order to achieve high levels of performance and understand the role of relationships to the management of stress and health.

INSTRUCTIONAL OBJECTIVES

- Understand the physiological systems that are affected by stressors and the long-term effects and illnesses that can result from stressors.
- Understand the specific applications of stress as it relates to the workplace and different target groups.
- Create effective stress management plans for individual clients and for work place environments. Enhancing significance of training and development, performance evaluation

Unit–I

UNDERSTANDING STRESS Meaning – Symptoms – Work Related Stress – Individual Stress – Reducing Stress -sources of stress –consequence of stress-burnout-symptoms of Burnout-stress verses Burnout-model of stress-strategies for coping stress (individual and organizational strategies) –case study

Unit–II

TIME MANAGEMENT Techniques – Importance of Planning the day –developing concentration – Prioritizing Beginning at the start – Techniques for conquering procrastination – Sensible delegation – Taking the right breaks – Learning to say "No"

Unit–III

CAREER PLATEAU Career plateau – Identifying Career plateaus – Structural and Content – Plateauing – Making a fresh start – Importance of Sabbaticals – Counseling out – Executive leasing – Sustaining a marketable Career.

Unit–IV

CRISIS MANAGEMENT Implications – People issues – Structure issues – Environmental issues – Learning to keep calm - Preventing interruptions – Controlling crisis – Pushing new ideas – Empowerment – Work place Humour, developing a sense of Humour – Learning to laugh – role of group cohesion and team spirit.

Unit–V

SELF DEVELOPMENT Improving personality – Leading with Integrity – Enhancing Creativity – Effective decision making – Sensible Communication – The Listening Game – Managing Self – Mediation for peace – Yoga for Life

Text Books

1. Bhatia R.L., The Executive Track: An Action Plan for Self-Development Wheeler Publishing, New Delhi
2. Charavathy.S.K, "Human Values for Manager", McGraw Hill/HenelyManagement Series

Reference Books

1. Jeffr Davison, Managing Stress, Prentice Hall of India, New Delhi
2. Jerrold S Greenberg, Comprehensive Stress Management, Jain Books, 2009

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III Year B. Tech., I Semester

PROFESSIONAL ETHICS
(AUDIT COURSE)

Course Objective:

To make the students understand ethics in engineering and infuse them with confidence to apply the same in their professional life.

INSTRUCTIONAL OBJECTIVES

- To understand the relevance of ethics and morals in engineering
- To appreciate the vulnerability to failure of engineering processes
- To comprehend the finer aspects of safety and risk with reference to the responsibilities of engineers.
- To understand the link between responsibility, rights and accountability
- To understand the global impact of engineering profession

Unit–I

MORALS AND ETHICS IN ENGINEERING Senses of 'Engineering Ethics' – Variety of moral issues – Types of inquiry – Moral dilemmas – Moral Autonomy – Kohlberg's theory – Gilligan's theory –Indian Theory-Consensus and Controversy – Professions and Professionalism – Professional Ideals and Virtues – Uses of Ethical Theories

Unit–II

ENGINEERING AS SOCIAL EXPERIMENTATION Engineering as Experimentation – Engineers as responsible Experimenters – Research Ethics - Codes of Ethics – Industrial Standards - A Balanced Outlook on Law – The Challenger Case Study – Titanic disaster as Case Study

Unit–III

ENGINEER'S RESPONSIBILITY FOR SAFETY: Safety and Risk – Assessment of Safety and Risk – Risk Benefit Analysis – Reducing Risk – The Government Regulator's Approach to Risk – Disasters at Chernobyl and Bhopal - Case Studies

Unit–IV

RESPONSIBILITIES, RIGHTS AND ACCOUNTABILITY Collegiality and Loyalty – Respect for Authority – Collective Bargaining – Confidentiality – Conflicts of Interest – Occupational Crime – Professional Rights – Employee Rights – Intellectual Property Rights (IPR) – Discrimination

Unit–V

GLOBAL ISSUES Multinational Corporations – Business Ethics - Environmental Ethics – Computer Ethics - Role in Technological Development – Weapons Development – Engineers as Managers – Consulting Engineers – Engineers as Expert Witnesses and Advisors – Honesty – Moral Leadership – Sample Code of Conduct

Text Book

Mike Martin and Roland Schinzinger, "Ethics in Engineering", McGraw Hill, New York, 2005.

Reference Books

1. Charles E Harris, Michael S Pritchard and Michael J Rabins, "Engineering Ethics oncepts and Cases", Thompson Learning, 2000.
2. Charles D Fleddermann, "Engineering Ethics", Prentice Hall, New Mexico,1999.
3. John R Boatright, "Ethics and the Conduct of Business", Pearson Education, 2003.
4. Edmund G Seebauer and Robert L Barry, "Fundamentals of Ethics for Scientists and Engineers", Oxford University Press, 2001.
5. Prof. (Col) P S Bajaj and Dr. Raj Agrawal, "Business Ethics – An Indian Perspective", Biztantra, New Delhi, 2004.
6. David Ermann and Michele S Shauf, "Computers, Ethics and Society", Oxford University Press, 2003.
7. Jayashree Suresh, Raghavan, B.S., "Professional Ethics", S. Chand & Company Ltd., 2005

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III Year B.Tech., II Semester

(5G161)CRYPTOGRAPHY AND NETWORK SECURITY
(Common to CSE & IT)

Course Objectives:

- To understand the network security threats, security services, and counters measures.
- To learn the fundamentals of cryptography and its application to network security.
- To acquire background knowledge on well-known network security protocols such as IPsec, SSL, and SET.
- To understand the vulnerability analysis of network security.
- To acquire background on Digital Signature, authentication, firewalls, intrusion detection techniques.

Course Outcomes:

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

- Identify the network security threats and determine efforts to counter them.
- Encrypt the data using different algorithms.
- Examine authentication services and Email security.
- Apply knowledge on IP security and Web security services.
- Conceptualize intrusion detection and firewall designs.

Unit– I

Security Attacks (Interruption, Interception, Modification and Fabrication), Security Services (Confidentiality, Authentication, Integrity, Non-repudiation, access Control and Availability) and Mechanisms, A model for Internetwork security, Internet Standards and RFCs. Buffer overflow & format string vulnerabilities,

Unit– II

Conventional Encryption Principles, Conventional encryption algorithms, cipher block modes of operation, location of encryption devices, key distribution. Approaches of Message Authentication, Secure Hash Functions and HMAC. Public key cryptography principles, public key cryptography algorithms, digital signatures, digital Certificates, Certificate Authority and key management

Unit–III

Kerberos, X.509 Directory Authentication Service. Email privacy: Pretty Good Privacy (PGP) and S/MIME.

Unit–IV

IP Security Overview, IP Security Architecture, Authentication Header, Encapsulating Security Payload, Combining Security Associations and Key Management.

Web Security Requirements, Secure Socket Layer (SSL) and Transport Layer Security (TLS), Secure Electronic Transaction (SET).

Unit–V:

Basic concepts of SNMP, Intruders, Intrusion Detection Systems, Viruses and related threats. Firewall Design principles, Trusted Systems.

Text Books:

1. Network Security Essentials (Applications and Standards) by William Stallings, Pearson, Third Edition.
2. Hack Proofing your network, Russell, Dreamtech, Second edition.

Reference Book:

Cryptography and Network Security Second Edition Behrouz Forouzan

Mode of Evaluation:

Continuous Internal Examination (CIE)		Continuous Evaluation	Semester End Examination (SEE) 70 Marks
Mid1 20 Marks	Mid2 20 Marks	10 Marks	

Course Outcomes & Program Outcomes Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	1	-	-	-	-	-	-	2	-	-	1	-	3	-
CO2	-	-	3	-	1	3	-	3	-	3	1	-	2	3	-
CO3	-	-	-	-	-	3	3	3	-	-	-	-	-	3	-
CO4	2	-	-	-	-	-	3	-	2	3	-	-	-	-	1
CO5	-	-	3	-	-	3	3	3	-	-	-	-	-	-	-

ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES::RAJAMPET

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III Year B.Tech., II Semester

(5G162) DATA MINING& DATA WAREHOUSING

Course Objectives:

- To learn the concepts of database technology evolutionary path this has led to the need for data mining and its applications
- To learn Data mining algorithms to build analytical applications

Course Outcomes:

At the end of this course the students will be able:

- To understand and apply the data preprocessing techniques and the Measures of proximity.
- To solve different classification problems and measuring the accuracy of classification algorithms.
- To compare different Classification-Alternative techniques.
- To analyze various association rule mining algorithms and evaluate the Association Patterns.
- To apply and analyze different clustering techniques.

Unit– I

Introduction: What is Data Mining, Motivating Challenges, The Origins of Data Mining, and Data Mining Tasks. **Data:** Types of Data, Data Quality, Data Preprocessing, Measures of Similarity and Dissimilarity.

Exploring Data: Summary Statistics, OLAP and Multidimensional Data Analysis.

Unit– II

Basic Concepts, Decision Trees, and Model Evaluation: Preliminaries, General Approach to Solving a Classification Problem, Decision Tree Induction, Model Overfitting, Evaluating the Performance of a Classifier, Methods for Comparing Classifiers.

Unit–III

Classification-Alternative techniques: Rule-Based Classifier, Nearest-Neighbor Classifiers, Bayesian Classifiers, Artificial Neural Networks, Support Vector Machines, Ensemble Methods, Class Imbalance Problem, Multiclass Problem

Unit– IV

Association Analysis- Basic Concepts and Algorithms: Problem Definition, Frequent Item set Generation, Rule Generation, Compact Representation of Frequent Item sets, Alternative Methods for Generating Frequent Item sets, FP-Growth Algorithm, Evaluation of Association Patterns, Effect of Skewed Support Distribution

Unit–V

Cluster Analysis- Basic Concepts and Algorithms: Overview, k-means, Agglomerative Hierarchical Clustering, DBSCAN, and Cluster Evaluation.

Cluster Analysis-Additional Issues and Algorithms: Characteristics of Data, Clusters, and Clustering Algorithms, Prototype-Based Clustering, Density-Based Clustering, Graph-Based Clustering-Minimum Spanning Tree (MST) Clustering, Chameleon, Scalable Clustering Algorithms-Scalability-General Issues and Approaches, BIRCH, CURE

Text Books:

1. Introduction to Data Mining, Pang-Ning Tan, Vipin Kumar, Michael Steinbach, Pearson
2. Data Mining: Concepts and Techniques, Jiawei Han and MichelineKamber, Morgan Kaufmann Publishers, Elsevier, Second Edition, 2006 www.alljntuworld.in || www.expresscoupons.in 84

Reference Books:

1. Data Mining Principles &Applications, T.V. Suresh Kumar, B. Eswara Reddy, Jagadish S Kallimani, Elsevier
2. Data Mining Techniques and Applications an Introduction, Hongbo Du, Cengage Learning
3. Data Mining Techniques, Arun K Pujari, Second Edition, Universities Press 4. Data Mining, Pudi, Oxford University Press

Mode of Evaluation:

Continuous Internal Examination (CIE)		Continuous Evaluation	Semester End Examination (SEE) 70 Marks
Mid1 20 Marks	Mid2 20 Marks	10 Marks	

Course Outcomes & Program Outcomes Mapping:

Course outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11	PO 12	PSO1	PSO2	PS O3
CO1	3	3	3	-	3			-	-	-	2		3		-
CO2	3	3	3	3	3	3		-	-	3	-		3	3	-
CO3	3	3	3	3	3	3		-	-	3	-		3	3	-
CO4	3	3	3	3	3	3		-	-		2		3		-
CO5		3	-	-	-	3	3	-	-	-	-	3	3		-

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III Year B.Tech., II Semester

(5G16C)INTERNET OF THINGS
(Common to CSE & IT)

Course Objectives:

- To Understand, the Enabling technologies of IoT.
- To Analyze various layers of Enterprise IoT Stack.
- To interpret various Applications of IoT.
- To understand and memorize various Internet Protocols.
- To Design Applications for real time scenario using the concepts of Arduino Platform and Embedding Computing Basics.

Course Outcomes:

After completion of the course student will be able to

- Understand, the Enabling technologies of IoT.
- Analyze various layers of Enterprise IoT Stack.
- Interpret various Applications of IoT.
- Understand and memorize various Internet Protocols.
- Design Applications for real time scenario using the concepts of Arduino Platform and Embedding Computing Basics.

Unit I

The Internet of Things: An Overview

Introduction to Internet of Things, History of IoT, The identifier in the IoT, Enabling technologies of IoT, Radio Frequency Identification Technology (RFID).

Unit II

Enterprise IoT Stack

IoT stack, Device Layer, Communication Layer, Core Platform Layer, Analytics Platform Layer, Cognitive Platform Layer, Solutions Layer, IoT Security & Management

Unit III

Application of IoT

Manufacturing, Monitoring & Utilization, Asset Management, Instrumentation, Handle Connectivity, Perform Monitoring, Condition Based Maintenance, Predictive Based Maintenance, Optimization, Connecting Connected Solutions, Connected Car.

Unit IV

Internet Protocol

The Wireless Embedded Internet: Introduction to 6LoWPAN**,** The 6LoWPAN Architecture ,The Basic 6LoWPAN Format, Addressing ,MQ telemetry transport for sensor networks (MQTT-S), ZigBee compact application protocol, Contiki and uIPv6, Wireless RFID Infrastructure.

Unit V

Embedded Devices

Embedded Computing Basics-Microcontrollers, System-on-Chips, Choosing your Platform, **Arduino-**Developing on the Arduino, Some Notes on the Hardware, Openness.

Text Books:

1. The Internet of Things Connecting Objects to the Web, Hakima Chaouchi, Wiley publications,2010.(Unit I)
2. Designing the Internet of Things, Adrian McEwen, Hakim Cassimally, Wiley 2014.
3. Enterprise IoT, A Definitive Handbook by Naveen Balani.
4. 6LoWPAN: The WirelessEmbedded Internet, Zach Shelby and Carsten Bormann,Wiley publications, first edition,2009.(Unit IV)

Reference Books:

1. Internet of Things - A Hands-on Approach, ArshdeepBahga and Vijay Madisetti, Universities Press, 2015, ISBN: 9788173719547
2. Francis daCosta, "Rethinking the Internet of Things: A Scalable Approach to Connecting Everything", 1st Edition, Apress Publications, 2013
3. Getting Started with Raspberry Pi, Matt Richardson & Shawn Wallace, O'Reilly (SPD), 2014, ISBN: 9789350239759

Mode of Evaluation:

Continuous Internal Examination (CIE)		Continuous Evaluation	Semester End Examination (SEE) 70 Marks
Mid1 20 Marks	Mid2 20 Marks	10 Marks	

Course Outcomes & Program Outcomes Mapping:

Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11	PO 12	PSO 1	PSO2	PSO3
CO1	3	-	3	3	-	-	-	-	-	-	-	3	3	3	3
CO2	3	3	-	-	-	-	-	-	-	-	-	3	3	3	-
CO3	3	3	-	-	-	-	-	-	-	-	-	3	3	3	-
CO4	3	-	3	3	-	-	-	-	-	-	-	3	3	3	3
CO5	3	-	3	3	1	1	1	1	1	1	1	3	3	3	3

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III Year B.Tech., II Semester

(5G163) SMART PHONE PROGRAMMING

Course Objectives:

- To understand the fundamentals of smart phone programming and android software development tools.
- To construct and apply knowledge on how to develop User Interface for a mobile application
- Design, develop and substitute basic things on data persistence, content provider, messaging, and location based services for a mobile application.

Course Outcomes:

Upon completion of the subject, students will be:

- Able to recognize the importance of knowledge on Android programming basics and its tools.
- Able to construct the various aspects of user interfaces.
- Able to apply knowledge on displaying pictures, menus and persistent data services.
- Able to develop application on content provider and messaging services.
- Able to substitute on the fundamentals of location based services, and creating your own services.

Unit–I:

Getting started with android programming: What is android, obtaining the required tools, creating first android application, anatomy of android application.

Activities, fragments & Intents: Understanding activities, linking activities using intents, fragments, calling built-in applications using intents, displaying notifications.

Unit–II

Getting to know the android user interface: Understanding the components of a screen, adapting to display orientation, managing changes to screen orientation, utilizing the action bar, creating the user interface programmatically, and listening for UI notifications.

Designing User Interface with Views: Using basic views, using picker views, using list views to display long lists.

Unit–III

Displaying pictures and Menus with Views: Using image views to display pictures-Gallery and Image View views, using menus with views, analog and digital clock views.

Data Persistence: Saving and loading user preferences, persisting data to files, creating and using databases.

Unit–IV

Content Providers: Sharing data in android, using a content provider, creating own content providers.

Messaging: SMS messaging, sending E-mail.

Unit–V

Location based services: Displaying maps, getting a location data, monitoring a location, building a location tracker.

Developing android services: Creating your own services.

Text Book:

Beginning Android 4 Application Development, Wei-Meng Lee, Wiley India (Wrox), 2013

Reference Books:

1. Professional Android 4 Application Development, Reto Meier, Wiley India, (Wrox), 2012
2. Android Application Development for Java Programmers, James C Sheusi, Cengage Learning, 2013

Mode of Evaluation:

Continuous Internal Examination (CIE)		Continuous Evaluation	Semester End Examination (SEE) 70 Marks
Mid1 20 Marks	Mid2 20 Marks	10 Marks	

Course Outcomes versus Program Outcomes Mapping

Course Outcomes	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO10	PO11	PO12	PSO1	PSO2	PSO 3
CO1	3	-	-	-	3	-	-	-	3	-	-	3	3	-	-
CO2	3	-	-	-	3	-	-	-	3	-	-	3	3	-	-
CO3	3	-	-	-	3	-	-	-	3	-	-	3	3	-	-
CO4	3	-	3	-	3	-	3	-	3	-	-	3	3	-	3
CO5	3	-	3	-	3	1	3	-	3	-	-	3	3	-	3

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III Year B.Tech., II Semester

(5G164) ARTIFICIAL INTELLIGENCE
(PROFESSIONAL ELECTIVE-I)

Course Objectives:

- To develop a basic understanding of the building blocks of AI as presented in terms of intelligent agents.
- To understand the main approaches of artificial intelligence such as heuristic search, game search, logical inference, decision theory, planning, machine learning, neural networks and natural language processing.

Course Outcomes:

After completion of the course student will be

- Able to recite the importance of artificial intelligence in real world environment.
- Able to understand the artificial intelligence algorithms for hands-on experience.
- Able to understand the various resolutions in an uncertain environment for obtaining a solution.
- Able to analyze the types of objects and mental events
- Able to select the appropriate actions with partial knowledge.

Unit– I

INTRODUCTION TO AI AND PROBLEM SOLVING

Artificial Intelligence: Introduction to AI, History of AI, Emergence Of Intelligent Agents, Intelligent Agents**:** PEAS- Representation for an Agent, Types of Agents, Types of Agent Environments, Concept of Rational Agent, Structure of Intelligent agents, Defining the Problem as a State Space Search, Problem Characteristics.

Problem Solving: Solving problems by searching, Problem Formulation, Uninformed Search Techniques- DFS, BFS, Iterative Deepening, Comparing Different Techniques, Informed search methods – heuristic Functions, Hill Climbing, Simulated Annealing, A*, Performance Evaluation. Constrained Satisfaction Problems: Constraint Satisfaction Problems like – map Coloring, Crypt Arithmetic, Backtracking for CSP, Local Search.

Unit– II

KNOWLEDGE AND REASONING

Knowledge and Reasoning: A knowledge Based Agent, Introduction To Logic, Propositional Logic, Reasoning in Propositional logic, First Order Logic: Syntax and Semantics, Extensions and Notational Variation, Inference in First Order Logic, Unification, Forward and backward chaining, Resolution.

Unit– III:

KNOWLEDGE ENGINEERING AND PLANNING

Knowledge Engineering: Ontology, Categories and Objects, Mental Events and Objects. **Planning:** Planning problem, Planning with State Space Search, Partial Order Planning, Hierarchical Planning, Conditional Planning.

Unit– IV

UNCERTAIN KNOWLEDGE AND REASONING

Uncertain Knowledge and Reasoning: Uncertainty, Acting Under Uncertainty, Basic Probability Notation, The Axioms of Probability, Inference Using Full Joint Distributions, Independence, Bayes' Rule and Its Use. Belief Networks, Simple Inference in Belief Networks.

Unit– V

LEARNING AND INTRODUCTION TO NEURAL NETWORKS: Learning: Learning from Observations, General Model of Learning Agents, Inductive learning, learning Decision Trees, Introduction to neural networks, Perceptrons, Multilayer feed forward network, Application of ANN, Reinforcement learning: Passive & Active Reinforcement learning.

Text Book:

1. Stuart Russell and Peter Norvig, Artificial Intelligence: A Modern Approach, 2nd Edition,Pearson Publication.

Reference Books:

1. George Lugar, "AI-Structures and Strategies for Complex Problem Solving", 4/e, 2002,Pearson Education.
2. Robert J. Schalkolf, Artificial Inteilligence: an Engineering approach, McGraw Hill, 1990.
3. Patrick H. Winston, Artificial Intelligence, 3rd edition, Pearson.
4. Nils J. Nilsson, Principles of Artificial Intelligence, Narosa Publication.
5. Dan W. Patterson, Introduction to Artificial Intelligence and Expert System, PHI.
6. Elaine Rich, Kevin Knight, Artificial Intelligence, Tata McGraw Hill, 1999.

Mode of Evaluation:

Continuous Internal Examination (CIE)		Continuous Evaluation	Semester End Examination (SEE) 70 Marks
Mid1 20 Marks	Mid2 20 Marks	10 Marks	

Course Outcomes & Program Outcomes Mapping with PSO's:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11	PO 12	PSO1	PSO2	PSO3
CO1	-	3	-	-	-	-	-	-	-	-	-	1	3	-	-
CO2	3	3	3	3	3	-	-	-	-	-	-	-	3	3	3
CO3	3	3	3	3	3	-	-	-	-	-	-	-	3	3	3
CO4	-	3	-	-	-	-	-	-	-	-	-	-	3	-	-
CO5	3	3	-	-	-	-	-	-	-	-	-	-	3	-	-

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III Year B.Tech., II Semester

(5G165)MOBILE ADHOC NETWORKS
(PROFESSIONAL ELECTIVE-I)

Course Objectives:

- To understand the basics of ad hoc networks and its characteristics in an unguided media.
- To know about the Medium Access Control Protocols and its classification to avoid the collisions.
- To learn about the various routing protocols and QoS issues in the network layer To know
- To acquire the knowledge on importance of transport layer and security in end to end delivery.
- To perceive the need of cross layer design issues in mobile ad hoc networks.

Course Outcomes:

Upon the completion of the subject, students will be:

1. Recognize the importance of the Ad hoc networks in wireless Media and its real time applications in complex situations.
2. Select the suitable the Medium Access Control Protocols for avoiding the collisions in the network.
3. Compare the various routing protocols based on different parameters in ad hoc networks.
4. Understand how to establish a secure connection in a transport layer.
5. Identify the requirement of cross layer design and integration in ad hoc networks.

Unit– I

INTRODUCTION: Introduction to adhoc networks – definition, characteristics features, applications, Characteristics of Wireless channel, Adhoc Mobility Models:- Indoor and outdoor models.

Unit– II

MEDIUM ACCESS PROTOCOLS: MAC Protocols: design issues, goals and classification. Contention based protocols- with reservation, scheduling algorithms, protocols using directional antennas. IEEE standards: 802.11a, 802.11b, 802.11g, 802.15. HIPER LAN.

Unit– III

NETWORK PROTOCOLS: Routing Protocols: Design issues, goals and classification. Proactive Vs reactive routing, Unicast routing algorithms, Multicast routing algorithms, hybrid routing algorithm, Energy aware routing algorithm, Hierarchical Routing, QoS aware routing.

Unit– IV

END-END DELIVERY & SECURITY: Transport layer : Issues in designing- Transport layer classification, adhoc transport protocols. Security issues in adhoc networks: issues and challenges, network Security attacks, secure routing protocols

Unit– V

CROSS LAYER DESIGN & INTEGRATION OF ADHOC FOR 4G CROSS LAYER DESIGN: Need for cross layer design, cross layer optimization, parameter optimization techniques, Cross layer cautionary perspective, Integration of adhoc with Mobile IP networks.

Text Books:

1.C.Siva Ram Murthy and B.S.Manoj, Ad hoc Wireless Networks Architectures andprotocols, 2nd edition, Pearson Education. 2007

2.Charles E. Perkins, Ad hoc Networking, Addison – Wesley, 2000

Reference Books:

1. Stefano Basagni, Marco Conti, Silvia Giordano and Ivan stojmenovic, Mobilead hocnetworking, Wiley-IEEE press, 2004.
2. Mohammad Ilyas, The handbook of adhoc wireless networks, CRC press, 2002.
3. T. Camp, J. Boleng, and V. Davies "A Survey of Mobility Models for Ad Hoc Network
4. Research," Wireless Commun. and Mobile Comp., Special Issue on Mobile Ad HocNetworking Research, Trends and Applications, vol. 2, no. 5, 2002, pp. 483–502.
5. A survey of integrating IP mobility protocols and Mobile Ad hoc networks, Fekri M.Abduljalil and Shrikant K. Bodhe, IEEE communication Survey and tutorials, v no.12007
6. V.T. Raisinhani and S.Iyer "Cross layer design optimization in wireless protocolstacks"Comp. communication, vol 27 no. 8, 2004.
7. V.T.Raisinhani and S.Iyer,"ÉCLAIR; An Efficient Cross-Layer Architecture forwireless protocol stacks",World Wireless cong., San francisco,CA,May 2004.
8. V.Kawadia and P.P.Kumar,"A cautionary perspective on Cross-Layer design,"IEEE

Mode of Evaluation:

Continuous Internal Examination (CIE)		Continuous Evaluation	Semester End Examination (SEE) 70 Marks
Mid1 20 Marks	Mid2 20 Marks	10 Marks	

Course Outcomes & Program Outcomes Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	P O 11	P O 12	PSO1	PSO 2	PSO 3
CO 1	2	-	3	-	-	-	3	-	-	-	3	-	3	3	-
CO 2	2	3	3	-	3	-	3	-	-	-	3	-	3	3	-
CO 3	-	3	3	-	-	-	-	-	1	-	3	-	3	-	3
CO 4	-	3	3	-	-	1	3	-	-	1	-	-	3	-	3
CO 5	-	3	-	1	3	-	-	-	-	-	-	-	-	3	-

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III Year B.Tech., II Semester

(5G166)REAL TIME SYSTEMS

(PROFESSIONAL ELECTIVE-I)

Course Objectives:

- Defines organizational factors of a Real-Time System and concepts of Computer Control.
- Identify the prerequisites for a real time application.
- Describe various automated algorithms for designing a computer based systems.
- Teaches varied methodologies and standards to design & construct the complex realtime system.
- Compute distinct mechanisms that makes system tolerant of faults.

Course Outcomes:

On successful completion of this course students will be:

- Acquire Knowledge about organizational factors of a Real-Time System and concepts of Computer Control.
- Identify the prerequisites for a real time application
- Express various automated algorithms for designing a computer based systems.
- Indicate formal methods to analyze and design a real-time system.
- Determine appropriate techniques to detect faults

Unit– I

Introduction to Real-Time Systems: Historical background, Elements of a computer control systems, Real-Time Systems- definition, Classification of real-time systems, Time constraints, Classification of programs, Summary.

Concepts of Computer control: Introduction, Sequence control, Loop control (direct digital control), Supervisory control, Centralized computer control, Hierarchical systems, Distributed systems, Human- Computer Interface (HCI), the control engineer, Economics and benefits of computer control systems, Summary.

Unit– II

Computer Hardware Requirements for Real-Time applications: Introduction: General purpose computer, Single-chip microcomputers and microcontrollers, Specialization Processor, Process-related Interfaces, Data Transfer techniques, Communications, Standard Interface, Summary. DDC Algorithms and Their Implementation Introduction, Implementation for the Basic PID algorithm, Synchronization of the control loop.

Unit– III

Bumpless transfer, Saturation and integral action wind-up, Tuning Choice of sampling interval, Plant input and output, improved forms of algorithm for integral and derivative calculation, Implementation of controller designs based on plant models, Summary Design of Real-Time Systems – General Introduction

Introduction, Specification document, Preliminary design, Single-program Approach Foreground/Background system, Multi-tasking approach, Mutual exclusion, Monitors, Rendezvous, Summary.

Unit– IV

Real-Time System Development Methodologies – 1: Introduction, Yourdon methodology, Requirements definition for drying oven, Ward and Mellor method, Hatley and Pirbhai method, Comments and the Yourdon Methodologies summary

Real-Time System Development Methodologies -2: MASCOT, Basic features of MASCOT, General design approach, Textual representation of MASCOT designs, Other features of MASCOT, Development facilities, The MASCOT Kernel, Summary of MASCOT, Formal Methods, The PAISLey system for real-time software development method, PAISLey summary, Summary.

Unit– V

Dependability, Fault detection and fault tolerance: Introduction, USE of Redundancy, Fault tolerance in Mixed Hardware-Software systems, Fault detection measures, Fault detection mechanisms, Damage containment and assessment Provision of fault tolerance, summary

Text Book:

Real Time Computer control, Stuart Bennett, 2nd edition, Pearson Education

Reference Book:

Real-Time Systems Design and Analysis by Phillip A Laplante

Mode of Evaluation:

Continuous Internal Examination (CIE)		Continuous Evaluation	Semester End Examination (SEE) 70 Marks
Mid1 20 Marks	Mid2 20 Marks	10 Marks	

Course Outcomes & Program Outcomes Mapping:

	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO 10**	**PO 11**	**PO 12**	**PSO 1**	**PSO 2**	**PSO 3**
CO1	2		3				3				3		3	3	
CO2	2	3	3		3		3				3		3	3	
CO3		3	3						1		3		3		3
CO4		3	3			1	3			1			3		3
CO5		3		1	3									3	

ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES::RAJAMPET
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III Year B.Tech., II Semester

(5G167) SOFTWARE TESTING METHODOLOGIES
(PROFESSIONAL ELECTIVE-I)

Course Objectives

- To understand the fundamental concepts of software testing, including software testing objectives, the taxonomy of bugs, various testing techniques
- To analyze a range of test cases from software requirements using logic based testing
- To prepare and test path expressions, the concepts of state graphs and transition testing

Course Outcomes:

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

- Recognize the concepts of software testing and taxonomy of bugs.
- Construct control flow graphs for different programs.
- Apply data flow testing for simple projects.
- Prepare paths and decision tables for various problems
- Propose state graphs for different problems and apply transition testing

Unit– I

INTRODUCTION: Purpose of testing, Dichotomies, model for testing, consequences of bugs, taxonomy of bugs.

Unit– II

FLOW GRAPHS AND PATH TESTING: Basics concepts of path testing, predicates, path predicates and achievable paths, path sensitizing, path instrumentation, application of path testing.

TRANSACTION FLOW TESTING: Transaction flows, transaction flow testing techniques.

Unit– III

DATAFLOW TESTING: Basics of dataflow testing, strategies in dataflow testing, application of dataflow testing.

DOMAIN TESTING: Domains and paths, Nice & ugly domains, domain testing, domains and interfaces testing.

Unit– IV

PATHS, PATH PRODUCTS AND REGULAR EXPRESSIONS: Path products & path expression, reduction procedure, applications, regular expressions & flow anomaly detection.

LOGIC BASED TESTING: Overview, decision tables, path expressions, kv charts, specifications.

Unit– V

STATE, STATE GRAPHS AND TRANSITION TESTING: State graphs, good & bad state graphs, state testing, GRAPH MATRICES AND APPLICATION

Motivational overview, matrix of graph, relations, power of a matrix, node reduction algorithm, building tools.

Text Book:

Boris Beizer, *Software testing techniques*. Dreamtech, 2nd Ed.

Reference Books:

1. Dr.K.V.K.K.Prasad, *Software Testing Tools*. Dreamtech.
2. Brian Marick,*The craft of software testing*. Pearson Education.

3. *Software Testing Techniques* – SPD(Oreille).
4. Edward Kit. *Software Testing in the Real World*. Pearson.
5. Perry, *Effective methods of Software Testing*, John Wiley.
6. Meyers, *Art of Software Testing*, John Wiley.

Mode of Evaluation:

Continuous Internal Examination (CIE)		Continuous Evaluation	Semester End Examination (SEE) 70 Marks
Mid1 20 Marks	Mid2 20 Marks	10 Marks	

Course Outcomes & Program Outcomes Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11	PO 12	PSO1	PSO2	PSO3
CO1	3	3	-	-	-	-	-	-	3	-	-	3	-	-	-
CO2	3	3	3	-	-	-	-	-	3	-	-	3	-	-	-
CO3	3	-	3	-	-	-	-	-	3	-	-	3	-	-	3
CO4	3	-	3	-	-	-	-	3	3	-	3	3	-	3	3
CO5	3	-	3	-	1	-	-	3	3	-	3	3	-	3	3

ANNAMACHARYA INSTITUTE OF TECHNOLOGY AND SCIENCES::RAJAMPET
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III Year B.Tech., II Semester

(5G168)CLIENT SERVER COMPUTING
(PROFESSIONAL ELECTIVE-II)

Course Objectives:

- Recognize different servers &operating systems.
- Discuss the fundamental concepts of communication protocols in client server middle ware.
- Demonstrate the underlying components & elements of client server databases and groupware.
- Illustrates transaction monitoring techniques & interactions.
- Observe popular three tier scenarios &distributed objects required to implement internet based applications.

Course Outcomes:

At the end of the course students will be:

- Gain exposure on most common used servers and operating systems.
- Device the concepts of middleware, and communication protocols.
- Use SQL to define, query & modify databases and components of groupware.
- States transaction monitoring techniques & interactions.
- Relate popular three tier scenarios with distributed objects required to implement internet based applications.

Unit– I

Basic Concepts: Characteristics - File Server - Database Server - Transaction Server - Groupware Server - Object Server – Middleware - Building Blocks.

Client Server Operating System: Anatomy of server program - Server needs from OS - Server Scalability - Client Anatomy - Client need from OS - Client OS trends - Server OS trends.

Unit– II

Client Server Middleware: NOS Middleware – Transparency - Global Directory Services - Distributed Time Service - Distributed Security Service - RPC, Messaging and Peer to Peer - Peer to Peer Communication - RPC-Messaging and Queuing (MOM)- MOM Vs RPC-NOS trends.

Unit– III

SQL Database Server: Stored Procedure, Triggers and Rules - Database Connectivity Solutions - ODBC – Architecture – Components of ODBC.

Data Warehouse: Elements- Warehouse Hierarchies- Replication Vs Direct Access – Mechanics of Data Replication – Cleansing and Transforming the Raw Data - EIS/DSS.

Client Server Groupware: Groupware - Component of Groupware.

Unit– IV

Client Server Transaction Processing: ACID properties - Transaction Model - TP Monitor and Operating System - TP Monitor and Transaction Management - TP Monitor Client Server interaction types - Transactional RPCs, Queues and Conversations - TP lite or TP Heavy - TP lite Vs TP Heavy.

Unit– V

Client Server with Distributed Objects: Distributed Objects and Components - From Distributed Objects to Components - CORBA-Distributed objects CORBA style - Object Management Architecture - Intergalactic ORB - Object Services - Common Facilities - Business Objects - Next Generation - COM+ - Other Component bus - COM short history - COM 101 - OLE/DCOM.

Client Server and Internet: Web Client Server interaction – 3 Tier client Server web style – CGI – Server side of the web.

TEXT BOOK:

1. Robert Orfali, Dan Harkey and Jerri Edwards, "Essential Client Server Survival Guide", John Wiley & Sons, Third edition, 2007.

REFERENCE BOOKS:

1. Goldman, James E Rawles, Philip T Mariga and Julie R, "Client Server Information Systems: A Business Oriented Approach", Wiley, 1999.
2. Eric Johnson, Susan McDermott, "The Complete Guide to Client Server Computing", Prentice Hall, 2001.
3. Smith and Steven L Guengerich, "Client Server Computing", Prentice-Hall of India, 2002.

Mode of Evaluation:

Continuous Internal Examination (CIE)		Continuous Evaluation	Semester End Examination (SEE) 70 Marks
Mid1 20 Marks	Mid2 20 Marks	10 Marks	

Course Outcomes & Program Outcomes Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11	PO 12	PS O1	PS O2	PS O3
CO1			3		3				3	2			3		2
CO2			3		3	1			3	2				3	
CO3	3		3		3				3				3		3
CO4	3	2	3	2										3	
CO5	3	2		2							1		2		3

ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES::RAJAMPET
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III Year B.Tech., II Semester

(5G169)DISTRIBUTED SYSTEMS
(PROFESSIONAL ELECTIVE-II)

Course Objectives:

- To learn the characteristics of distributed systems and system models.
- To acquire the depth knowledge on distributed objects and remote invocations
- To apply various domain naming services.
- To compare the different issues of Global clocks, process states coordination and agreement.
- To analyze the optimistic concurrency control and distributed transactions.

Course Outcomes:

At the end of the course students will be:

- To understand the characteristics of distributed systems and system models.
- To describe knowledge on distributed objects and remote invocations
- To use various domain naming services.
- To distinguish different issues of Global clocks, process states coordination and agreement.
- To estimate the optimistic concurrency control and distributed transactions.

Unit– I

CHARACTERIZATION OF DISTRIBUTED SYSTEMS: Introduction, Examples of Distributed systems, Resource sharing and web, challenges, **System models:** Introduction, Architectural and Fundamental models, Inter-process Communication.

Unit– II

Distributed objects and Remote Invocation: Introduction, Communication between distributed objects, RPC, Events and notifications, Case study-Java RMI.

OPERATING SYSTEM SUPPORT: Introduction, OS layer, Protection, Processes and Threads, Communication and Invocation, Operating system architecture. Distributed File Systems-Introduction, File Service architecture.

Unit– III

NAME SERVICES: Introduction, Name Services and the Domain Name System, Case study of the Global Name Service.

Peer to Peer Systems: Introduction, Napster and its legacy, Peer to Peer middleware, routing overlays.

Unit– IV

TIME AND GLOBAL STATES: Introduction, Clocks, events and Process states, Synchronizing physical clocks, logical time and logical clocks, global states, distributed debugging.

COORDINATION AND AGREEMENT: Introduction, Distributed mutual exclusion, Elections, Multicast communication, consensus and related problems.

Unit– V

TRANSACTIONS AND CONCURRENCY CONTROL: Introduction, Transactions, Nested Transactions, Locks, Optimistic concurrency control, Timestamp ordering.

DISTRIBUTED TRANSACTIONS: Introduction, Flat and Nested Distributed Transactions, Atomic commit protocols, Concurrency control in distributed transactions, Distributed deadlocks, Transaction recovery, Replication-Introduction, Fault tolerant services, Transactions with replicated data.

Text Book:

G Coulouris, J Dollimore and T Kindberg, *Distributed Systems Concepts and Design*, Pearson Education, 4thEd.

Reference Books:

1. S.Mahajan and S.Shah, *Distributed Computing*. Oxford University Press.
2. PradeepK.Sinha,*Distributed Operating Systems Concepts and Design*. PHI.
3. M Singhal, N G Shivarathri, *Advanced Concepts in Operating Systems*. TMH Edition.
4. K.P.Birman,*Reliable Distributed Systems*, Springer.
5. A.S. Tanenbaum and M.V. Steen,*Distributed Systems: Principles and Paradigms*. Pearson Education.
6. R.Chow, T.Johnson, *Distributed Operating Systems and Algorithm*Analysis. Pearson.
7. A.S.Tanenbaum,*Distributed Operating Systems*, Pearson Education.
8. S.Ghosh, *Distributed Systems*.ChapmanHall/CRC Taylor & Francis Group, 2010.

Mode of Evaluation:

Continuous Internal Examination (CIE)		Continuous Evaluation	Semester End Examination (SEE) 70 Marks
Mid1 20 Marks	Mid2 20 Marks	10 Marks	

Course Outcomes & Program Outcomes Mapping:

	PO 1	PO 2	P O3	P O4	P O5	P O6	P O7	P O8	P O9	PO 10	PO 11	PO 12	PSO1	PSO2	PSO3
C O1	-	-	3	-	-	3	3	-	-	-	-	3	3	3	-
C O2	-	2	-	-	-	3	3	-	-	-	3	3	3	-	3
C O3	-	2	-	2	-	3	-	-	-	-	3	3	3	3	-
C O4	-	-	3	-	-	-	-	-	-	-	3	-	-	3	3
C O5	-	-	3	2	-	-	-	-	-	-	-	3	3	3	-

ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES::RAJAMPET
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III Year B.Tech., II Semester

(5G16A) MACHINE LEARNING
(PROFESSIONAL ELECTIVE-II)

Course Objectives:

- To formulate machine learning problems corresponding to different applications.
- To understand a range of machine learning algorithms along with their strengths and weaknesses.
- To understand the basic theory underlying machine learning.
- To apply machine learning algorithms to solve problems of moderate complexity.
- To understand different types of learning approaches.

Course Outcomes:

At the end of the course students will be:

- Able to understand the basic knowledge about the key algorithms and theory that form the foundation of machine learning and computational intelligence
- Able to understand different machine learning algorithms and methods
- Able to understand the principles, advantages, limitations such as over fitting and possible applications of machine learning
- Able to identify and apply the appropriate machine learning technique to classification, pattern recognition and optimization and decision problems.
- Able to understand different types of learning approaches.

Unit– I

INTRODUCTION: Well-posed learning problems, Designing a learning system, Perspectives and issues in machine learning Concept learning and the general to specific ordering – Introduction, A concept learning task, Concept learning as search, Find-S: finding a maximally specific hypothesis, Version spaces and the candidate elimination algorithm, Remarks on version spaces and candidate elimination, Inductive bias

Unit– II

Decision Tree learning – Introduction, Decision tree representation, Appropriate problems for decision tree learning, The basic decision tree learning algorithm, Hypothesis space search in decision tree learning, Inductive bias in decision tree learning, Issues in decision tree learning Artificial Neural Networks – Introduction, Neural network representation, Appropriate problems for neural network learning, Perceptions, Multilayer networks and the back propagation algorithm, Remarks on the back propagation algorithm, An illustrative example face recognition Advanced topics in artificial neural networks Evaluation Hypotheses – Motivation, Estimation hypothesis accuracy, Basics of sampling theory, A general approach for deriving confidence intervals, Difference in error of two hypotheses, Comparing learning algorithms

Unit– III

Bayesian learning – Introduction, 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, Gibs algorithm, Naïve Bayes classifier, An example learning to classify text, Bayesian belief networks The EM algorithm Computational learning theory – Introduction, Probability learning an approximately correct hypothesis, Sample complexity for Finite Hypothesis Space, Sample Complexity for infinite Hypothesis Spaces, The mistake bound model of learning - Instance-Based Learning- Introduction, k -Nearest Neighbour Learning, Locally Weighted Regression, Radial Basis Functions, Case-Based Reasoning, Remarks on Lazy and Eager Learning Genetic Algorithms – Motivation, Genetic Algorithms, An illustrative Example, Hypothesis Space Search, Genetic Programming, Models of Evolution and Learning, Parallelizing Genetic Algorithms

Unit– IV

Learning Sets of Rules – Introduction, Sequential Covering Algorithms, Learning Rule Sets: Summary, Learning First Order Rules, Learning Sets of First Order Rules: FOIL, Induction as Inverted Deduction, Inverting Resolution Analytical Learning - Introduction, Learning with Perfect Domain Theories: Prolog-EBG Remarks on Explanation-Based Learning, Explanation-Based Learning of Search Control Knowledge

Unit– V

Combining Inductive and Analytical Learning – Motivation, Inductive-Analytical Approaches to Learning, Using Prior Knowledge to Initialize the Hypothesis, Using Prior Knowledge to Alter the Search Objective, Using Prior Knowledge to Augment Search Operators, Reinforcement Learning – Introduction, The Learning Task, Q Learning, Non-Deterministic, Rewards and Actions, Temporal Difference Learning, Generalizing from Examples, Relationship to Dynamic Programming

Text Books:

1. Machine Learning – Tom M. Mitchell, - MGH
2. Machine Learning: An Algorithmic Perspective, Stephen Marsland, Taylor & Francis (CRC)

Reference Books:

1. Machine Learning Methods in the Environmental Sciences, Neural Networks, William W Hsieh, Cambridge Univ Press.
2. Richard o. Duda, Peter E. Hart and David G. Stork, pattern classification, John Wiley & Sons Inc., 2001 3. Chris Bishop, Neural Networks for Pattern Recognition, Oxford University Press, 1995

Mode of Evaluation:

Continuous Internal Examination (CIE)		Continuous Evaluation	Semester End Examination (SEE) 70 Marks
Mid1 20 Marks	Mid2 20 Marks	10 Marks	

Course Outcomes & Program Outcomes Mapping:

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

ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES::RAJAMPET
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III Year B.Tech., II Semester

(5G16B) SOFTWARE PROJECT MANAGEMENT
(PROFESSIONAL ELECTIVE-II)

Course Objectives:

The main Objectives of this course are

- To understand the basics of the project management concepts like initiating a project, defining the project's boundaries, documenting the project's charter, identifying project stakeholders, defining the project's scope, and requirements management throughout the product development cycle.
- To know the distinction between conventional and modern approaches for developing a software project.
- To learn about the life cycle phases and artifacts in software development process.
- To realize the importance of Work breakdown structures and responsibilities while working in a real time project.
- To know how to measure the software quality and risk management in a modern project profile.

Course Outcomes:

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

- Understand the conventional software Management and Software Economics factors that affects the development of a software project.
- Recognize the how to develop the project and Artifacts of the process in Software Development life cycle.
- Analyze the workflows and how to create the check points of process in a project management.
- Organize the work breakdown structures and assign the roles in a project organization for establishing an active network.
- Estimate the project metrics and era of the future software project management.

Unit– I

Conventional Software Management: The waterfall model, conventional software Management performance.

Evolution of Software Economics: Software Economics, pragmatic software cost estimation.

Improving Software Economics: Reducing Software product size, improving software processes, improving team effectiveness, improving automation, Achieving required quality, peer inspections.

Unit–II

The old way and the new: The principles of conventional software Engineering, principles of modern software management, transitioning to an iterative process.

Life cycle phases: Engineering and production stages, inception, Elaboration, construction, transition phases.

Artifacts of the process: The artifact sets, Management artifacts, Engineering artifacts, pragmatic artifacts.

Unit–III

Model based software architectures: A Management perspective and technical perspective.

Work Flows of the process: Software process workflows, Iteration workflows.

Checkpoints of the process: Major mile stones, Minor Milestones, Periodic status assessments

Unit– IV

Iterative Process Planning: Work breakdown structures, planning guidelines, cost and schedule estimating, Iteration planning process, Pragmatic planning.

Project Organizations and Responsibilities: Line-of-Business Organizations, Project Organizations, evolution of Organizations.

Process Automation: Automation Building blocks, The Project Environment.

Unit– V

Project Control and Process instrumentation : The seven core Metrics, Management indicators, quality indicators, life cycle expectations, pragmatic Software Metrics, Metrics automation.

Tailoring the Process: Process discriminants.

Future Software Project Management: Modern Project Profiles, Next generation Software economics, modern process transitions.

Text Book:

Software Project Management, Walker Royce: Pearson Education, 2005.

Reference Books:

1. Software Project Management, Bob Hughes and Mike Cotterell: Tata McGraw-Hill Edition.
2. Software Project Management, Joel Henry, Pearson Education.
3. Software Project Management in practice, PankajJalote, Pearson Education.2005.

Mode of Evaluation:

<table>
<tr><td colspan="2">Continuous Internal Examination (CIE)</td><td>Continuous Evaluation</td><td rowspan="2">Semester End Examination (SEE)
70 Marks</td></tr>
<tr><td>Mid1
20 Marks</td><td>Mid2
20 Marks</td><td>10 Marks</td></tr>
</table>

Course Outcomes and Program Outcomes Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11	PO 12	PS O1	PS O2	PS O3
CO1	2	-	-	2	-	-	-	-	-	-	3	-	-	3	-
CO2	-	3	3	-	3	3	-	-	3	3	3	-	-	3	-
CO3	-	3	3	-	3	-	-	-	-	-	3	-	-	3	3
CO4	-	3	-	-	3	3	-	1	3	3	3	-	-	3	3
CO5	2	-	3	2	3	-	-	-	-	-	3	1	1	-	3

ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES::RAJAMPET
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III Year B.Tech., II Semester

(5G16E) DATA MINING & INTERNET OF THINGS LAB

Course Outcomes:

At the end of this course the students will be able:

- To organize different datasets with preprocessing techniques and perform associationrule mining.
- To find the accuracy of different classifier models and classify different applicants.
- To analyze the cross validation technique and construct a decision tree.
- To understand the concept of tree pruning.
- To perform clustering on different datasets.

Part - A

Credit Risk Assessment

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 dataset, 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 to classify the applicant into one of two categories, good or bad.

Sub tasks: (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 orWhy 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 Decision 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 misclassifcations 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.

Part-B

1. Demonstration of preprocessing on dataset student.arff
2. Demonstration of preprocessing on dataset labor.arff
3. Demonstration of Association Rule process on dataset contactlenses.arff using Apriori algorithm
4. Demonstration of Association Rule process on dataset test.arff using Apriori algorithm
5. Demonstration of classification rule process on dataset student.arff using j48 algorithm
6. Demonstration of classification rule process on dataset employee.arff using j48 algorithm
7. Demonstration of classification rule process on dataset employee.arff using id3 algorithm
8. Demonstration of classification rule process on dataset employee.arff using naïve bayes algorithm
9. Demonstration of clustering rule process on dataset iris.arff using simple k-means algorithm
10. Demonstration of clustering rule process on dataset student.arff using simple k-means algorithm

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: Introduction to Weka (html version) (download ppt version)
  - Download Weka
  - Weka Tutorial
  - ARFF format

Using Weka from command line

PART B: INTERNET OF THINGS LAB

Course Objectives:

- To Learn Python Programming
- To analyze the basics of Raspberry Pi
- To Create Traffic Light Scenario using Raspberry Pi and LED lights.
- To Design Applications using the concepts of Arduino Platform and Smoke Sensor Humidity Sensor
- To Design Applications using the concepts of Arduino Platform and PIR Sensor, Soil Moisture Sensor.

Course Outcomes:

After completion of the course student will be able to

- Learn Python Programming
- analyze the basics of Raspberry Pi
- Create Traffic Light Scenario using Raspberry Pi and LED lights.
- To Design Applications using the concepts of Arduino Platform and Smoke Sensor , Humidity Sensor
- To Design Applications using the concepts of Arduino Platform and PIR Sensor, Soil Moisture Sensor

1. Introduction to Python Programming
2. Demonstrate LED blinking using Raspberry Pi
3. Demonstrate Traffic Light implementation using Raspberry Pi
4. Using Arduino platform demonstrate the usage of Smoke Sensor
5. Using Arduino platform demonstrate the usage of PIR Sensor
6. Using Arduino platform demonstrate the usage of Humidity Sensor
7. Using Arduino platform demonstrate the usage of Soil Moisture Sensor

Text Books:

1. The Internet of Things Connecting Objects to the Web, HakimaChaouchi,Wiley publications,2010.(Unit I)
2. Designing the Internet of Things,Adrian McEwen, Hakim Cassimally, Wiley 2014.
3. Enterprise IoT, A Definitive Handbook by Naveen Balani.
4. 6LoWPAN: The WirelessEmbedded Internet, Zach Shelby and Carsten Bormann,Wiley publications, first edition,2009.(Unit IV)

Reference Books:

1. Internet of Things - A Hands-on Approach, ArshdeepBahga and Vijay Madisetti, Universities Press, 2015, ISBN: 9788173719547
2. Francis daCosta, “Rethinking the Internet of Things: A Scalable Approach to Connecting Everything”, 1st Edition, Apress Publications, 2013
3. Getting Started with Raspberry Pi, Matt Richardson & Shawn Wallace, O'Reilly (SPD), 2014, ISBN: 9789350239759

Mode of Evaluation:

Day to Day Evaluation	Internal Evaluation	Semester End lab Examination (SEE) 70 Marks
20 Marks	10 Marks	

Course Outcomes & Program Outcomes Mapping (PART-A):

Course Outcome s	PO 1	PO 2	P O 3	P O4	P O 5	P O 6	P O 7	PO 8	P O 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO1	-	3	3	-	3	-	-	-	-	-	1	-	3		-
CO2	3	3	3	-	3	3	-	-	-	3	-	-	3	3	-
CO3	3	3	3	1	3	3	-	-	-	3	-	-	3	3	-
CO4	3	3	3	-	3	3	-	-	-	-	1	-	-	-	-
CO5	3	3	3	-	3		3	-	-	-	-	3	3	-	-

Course Outcomes & Program Outcomes Mapping (PART-B):

	P O 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	P O 10	P O 11	P O 12	PSO 1	PSO 2	PSO 3
CO1	3	3	3	3	3	-	3	-	3	-	-	3	3	3	-
CO2	-	-	3	3	3	-	-	-	-	-	-	3	3	3	-
CO3	-	-	3	3	3	-	-	-	-	-	-	3	3	3	-
CO4	-	-	3	3	3	-	-	-	-	-	-	3	3	3	-
CO5	-	-	3	3	3	-	-	-	-	-	-	3	3	3	-

ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES::RAJAMPET
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III Year B.Tech., II Semester

(5G16F)SMART PHONE PROGRAMMING THROUGH ANDROID LAB

Course Objectives:

- To understand the fundamentals of smart phone programming and android software development tools.
- To construct and apply knowledge on how to develop User Interface for a mobile application
- Design, develop and substitute basic things on data persistence, content provider, messaging, and location based services for a mobile application.

Course Outcomes:

Upon completion of the subject, students will be:

- Able to recognize the importance of knowledge on Android programming basics and its tools.
- Able to construct the various aspects of user interfaces.
- Able to apply knowledge on displaying pictures, menus and persistent data services.
- Able to develop application on content provider and messaging services.
- Able to substitute on the fundamentals of location based services, and creating your own services.

The student is expected to be able to do the following problems, though not limited.

1. a) Create an Android application that shows Hello + name of the user and run it on an emulator.

   b) Create an application that takes the name from a text box and shows hello Message along with the name entered in text box, when the user clicks the OK button.
2. Create a screen that has input boxes for User Name, Password, and Address, Gender (radio buttons for male and female), Age (numeric), Date of Birth (Date Picket), State (Spinner) and a Submit button. On clicking the submit button, print all the data below the Submit Button. Use (a) Linear Layout (b) Relative Layout and (c) Grid Layout or Table Layout.
3. Develop an application that shows names as a list and on selecting a name it should show the details of the candidate on the next screen with a "Back" button. If the screen is rotated to landscape mode (width greater than height), then the screen should show list on left fragment and details on right fragment instead of second screen with back button. Use Fragment transactions and Rotation event listener.
4. Develop an application that uses a menu with 3 options for dialing a number, opening a website and to send an SMS. On selecting an option, the appropriate action should be invoked using intents.
5. Develop an application that inserts some notifications into Notification area and whenever a notification is inserted, it should show a toast with details of the notification.
6. a) Create an application to display images in gallery and Image Views.

   b) Create an application to display analog and digital clock.
7. a) Create a user registration application that stores the user details in a database table.

   c) Create a database and a user table where the details of login names and passwords are stored. Insert some names and passwords initially. Now the login details entered by the user should be verified with the database and an appropriate dialog should be shown to the user.
8. a) Create an admin application for the user table, which shows all records as a list and the admin can select any record for edit or modify. The results should be reflected in the table.

b) Create an application that shows all contacts of the phone along with details like name, phone number, mobile number etc.

9. Create an application that saves user information like name, age, gender etc. in shared preference and retrieves them when the program restarts.
10. Create an alarm that rings every Sunday at 8:00 AM. Modify it to use a time picker to set alarm time.
11. Develop an application that shows the current location's latitude and longitude continuously as the device is moving (tracking).
12. Create an application that shows the current location on Google maps.
13. Create an application that illustrates sending E-mail.
14. Create an application that illustrates SMS messaging.

Note:

Android Application Development with MIT App Inventor: For the first one week, the student is advised to go through the App Inventor from MIT which gives insight into the various properties of each component.

The student should pay attention to the properties of each components, which are used later in Android programming. Following are useful links:

1. http://ai2.appinventor.mit.edu
2. https://drive.google.com/file/d/0B8rTtW_91YclTWF4czdBMEpZcWs/view

Mode of Evaluation:

Day to Day Evaluation	Internal Evaluation	Semester End lab Examination (SEE) 70 Marks
20 Marks	10 Marks	

Course Outcomes versus Program Outcomes Mapping

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

ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES::RAJAMPET
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III Year B. Tech. II Semester

ADVANCED ENGLISH COMMUNCATION SKILLS LAB
(AUDIT COURSE)

RESUME PREPARATION

Structure, formats and styles – planning - defining career objective - projecting one's strengths and skills - creative self-marketing–sample resumes - cover letter.

INTERVIEW SKILLS

Concept and process - pre-interview planning – preparation - body language - answering strategies – frequently asked questions

GROUP DISCUSSION

Communicating views and opinions – discussing – intervening – agreeing and disagreeing – asking for and giving clarification - substantiating - providing solution on any given topic across a cross-section of individuals - modulation of voice and clarity - body language – case study.

ORAL PRESENTATIONS (INDIVIDUAL)

Collection of data from various sources –planning, preparation and practice – attention gathering strategies -transition – handling questions from audience.

ORAL PRESENTATIONS (TEAM)

Appropriate use of visual aids – Using PowerPoint for presentation.

READING COMPREHENSION

Reading for facts – scanning – skimming - guessing meanings from context– speed reading.

LISTENING COMPREHENSION

Listening for understanding - responding relevantly.

MINIMUM REQUIREMENTS:

Advanced English Language Communication Skills Lab is conducted at two places:

- Computer-aided Language Lab with 60 computer machines, one teacher console, LAN facility and Language Learning software for self-study.
- Communication Skills Lab with movable chairs, a discussion room, Public Address System, a Television, a DVD Player, a camcorder, an LCD Projector and a computer machine.
- Manual cum Record, prepared by Faculty Members of English of the college will be used by students.

SUGGESTED SOFTWARE:

- It's your Job published by Clarity.
- Business Writing published by Clarity.
- Active Listening published by Clarity.
- Active Reading published by Clarity.
- Software published by Globerana.
- Cambridge Advanced Learner's Dictionary.
- Oxford Advanced Learner's Dictionary.

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IV Year B.Tech., I Semester

(5G171) BIG DATA AND DATA ANALYTICS

Course Objectives:

- To impart Knowledge on Big Data storage, processing, querying and reporting.
- To study Big Data Tools to build effective distributed systems.
- To apply the tools and techniques of Big Data to improve performance, scalability and reliability of a business intelligence system.

Course Outcomes:

On successful completion of this course the students will be:

- Able to understand the basics of Big Data and its storage in Hadoop compared with other data base system.
- Able to analyze the different types of data by using map reduce and HDFS framework.
- Able to understand types and formats of map reduce and develop map reduce application.
- Able to describe the features of map reduce and understand the installation of Hadoop in cluster mode.
- Able to analyze the data with various Hadoop related projects: Pig and Hive.

Unit–I

INTRODUCTION TO BIG DATA: What is Big Data, Why Big Data Matters, Big Data Sources, Evaluation of Big Data, The nuts and bolts of Big Data, Best Practices for Big data analytics.

Meet Hadoop: Data Storage and Analysis, Comparison with Other Systems.

Unit–II

MapReduce: Analyzing the Data with UNIX Tools, Analyzing the Data with Hadoop, Scaling Out, Hadoop Streaming, Hadoop Distributed File system.

HADOOP I/O: Data Integrity, Compression, Serialization, File-Based Data Structures.

Unit–III

Developing a MapReduce Application: The Configuration API, Configuring the Development Environment, Writing a Unit Test, Running Locally on Test Data, Running on a Cluster, Tuning a Job, MapReduce Workflows.

How MapReduce Works: Anatomy of a MapReduce Job Run, Failures, Shuffle and Sort, Task Execution.

MapReduce Types and Formats: MapReduce Types, Input Formats, Output Formats.

Unit–IV

MapReduce Features: Counters, Sorting, Joins, Side Data Distribution, MapReduce Library Classes.

Setting Up a Hadoop Cluster: Cluster Specification, Cluster Setup and Installation, SSH Configuration, Hadoop Configuration, Security, Benchmarking a Hadoop Cluster.

Administering Hadoop: HDFS, Monitoring, Maintenance.

Unit–V

Related Projects: Pig, Hive

Pig: Installing and Running Pig, Comparison with Databases, Pig Latin, User defined functions, data processing operators, Pig in practice.

Hive: Installing Hive, Running Hive, Comparison with Traditional Databases, HiveQL, Tables, Querying Data, User - Defined Functions.

Text Books:

1. Tom White, *"Hadoop: The Definitive Guide,"* Oreilly and Yahoo Press, 3rd Edition, 2012.
2. Frank J. Ohlhorst, *"Big Data Analytics: Turning Big Data into Big Money,"* Wiley Publication, December 2012.

Reference Books:

1. Kevin Roebuck,*"Big Data: High-Impact Strategies - What You Need to Know: Definitions, Adoptions, Impact, Benefits, Maturity, Vendors,"* Tebbo Publisher, 2011.
2. Alex Holmes,*"Hadoop in Practice,"* Manning Publications Publisher, 2012.

Mode of evaluation:

Continuous Internal Examination (CIE)		Continuous Evaluation	Semester End Examination (SEE) 70 Marks
Mid1 20 Marks	Mid2 20 Marks	10 Marks	

Course Outcomes & Program Outcomes Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11	PO 12	PS O1	PS O2	PS O3
CO1	3	3	-	-	-	-	-	-	-	-	-	-	-	-	
CO2	-	-	3	3	3	3	3	-	-	-	-	3	3	3	
CO3	3	3	3	-	-	3	-	-	-	-	-	3	3	3	
CO4	3	-	-	-	-	-	-	-	-	-	-	-	-	-	
CO5	-	3	3	3	3	3	3	-	-	-	-	3	3	3	

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IV Year B.Tech., I Semester

(5G478)OBJECT ORIENETED ANALYSIS AND DESIGN

(Common to CSE& IT)

Course Objectives:

- Describes the Importance of object-oriented Modeling.
- Generalize the advanced classes and Object diagrams with advanced relationships
- Determining the behavioral modeling for use cases, interaction and activity diagrams.
- Analyzing the events and states of a software system.
- Designing a model with the help of different components and deployments

Course Outcomes:

After completion of the course Students is able to:

- Recite the fundamental principles of Object-Oriented designing.
- Understand the class and object diagrams for software systems.
- Identify the behavior of a system using use case and interaction diagrams.
- Sketch the states and state machines for a software system
- Analyze the system architecture.

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.

Basic Structural Modeling: Classes, Relationships, common Mechanisms, and diagrams.

Unit–II

Advanced Structural Modeling: Advanced classes, advanced relationships, Interfaces, Types and Roles, Packages

Class & Object Diagrams: Terms, concepts, modeling techniques for Class & Object Diagrams. Design class diagram for Library information system.

Unit–III

Basic Behavioral Modeling-I: Interactions, Interaction diagrams.

Basic Behavioral Modeling-II: Use cases, Use case Diagrams, Activity Diagrams. Design Use cases, Use case diagrams, Interaction diagram and Activity diagram for library system.

Unit–IV

Advanced Behavioral Modeling: Events and signals, state machines, processes and Threads, time and space, state chart diagrams. Design state machine for different objects in library system.

Unit–V

Architectural Modeling: Component, Deployment, Component diagrams and Deployment diagrams. Design & document of library system.

Text Books:

1. Grady Booch, James Rumbaugh, IvarJacobson : The Unified Modeling Language User Guide, Pearson Education.
2. Hans-Erik Eriksson, Magnus Penker, Brian Lyons, David Fado: UML 2 Toolkit, WILEY-Dreamtech India Pvt. Ltd.

Reference Books:

1. Meilir Page-Jones: Fundamentals of Object Oriented Design in UML, Pearson Education.

2. Pascal Roques: Modeling Software Systems Using UML2, WILEY- Dreamtech India Pvt. Ltd

Mode of Evaluation:

Continuous Internal Examination (CIE)		Continuous Evaluation	Semester End Examination (SEE) 70 Marks
Mid1 20 Marks	Mid2 20 Marks	10 Marks	

Course Outcomes versus Program Outcomes mapping:

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PS O1	PSO2	PSO3
CO1	3	-	-	-	3	-	-	-	3	-	-	-	3	-	-
CO2	3	-	3	-	3	-	-	-	3	-	-	-	3	3	-
CO3	-	-	3	2	3	-	-	-	3	-	-	-	-	3	-
CO4	-	-	3	2	3	-	-	-	3	-	-	-	-	3	-
CO5	-	-	3	-	-	1	-	1	-	1	-	-	-	-	1

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IV Year B.Tech., I Semester

(5G172) ENTERPRISE PROGRAMMING
(Common to CSE & IT)

Course Objectives:

- To know the working of different servers like XAMPP, WAMP and basics of PHP environment.
- To understand the basics and object-oriented fundamentals of PHP.
- To apply gained knowledge of PHP for creating applications in client/server environment using PHP.
- To analyze different web-based applications with PHP and database environment.
- To apply concepts of AJAX in web applications developed in PHP and MySQL.

Course Outcomes:

At the end of this course students will be:

- Able to run and working with different types of web servers with PHP environment.
- Able to learn the basics and object oriented concepts of PHP.
- Able to use PHP concepts in development of client/server environment application.
- Able to analyze their understanding of PHP and MySQL to create, modify, add, and delete data in a database through a web page in web application.
- Able to perceive the fundamentals of AJAX to create good, effective and customized websites using PHP & MySQL

Unit– I

INTRODUCTION TO WEB TECHNOLOGIES: Introduction to Web servers like XAMPP(Bundle Server), WAMP(Bundle Server),Handling HTTP Request and Response, installations of above servers.

INTRODUCTION TO PHP: Downloading, installing, configuring PHP, Programming in a Web environment like XAMPP and WAMPP Bundle Servers. The anatomy of a PHP Page.

Unit– II

OVERVIEW OF PHP DATA TYPES AND CONCEPTS: Variables and data types, Operators, Expressions and Statements, Strings, Arrays and Functions.

OVERVIEW OF CLASSES, OBJECTS, AND INTERFACES: Creating instances using Constructors, Controlling access to class members, Extending classes, Abstract classes and methods, using interfaces, Using class destructors, File Handling and Using Exceptions.

Unit– III

PHP ADVANCED CONCEPTS: Using Cookies, Using HTTP Headers, Using Sessions, Authenticating users, Using Environment and Configuration variables, Working with Date and Time.

CREATING AND USING FORMS: Understanding Common Form Issues, GET vs. POST, Validating form input, Working with multiple forms, and Preventing Multiple Submissions of a form.

Unit– IV

PHP AND DATABASE ACCESS: Basic Database Concepts, Connecting to a MYSQL database, Retrieving and Displaying results, Modifying, Updating and Deleting data. MVC architecture.

INTRODUCTION To AJAXs: Introducing Ajax -From CGI to Flash to DHTML, Pros and Cons of Today's Web Application Environment, Enter Ajax, Ajax Requirements, Ajax Basics-HTTP Request and Response Fundamentals, The XMLHttpRequest Object, XMLHttpRequest

Methods, XML HttpRequest Properties, Cross-Browser Usage, Sending a Request to the Server, Basic Ajax Example.

Unit–V

PHP and Ajax: Why PHP and Ajax, Client-Driven Communication, Server-Side Processing, Basic Examples, Expanding and Contracting Content, Auto-Complete, Form Validation, Tooltips, Forms :Bringing in the Ajax: GET vs. POST Passing Values, Form Validation

Text Books:

1. Jason Gilmore .Beginning PHP and MySQL, Apress Publications (Dream tech.). 3rd edition.
2. Lee Babin, Nathan A Good, Frank M.Kromann and Jon Stephens .PHP 5 Recipes A problem Solution Approach.
3. Lee BabinBeginning Ajax with PHPFrom Novice to Professional,Apress Publications (Dream tech.). 3rd edition.

Reference Books:

1. J.Lee and B.Ware .Open Source Web Development with LAMP using Linux, Apache, MySQL, Perl and PHP, (Addison Wesley) Pearson Education.
2. Julie Meloni and Matt Telles,PHP 6 Fast and Easy Web Development, CengageLearning Publications.
3. Bayross and S.Shah .PHP 5.1, I., The X Team, SPD.
4. E.Quigley .PHP and MySQL by Example, Prentice Hall(Pearson).
5. V.Vaswani .PHP Programming solutions, TMH.

Mode of evaluation:

Continuous Internal Examination (CIE)		Assignments	Semester End Examination (SEE) 70 Marks
Mid1 20 Marks	Mid2 20 Marks	10 Marks	

Course Outcomes & Program Outcomes Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO1	-	-	-	-	3	-	-	-	3	-	-	3	3	-	-
CO2	-	-	3	-	3	-	-	-	3	-	-	-	-	-	-
CO3	-	-	-	-	3	-	2	-	3	-	-	-	3	-	3
CO4	-	-	3	-	3	-	-	-	3	-	-	3	3	-	-
CO5	2	-	3	-	3	-	-	-	3	-	-	3	3	-	3

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IV Year B.Tech., I Semester

(5G173)INDUSTRIAL MANAGEMENT & ENTREPRENEURSHIP

Course Objectives:

- To understand the principles of management.
- To understand the functions of production and material management.
- To learn the concepts of financial management.
- To understand the various issues personnel management.
- To analyze the need of entrepreneur development.

Course Outcomes:

At the end of this course students will be:

- Understand the principles and practices of general management.
- Acquire knowledge on production and material management.
- Understand the various issues of financial management.
- Learn the functions of personnel management.
- Analyze the importance of entrepreneur development.

Unit–I

General management: Management definition, functions of management and principles of management. Forms of Business Organization: Salient features of Sole Proprietorship, Partnership, Joint Stock Company; Private Limited and Public Limited companies; Cooperative and Government owned companies; Merits and Demerits of above types; Marketing Management: Functions of Marketing; Concepts of Selling and Marketing- Difference; Market Research; Product pricing; Distribution channels; Marketing mix (4 Ps); Advertising and sales promotion; Product life cycle.

Unit–II

Production and Materials Management: Functions of Production planning and control; Production systems-Types; Inventory control-Relevant costs, EOQ, Deterministic single item model with static demand, ABC, VED and FSN analysis; Introduction to MRP.

Unit–III:

Financial Management: Concept of time value of money; Interest formulae; Present and Future worth amounts for different cash flow patterns; Evaluation of alternative investment proposals (Capital budgeting); Types of Capital-Fixed and Working capital; Working capital management-Factors and Principles; Depreciation- Straight line depreciation, declining balance and Sum of Years digits methods.

Unit–IV

Personnel Management: Functions of personnel management, human resource planning, recruitment, selection, placement, training and development and performance appraisal. Motivation theories, leadership styles.

Unit– V

Entrepreneur Development: Introduction, Entrepreneurial characteristics, Functions of an Entrepreneur; Factors affecting entrepreneurship, Role of communication in entrepreneurship; Entrepreneurial development-Objectives, Need of Training for enterprises; Finance for the enterprises; Product, Process and Plant Design- Product analysis and Product Design process. Steps in process design and Plant Design.

Text Books:

1. Industrial Engineering and Operations Management, S.K.Sharma, Savita Sharma and Tushar Sharma.
2. Industrial engineering and production management, Mahajan.
3. Industrial Economics, R.R.Bharatwal.

Reference Books:

1. Operations Management, Joseph G Monk.
2. Production, Planning and Control, Samuel Eilon.
3. Marketing Management, Phillip Kotler.
4. Financial Management I.M.Pandey.
5. Projects, Prasanna Chandra.
6. The Essence of Small Business, Barrow colin.
7. Small Industry Ram K Vepa.

Mode of evaluation:

Continuous Internal Examination (CIE)		Continuous Evaluation	Semester End Examination (SEE) 70 Marks
Mid1 20 Marks	Mid2 20 Marks	10 Marks	

Course Outcomes & Program Outcomes Mapping:

Course Outcomes	Program Outcomes											
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
1	3	3				2		3	3	3		
2	3	3		1		2		3		3		
3	3	3									2	
4								3	3	3		2
5	3	3	2			2	1	3	3		2	

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IV Year B.Tech., I Semester

(5G174)OPERATIONS RESEARCH

(PROFESSIONAL ELECTIVE-III)

Course Objectives:

- To learn the fundamental techniques of Operations Research and to choose a suitable OR technique to solve problem.
- To enable the students to the nature and scope of various decisionmaking situations within business contexts, understand and apply operations research techniques to industrial applications..

Course Outcomes:

- Create mathematical models of the real life situations and capable of obtaining best solution using Graphical Method, Simplex Method, Big M method and the student must be able to implement the theory of duality for simplifying the solution procedure for certain LPPs.
- Solve the special cases of LPP such as Transportation, Assignment and Job sequencing problems.
- Find optimal replacement period of a machine or group of parts.
- Choose the best strategy out of the available strategies in the competition or game.
- Understand and will apply the fundamentals of waiting lines in real life situations.
- Understand and will apply the fundamentals of inventory in real life situations.
- Apply Dynamic Programming technique to solve the complex problems by breaking them into a series of sub-problems.
- Simulate the Queuing, Inventory models.

Unit–I

Development – Definition– Characteristics and Phases – Types of operation and Research models– applications.

Linear Programming Problem Formulation – Graphical solution – Simplex method –Artificial variables techniques -Two–phase method, Big-M method – Duality Principle-Economic interpretation of duality.

Unit– II

TRANSPORTATION PROBLEM: Formulation – Optimal solution, unbalanced transportation problem –Degeneracy.

Assignment problem – Formulation – Optimal solution - Variants of Assignment Problem-Traveling Salesman problem, Job Sequencing Models.

Unit–III

REPLACEMENT: Introduction – Replacement of items that deteriorate with time – with change in money value - without change in money value – Replacement of items that fail completely, group replacement.

THEORY OF GAMES: Introduction – Minimax (maximin) – Criterion and optimal strategy – Solution of games with saddle points – Rectangular games without saddle points – 2 X 2 games – m X 2 & 2 X n games -graphical method. dominance principle.

Unit– IV

WAITING LINES: Introduction – Single Channel – Poisson arrivals – exponential service times – with infinite queue length models.

INVENTORY: Introduction – Single item – Deterministic models – Purchase inventory models with one price break and multiple price breaks – shortages are not allowed – Stochastic

models – demand may be discrete variable or continuous variable – Instantaneous production. Instantaneous demand and continuous demand and no set up cost.

Unit–V

DYNAMIC PROGRAMMING: Introduction – Bellman's Principle of optimality – Applications of dynamic programming- capital budgeting problem – shortest path problem – linear programming problem.

SIMULATION: Definition – Types of simulation models – phases of simulation– applications of simulation – Inventory and Queuing problems – Advantages and Disadvantages – Simulation Languages.

Text Books:

1. S.D.Sharma, Operations Reasearch
2. Taha, *Introduction to Operations Research*. PHI
3. Hiller &Libermann, *Introduction to Operations Research*. TMH.

Reference Books:

1. A.M. Natarajan, P.Balasubramani, A. Tamilarasi, *Operations Research.* Pearson Edu.
2. Maurice Saseini, ArhurYaspan& Lawrence Friedman, *Operations Research: Methods & Problems.*
3. R.Panneerselvam, *Operations Research.* PHI Publ.
4. Wagner, *Operations Research*. PHI Publ.
5. J.K. Sharma, *Operations Research.* Mac Milan.
6. Wayne L. Winston, *Operations Research.* Thomson Brooks/Cole.
7. Veerachari and V. Ravi Kumar, *Operations Research*. I.K. International

Mode of evaluation:

Continuous Internal Examination (CIE)		Continuous Evaluation	Semester End Examination (SEE) 70 Marks
Mid1 20 Marks	Mid2 20 Marks	10 Marks	

Mapping of Course Outcomes with Program Outcomes:

Course	**Program Outcomes**

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

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IV Year B.Tech., I Semester

(5G175)SEMANTIC WEB AND SOCIAL NETWORKS
(PROFESSIONAL ELECTIVE-III)

Course Objectives:

- To learn Web Intelligence and logic on the semantic web.
- To learn Knowledge Representation for the Semantic Web.
- To acquire knowledge on Ontology Engineering.
- To know Semantic Web Applications, Services and Technology.
- To perceive Social Network Analysis and semantic web.

Course Outcomes:

At the end of this course students will be:

- Able to learn Web Intelligence and logic on the semantic web.
- Able to understand the knowledge representation for the semantic web.
- Able to analyze the various concepts of ontology engineering.
- Able to know the different applications of semantic web.
- Able to perceive the issues of social networks

Unit–I

Web Intelligence Thinking and Intelligent Web Applications, The Information Age, The World Wide Web, Limitations of Today's Web, The Next Generation Web, Machine Intelligence, Artificial Intelligence, Ontology, Inference engines, Software Agents, Berners-Lee www, Semantic Road Map, Logic on the semantic Web.

Unit– II

Knowledge Representation for the Semantic Web Ontologies and their role in the semantic web, Ontologies Languages for the Semantic Web – Resource Description Framework(RDF) / RDF Schema, Ontology Web Language(OWL), UML, XML/XML Schema.

Unit–III

Ontology Engineering Ontology Engineering, Constructing Ontology, Ontology Development Tools, Ontology Methods, Ontology Sharing and Merging, Ontology Libraries and Ontology Mapping, Logic, Rule and Inference Engines.

Unit–IV

Semantic Web Applications, Services and Technology Semantic Web applications and services, Semantic Search, e-learning, Semantic Bioinformatics, Knowledge Base, XML Based Web Services, Creating an OWL-S Ontology for Web Services, Semantic Search Technology, Web Search Agents and Semantic Methods

Unit–V

Social Network Analysis and semantic web What is social Networks analysis, development of the social networks analysis, Electronic Sources for Network Analysis – Electronic Discussion networks, Blogs and Online Communities, Web Based Networks. Building Semantic Web Applications with social network features.

Text Books:

1. Thinking on the Web - Berners Lee, Godel and Turing, Wiley inter science, 2008
2. Social Networks and the Semantic Web, Peter Mika, Springer, 2007

Reference Books:

1. Semantic Web Technologies, Trends and Research in Ontology Based Systems, J.Davies, R.Studer, P.Warren, John Wiley & Sons.
2. Semantic Web and Semantic Web Services -Liyang Lu Chapman and Hall/CRC Publishers,(Taylor & Francis Group)
3. Information Sharing on the semantic Web - HeinerStuckenschmidt; Frank Van Harmelen, Springer Publications.
4. Programming the Semantic Web, T.Segaran, C.Evans, J.Taylor, O'Reilly, SPD.

Mode of evaluation:

Continuous Internal Examination (CIE)		Continuous Evaluation	Semester End Examination (SEE) 70 Marks
Mid1 20 Marks	Mid2 20 Marks	10 Marks	

Course Outcomes and Program Outcomes Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	-	-	-	-	-	-	-	-	3	-	-	3	3	-	-
CO2	3	-	-	-	2	-	-	-	3	-	-	3	3	-	-
CO3	-	-	-	-	-	-	-	-	3	-	-	3	-	-	-
CO4	-	-	-	-	2	-	-	-	3	3	-	3	3	-	2
CO5	3	-	-	-	-	2	2	-	-	3	-	-	3	-	-

ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES::RAJAMPET
(AN AUTONOMOUS INSTITUTION)

IV Year B.Tech., I Semester

(5G176)SERVICE ORIENTED ARCHITECTURE
(PROFESSIONAL ELECTIVE-III)

Course Objectives:

- Generalize aspects and advancements of SOA.
- Explains the modern framework for message dissemination in web.
- Understand fundamental principles of architecture &service layers.
- Compute business-oriented analysis based on design guidelines

Course Outcomes:

At the end the course students will be able to

- Gain knowledge on basic concepts of SOA, how it will differ with other architectures.
- Demonstrates advanced concepts of service composition, Orchestration and Choreography.
- Relate web service framework with respect to SOA.
- Model service candidate derived from existing business documentation.
- Interpret an SOA, in particular building distributed systems using Web service

Unit–I

Introducing SOA: Fundamental SOA, Common Characteristics of Contemporary SOA, and Common Tangible Benefits of SOA.

The Evolution of SOA: An SOA Timeline, the Continuing Evolution of SOA, the Roots of SOA.

Unit– II

Web Services and Primitive SOA: Web Services Framework, Services, Service Descriptions, Messaging.

Web Services and Contemporary SOA (Part-I): Message Exchange Patterns, Service Activity, Coordination, Atomic Transactions, Business Activities, Orchestration, and Choreography.

Unit–III

Web Services and Contemporary SOA (Part-II): Addressing, Reliable Messaging, Correlation, Policies, Metadata Exchange, Security, Notification and Evening.

Unit– IV

Principles of Service-Orientation: Service-Orientation and the Enterprise, Anatomy of Service-Oriented Architecture, Common Principles of Service-Orientation, How Service-Orientation Principles Inter-relate, Service-Orientation and Object-Orientation, Native Web Service Support for Service-Orientation Principles.

Service Layers: Service-Orientation and Contemporary SOA, Service Layer Abstraction, Application Service Layer, Business Service Layer, Orchestration Service Layer, Agnostic Services.

Unit–V

Service-Orientated Analysis: Introduction to Service-Oriented Analysis, Benefits of a Business-CentricSOA, Deriving Business Services, Service Modeling, Service Modeling Guidelines.

Service-Orientated Design: Introduction to Service-Orientated Design, WSDL-related XML Schema Language Basics, WSDL Language Basics, SOAP Language Basics, Service Interface Design Tools.

Text Book:

Service Oriented Architecture: Concepts, Technology, and Design, Thomas Erl, Pearson Education.

Reference Books:

1. SOA using Java Web Services, Mark D Hansen, Prentice Hall Publication.
2. Applied SOA, Michael Rosen & et al., Wiley Publication.
3. SOA based Enterprise Integration, Roshen, TMH Publication.
4. Service Oriented Computing, Muninder Singh & Michael Huhns, Wiley Publication.
5. Implementing SOA Using Java EE, B.V.Kumar, Prakash Narayan & Tony Ng, Pearson Education
6. XML and Web Services, Ron Schmelzer et al. Pearson Education.
7. SOA Governance, William A. Brown, Robert G. Laird, Clive Gee &TilakMitra, Pearson Education.

Mode of evaluation:

Continuous Internal Examination (CIE)		Continuous Evaluation	Semester End Examination (SEE) 70 Marks
Mid1 20 Marks	Mid2 20 Marks	10 Marks	

Course Outcomes & Program Outcomes Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO1	2						2		3		3		3	3	
CO2	2	3		3							3		3	3	
CO3		3			3				3		3		3		
CO4		3			3	1	2			3				3	3
CO5		3		3	3				3	3				3	3

ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES::RAJAMPET
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IV Year B.Tech., I Semester

(5G471) CLOUD COMPUTING
(PROFESSIONAL ELECTIVE-III)
(Common to CSE & IT)

Course Objectives:

- To learn the new computing model this enables shared resources on demand over the network.
- To understand about the pay-per-use scenarios.
- To apply the new kind of service models and deployment models.
- To analyze the virtualization technology.
- To improve cloud Storage systems and Cloud security, the risks involved in developing cloud application.

Course Outcomes

At the end of the course students should be:

- Able to define cloud computing and shared resources over the internet.
- Able to illustrate different cloud applications in cloud platforms.
- Able to make use of virtual machines and optimization of virtualization.
- Able to analyze cloud resources and choose scheduling algorithms for computing clouds.
- Able to estimate cloud Storage systems and Cloud security, the risks involved in developing cloud application

Unit–I

Introduction: Network centric computing and network centric content, Peer-to-peer systems, VCloud Computing: an old idea whose time has come, Cloud Computing delivery models &Services, Ethical issues, Cloud vulnerabilities, Challenges

Cloud Infrastructure: Amazon, Google, Azure & online services, open source private clouds. Storage diversity and vendorlock-in, inter cloud, Energy use & ecological impact of data centers, service level and compliance level agreement, Responsibility sharing, user experience, Software licensing.

Unit–II

Cloud Computing: Applications & Paradigms, Challenges, existing and new application opportunities, Architectural styles of cloud applications: single, multi, hybrid cloud site, redundant, non redundant, 3 tier, multi tier architectures, Workflows coordination of multiple activities, Coordination based on a state machine model -the Zoo Keeper, The Map Reduce programming model, Apache Hadoop, A case study: the Grep TheWeb application

Applications: Healthcare, Energy systems, transportation, manufacturing, Education, Government, mobile communication, application development.

Unit–III

Cloud Resource Virtualization: Definition, merits and demerits, types & Techniques, Layering, Virtual machine monitors, Hardware support for virtualization Case study: Xen -aVMM based on paravirtualization, Optimization of network virtualization in Xen 2.0, vBlades-paravirtualization targeting a x86-64 Itanium processor, A performance comparison of virtual machines, The darker side of virtualization, Software fault isolation.

Unit–IV

Cloud Resource Management: Policies and mechanisms for resourcemanagement, Stability of a twolevelresource allocation architecture, Feedback control based on dynamic thresholds,Coordination of specialized autonomic performance managers,

Storage systems: Evolution, Storage models, file systems, databases, General parallelFile system, GFS, Hadoop, Locks & Chubby, TPS, NOSQL, BigTable.

Unit–V

Cloud security: Risks, Security, privacy, Trust. Security of OS,VM, VMM, shared image, management OS.

Cloud Application Development: Amazon Web services, EC2 Instances, connecting clouds, Security rules, Launch and EC2 Linux instances.

Text Books:

1. Cloud Computing Theory and Practice – DAN C. Marinescu – ELSEVIER
2. Cloud Computing : A hands on Approach BaghaMadisetti

Reference Books:

1. Distributed and Cloud Computing, From Parallel Processing to the Internet of Things, Kai Hwang, Jack Dongarra, Geoffrey Fox. MK Publishers.
2. Cloud Computing: A Practical Approach, Anthony T. Velte, Toby J. Velte, Robert Elsenpeter, McGraw Fill, 2010

Mode of evaluation:

Continuous Internal Examination (CIE)		Continuous Evaluation	Semester End Examination (SEE) 70 Marks
Mid1 20 Marks	Mid2 20 Marks	10 Marks	

.

Course Outcomes & Program Outcomes Mapping:

	PO 1	P O 2	P O 3	PO 4	P O 5	P O 6	P O 7	P O 8	P O 9	PO 10	PO11	PO12	PSO1	PSO2	PSO3
Co1	3	2	3	-	3	-	-	-	3	3	3	3	3	-	3
Co2	3		3	-	-	-	3	-	-	-	3	-	3	-	3
Co3	3	3	3	-	3	3	3	-	2	-	-	3	3	-	3
Co4	3	-	-	-	3	-	3	-	3	2	3	-	3	-	3
Co5	3	2	3	-	-	3	-	-	2	-	-	2	3	-	3

ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES::RAJAMPET
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IV Year B.Tech., I Semester

(5G179)BIG DATA & CASE TOOLS LAB

Course Objectives:

- To understand Big Data storage, processing and study Big Data Tools to build effective distributed systems.
- To apply the tools and techniques of Big Data to improve performance, scalability and reliability of a business intelligence system.
- To apply the tools and techniques of CASE tools to model object oriented software systems.

Course Outcomes:

On successful completion of this course the students will be:

- Able to understand installation process of Hadoop in different modes.
- Able to understand Big Data storage, processing, querying and reporting.
- Able to apply Big Data Technologies to solve real-world problems such as stock market, sentiments analysis and massively scalable architectures.
- Able to understand various Big Data tools: Pig and Hive.
- Able to design object oriented software systems using CASE tools.

PART –A:

BIG DATA LAB

1. Practice Hadoop installation, HadoopCluster Configuration,Name node Safe mode, Secondary Name node, Hadoop File system Shell, Java API, Configuration, Reading Data and Writing Data in Hadoop Distributed File System.
2. Practice on MapReduce to Implement first MapReduce Job, Running MapReduce Locally, Running MapReduce on Cluster, Packaging MapReduce Jobs, MapReduce CLASSPATH, Submitting Jobs, Logs and Web UI, Input and Output Formats, Implement a Streaming Job, Contrast with Java Code and Create counts in Streaming application.
3. Practice on Pig Programming with Execution Modes, Installation, Pig Latin Basics, Developing Pig Script: Most Occurred Start Letter, Resources, Joining data-sets and User Defined Functions (UDF).
4. Practice on Hive Installation, Table Creation and Deletion, Loading Data into Hive, Partitioning, Bucketing and Joins.
5. **Project 1: Domain: Insurance:** A US-based insurance provider has decided to launch a new medical insurance program targeting various customers. To help this customer understand the current realities and the market better, you have to perform a series of data analytics tasks using Hadoop. The customer has provided pointers to the data set you can use.
6. **Project 2: Domain: Retail:** AnIndian-based online retailer wants to launch a new product category and wants to understand the potential growth areas and areas that have stagnated over a period of time. It wants to use this information to ensure its product focus is aligned to opportunities that will grow over the next 5–7 years. The customer has also provided pointers to the data set you can use.
7. **Project 3: Domain:** Social Media: As part of a recruiting exercise of the biggest social media company, they asked candidates to analyze data set from Stack Exchange. We will be using similar data set to arrive at certain key insights.
8. **Project 4:Domain:** Education: Your Company has recently bagged a large assignment from a US-based customer that is into training and development. The larger outcome deals with launching a suite of educational and skill development programs to consumers across the globe. As part of the project, the customer wants your company to analyze a - series of data sets to arrive at a prudent product mix, product positioning, and marketing strategy that will be applicable for at least a decade.

PART-B :

(CASE Tools lab)

1. The student should take up the case study of Unified Library application which is mentioned in the theory, and Model it in different views i.e. Use case view, logical view, component view, Deployment view, Database design, forward and Reverse Engineering, and Generation of documentation of the project.
2. Student has to take up another case study of his/her own interest and do the same whatever mentioned in first problem. Some of the ideas regarding case studies are given in reference books which were mentioned in theory syllabus can be referred for some idea.

Mode of evaluation:

Day to Day Evaluation	Internal lab Evaluation	Semester End lab Examination (SEE) 70 Marks
20 Marks	10 Marks	

Course Outcomes & Program Outcomes Mapping:

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO 1	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-
CO 2	3	3	3	3	3	-	-	-	-	-	-	-	-	-	-
CO 3	3	3	3	3	3	3	3	-	-	-	-	2	3	3	-
CO 4	3	3	3	3	3	3	3	-	-	-	-	-	3	3	-
CO 5	3	3	3	-	3	-	-	-	-	-	-	-	-	3	-

ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES::RAJAMPET
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IV Year B.Tech., I Semester

(5G17A)ENTERPRISEPROGRAMMING LAB

Course Objective:

- To know the working of different servers like XAMPP, WAMP and basics of PHP environment
- **To** Introduce the basic concepts and techniques in building dynamic web pages
- To analyze different web based applications with PHP and database environment.
- To create a fully functional website with MVC architecture.

Course Outcomes:

At the end of this course students will be:

- Able to run and working with different types of web servers with PHP environment.
- Able to learn the basics and object oriented concepts of PHP.
- Able to use PHP concepts in development of client/server environment application.
- Able to analyze their understanding of PHP and MySQL to create, modify, add, and delete data in a database through a web page in web application.
- Able to perceive the fundamentals of AJAX to create good, effective and customized websites using PHP & MySQL

Hardware and Software required:

A working computer system with either Windows or Linux

A web browser either IE or firefox

Apache web server or xampp and wamp bundle servers

A database either Mysql or Oracle

Week1:

1) Installation of apache webserver
2) Installation of XAMPP Bundle Server
3) Installation of WAMP Bundle Server

Week2:

Design the following web pages using PHP required for an online book store web site.

1) **HOME PAGE:**

The home page must contain three **frames**.

Top frame: Logo and the college name and links to Home page, Login page, Registration page, Catalogue page and Cart page (the description of these pages will be given below).

Left frame: At least four links for navigation, which will display the catalogue of respective links.

For e.g.: When you click the link **"CSE"** the catalogue for **CSE** Books should be displayed in the Right frame.

Right frame: The *pages to the links in the left frame must be loaded here*. Initially this page contains description of the web site.

<table>
<tr><td>Logo</td><td colspan="4">Web Site Name</td></tr>
<tr><td>Home</td><td>Login</td><td>Registration</td><td>Catalogue</td><td>Cart</td></tr>
<tr><td>CSE
ECE
EEE
CIVIL</td><td colspan="4">Description of the Web Site</td></tr>
</table>

Fig 1.1

2) LOGIN PAGE:

This page looks like below:

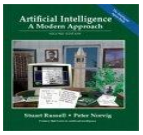
Logo	Web Site Name			
Home	Login	Registration	Catalogue	Cart
CSE ECE EEE CIVIL	Login : Password: Submit Reset			

3) CATOLOGUE PAGE:

The catalogue page should contain the details of all the books available in the web site in a table.

The details should contain the following:

1. Snap shot of Cover Page.
2. Author Name.
3. Publisher.
4. Price.
5. Add to cart button.

Logo	Web Site Name			
Home	Login	Registration	Catalogue	Cart
CSE		Book : XML Bible Author : Winston Publication : Wiely	$ 40.5	Add to cart
ECE EEE		Book : AI Author : S.Russel Publication : Princeton hall	$ 63	Add to cart
CIVIL		Book : Java 2 Author : Watson Publication : BPB publications	$ 35.5	Add to cart
		Book : HTML in 24 hours Author : Sam Peter Publication : Sam publication	$ 50	Add to cart

Note: Week 3 contains the remaining pages and their description.

Week 3:

4) CART PAGE:

The cart page contains the details about the books which are added to the cart.

The cart page should look like this:

Logo	Web Site Name			
Home	Login	Registration	Catalogue	Cart
CSE ECE EEE CIVIL	**Book name** Java 2 XML bible **Total amount**	**Price** $35.5 $40.5	**Quantity** 2 1	**Amount** $70 $40.5 $130.5

5) REGISTRATION PAGE:

Create a "*registration form* "with the following fields

1) Name (Text field)
2) Password (password field)
3) E-mail id (text field)
4) Phone number (text field)
5) Sex (radio button)
6) Date of birth (3 select boxes)
7) Languages known (check boxes – English, Telugu, Hindi, Tamil)
8) Address (text area)

WEEK 4:

VALIDATION:

Write *PHP Script* to validate the following fields of the above registration page.

1. Name (Name should contains alphabets and the length should not be less than 6 characters).
2. Password (Password should not be less than 6 characters length).
3. E-mail id (should not contain any invalid and must follow the standard pattern name@domain.com)
4. Phone number (Phone number should contain 10 digits only).

Note : You can also validate the login page with these parameters.

Week 5:

Design a web page using **CSS (C**ascading **S**tyle **S**heets**)** which includes the following:

1) Use different font, styles:

In the style definition you define how each selector should work (font, color etc.).

Then, in the body of your pages, you refer to these selectors to activate the styles.

For example:

```
<HTML>
<HEAD>
<style type="text/css">
B.headline {color:red, font-size:22px, font-family:arial, text-decoration:underline}
</style>
</HEAD>
<BODY>
<b>This is normal bold</b><br>
Selector {cursor:value}
For example:
<html>
<head>
```

```
<style type="text/css">
.xlink {cursor:crosshair}
.hlink{cursor:help}
</style>
</head>
<body>
<b>
<a href="mypage.htm" class="xlink">CROSS LINK</a>
<br>
<a href="mypage.htm" class="hlink">HELP LINK</a>
</b>
</body>
</html>
<b class="headline">This is headline style bold</b>
</BODY>
</HTML>
```

2) Set a background image for both the page and single elements on the page.

You can define the background image for the page like this:

```
BODY {background-image:url(myimage.gif),}
```

3) Control the repetition of the image with the background-repeat property.

As background-repeat: repeat

Tiles the image until the entire page is filled, just like an ordinary background image in plain HTML.

4) Define styles for links as

A:link
A:visited
A:active
A:hover

Example:

```
<style type="text/css">
A:link {text-decoration: none}
A:visited {text-decoration: none}
A:active {text-decoration: none}
A:hover {text-decoration: underline, color: red,}
</style>
```

5) Work with layers:

For example:

LAYER 1 ON TOP:

```
<div style="position:relative, font-size:50px, z-index:2,">LAYER 1</div> <div
style="position:relative, top:-50, left:5, color:red, font-size:80px, z-
index:1">LAYER 2</div>
```

LAYER 2 ON TOP:

```
<div style="position:relative, font-size:50px, z-index:3,">LAYER 1</div>
<div style="position:relative, top:-50, left:5, color:red, font-size:80px, z- index:4">LAYER
2</div>
```

6) Add a customized cursor:

Selector{cursor:value}

For example:

```
<html>
<head>
<style type="text/css">
.xlink {cursor:crosshair}
.hlink{cursor:help}
</style>
</head>
<body>
<b>
<a href="mypage.htm" class="xlink">CROSS LINK</a>
<br>
<a href="mypage.htm" class="hlink">HELP LINK</a>
</b>
</body>
</html>
```

Week6:

User Authentication: Assume four users user1,user2,user3 and user4 having the passwords pwd1,pwd2,pwd3 and pwd4 respectively. Write a PHP for doing the following.

1. Create a Cookie and add these four user id's and passwords to this Cookie.
2. Read the user id and passwords entered in the Login form (week1) and authenticate with the values (user id and passwords) available in the cookies.

   If he is a valid user(i.e., user-name and password match) you should welcome him by name(user-name) else you should display "You are not an authenticated user''

Use init-parameters to do this.

Week 7:

Install a database (Mysql or Oracle).

Create a table which should contain at least the following fields: name, password, email-id, phone number (these should hold the data from the registration form).

Week 8:

Write a PHP program to connect to that database and extract data from the tables and display them. Experiment with various SQL queries.

Insert the details of the users who register with the web site, whenever a new user clicks the submit button in the registration page (week2).

Week9:

Write a PHP which does the following job:

Insert the details of the 3 or 4 users who register with the web site (week9) by using registration form. Authenticate the user when he submits the login form using the user name and password from the database (similar to week8 instead of cookies)

Week10:

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

Week11& Week 12:

HTTP is a stateless protocol. Session is required to maintain the state.

The user may add some items to cart from the catalogue page. He can check the cart page for the selected items. He may visit the catalogue again and select some more items. Here our interest is the selected items should be added to the old cart rather than a new cart. Multiple users can do the same thing at a time (i.e., from different systems in the LAN using the ip-address instead of localhost). This can be achieved through the use of sessions. Every user will have his own session which will be created after his successful login to the website. When the user logs out his session should get invalidated (by using the method session.invalidate()).Modify your catalogue and cart PHP pages to achieve the above mentioned functionality using sessions.

Week13 & Week14:

Introduce Simple AJAXs Script where ever it possible in the above website designed by PHP.

Mode of evaluation:

Day to Day Evaluation	Internal lab Evaluation	Semester End lab Examination (SEE) 70 Marks
20 Marks	10 Marks	

Course Outcomes & Program Outcomes Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO1	-	3	-	-	3	-	-	-	3	-	3	3	3	-	-
CO2	-	3	3	-	3	-	-	-	3	-	3	3	3	-	-
CO3	1	3	3	-	3	-	-	-	3	-	3	3	3	-	1
CO4	-	3	3	-	3	-	-	-	3	-	3	3	3	-	-
CO5	-	3	3	-	3	-	-	-	3	-	3	3	3	-	-

ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES::RAJAMPET
(AN AUTONOMOUS INSTITUTION)

IV Year B. Tech. II Semester

(5G679)DISASTER MANAGEMENT
(OPEN ELECTIVE)

Course Objectives:

- To make the students convergent with various disasters and its impacts, risk reduction methods.

Course Outcomes:

- The students will learn basic concepts of various disasters.
- The students must learn various classification of disasters hazard and vulnerability profile of India.
- The students will learn impacts, global and national disaster trends.
- The students will learn disaster management cycle and its phases and DRR programmers in India and activities of national disaster management academy.
- The students should be able to analyze factors affecting vulnerability of developmental projects and environmental modifications for sustainable development.

Unit-I

INTRODUCTION- Concepts and definitions: disaster, hazard, vulnerability, risk, capacity, impact, prevention, mitigation).

Unit-II

DISASTERS- Disasters classification; natural disasters (floods, draught, cyclones, volcanoes, earthquakes, tsunami, landslides, coastal erosion, soil erosion, forest fires etc.); manmade disasters (industrial pollution, artificial flooding in urban areas, nuclear radiation, chemical spills etc); hazard and vulnerability profile of India, mountain and coastal areas, ecological fragility.

Unit-III

DISASTER IMPACTS- Disaster impacts (environmental, physical, social, ecological, economical, political, etc.); health, psycho-social issues; demographic aspects (gender, age, special needs); hazard locations; global and national disaster trends; climate-change and urban disasters.

Unit-IV

DISASTER RISK REDUCTION (DRR)- Disaster management cycle–its phases; prevention, mitigation, preparedness, relief and recovery; structural and non-structural measures; risk analysis, vulnerability and capacity assessment; early warning systems, Post-disaster environmental response (water, sanitation, food safety, waste management, disease control); Roles and responsibilities of government, community, local institutions, NGOs and other stakeholders; Policies and legislation for disaster risk reduction, DRR programmes in India and the activities of National Disaster Management Authority.

Unit-V

Disasters, Environment and Development- Factors affecting vulnerability such as impact of developmental projects and environmental modifications (including of dams, land-use changes, urbanization etc.), sustainable and environmental-friendly recovery; reconstruction and development methods.

Text Books/Reference Books:

1. http://ndma.gov.in/ (Home page of National Disaster Management Authority).
2. http://www.ndmindia.nic.in/ (National Disaster management in India, Ministry of Home Affairs).
3. Pradeep Sahni, 2004, Disaster Risk Reduction in South Asia, Prentice Hall.
4. Singh B.K., 2008, Handbook of Disaster Management: techniques & Guidelines, Rajat Publication.
5. Ghosh G.K., 2006, Disaster Management, APH Publishing Corporation.

Mode of evaluation:

Continuous Internal Examination (CIE)		Continuous Evaluation	Semester End Examination (SEE) 70 Marks
Mid1 20 Marks	Mid2 20 Marks	10 Marks	

Course Outcomes & Program Outcomes Mapping:

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

ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES::RAJAMPET (AN AUTONOMOUS INSTITUTION)

IV Year B.Tech., II Semester

(5G27C)SYSTEM MODELLING & SIMULATION

(OPEN ELECTIVE)

Course Objectives:

The course aims to provide the student with the ability

- To understand the basic system concepts and definitions of system.
- Techniques to model and to simulate various systems.
- To analyze a system and to make use of the information to improve theperformance

Course Outcomes:

- Define basic concepts in Modeling and Simulation.
- Understand the fundamental logic, structure, components and management of simulation modeling& demonstrate knowledge of how to use arena
- Classify various simulation models and give practical examples for each category
- Generate and test random number variates and apply them to develop simulation models
- Analyze output data produced by a model and test validity of the model Perform statistical analysis of output from terminating simulation

Unit–I

Basic Simulation Modeling, Systems, Models and Simulation, Discrete Event Simulation, Simulation of Single Server Queuing System, Simulation of Inventory System, Alternative approach to Modeling and Simulation.

Unit–II

SIMULATION SOFTWARE: Comparison of Simulation Packages with Programming Languages, Classification of Software, Desirable Software Features, General Purpose Simulation Packages – Arena, Extend and Others, Object Oriented Simulation, Examples of Application Oriented Simulation Packages.

Unit–III

BUILDING SIMULATION MODELS: Guidelines for Determining Levels of Model Detail, Techniques for Increasing Model Validity and Credibility,**Modeling Time Driven Systems:** Modeling Input Signals, Delays, System Integration, Linear Systems, Motion Control Models, Numerical Experimentation.

Unit–IV

EXOGENOUS SIGNALS AND EVENTS: Disturbance Signals, State Machines, Petri Nets & Analysis, System Encapsulation,

MARKOV Process: Probabilistic Systems, Discrete Time Markov Processes, Random Walks, Poisson Processes, the Exponential Distribution, Simulating a Poison Process, Continuous- Time Markov Processes.

Unit–V

EVENT DRIVEN MODELS AND SYSTEM OPTIMIZATION: Simulation Diagrams, Queuing Theory, Simulating Queuing Systems, Types of Queues, Multiple Servers, System Identification, Searches, Alpha/Beta Trackers, Multidimensional Optimization, Modeling and Simulation Mythology.

TEXT BOOKS:

1. System Modeling & Simulation, an Introduction – Frank L. Severance, John Wiley & Sons, 2001.
2. Simulation Modeling and Analysis – Averill M. Law, W. David Kelton, TMH, 3rd Edition, 2003.

Reference Book:

Systems Simulation – Geoffrey Gordon, PHI, 1978.

Mode of evaluation:

Continuous Internal Examination (CIE)		Continuous Evaluation	Semester End Examination (SEE) 70 Marks
Mid1 20 Marks	Mid2 20 Marks	10 Marks	

ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES::RAJAMPET
(AN AUTONOMOUS INSTITUTION)

IV Year B. Tech. II Semester

(5G57D) TOTAL QUALITY MANAGEMENT
(OPEN ELECTIVE)

Course Objectives:

The course aims to provide the student with the ability

- To demonstrate knowledge of quality management principles, techniques and philosophies.
- To apply statistical process control techniques to improve the quality.
- To demonstrate knowledge of TQM tools for industries.
- To apply appropriate techniques for reliability assessment.
- To demonstrate knowledge of advanced techniques for reliability engineering.

Course Outcomes:

- Understand the concept of quality management principles, techniques and philosophies.
- Understand how to apply statistical process control techniques to improve the quality
- Can able to demonstrate knowledge of TQM tools for industries.
- Able to apply appropriate techniques for reliability assessment.
- Understand the concept of advanced techniques for reliability engineering

Unit-I

INTRODUCTION: Definition of Quality, Historical Review, Principles of TQM, Leadership – Concepts, Role of Senior Management, Quality Council, Strategic Planning, Deming Philosophy, Continuous Process Improvement – Juran Trilogy, PDSA Cycle, 5S, Kaizen

Unit-II

STATISTICAL PROCESS CONTROL (SPC) : The seven tools of quality, Statistical Fundamentals, Population and Sample, Normal Curve, Control Charts for variables and attributes, Process capability, Concept of six sigma, New seven Management tools.

Unit-III

TQM TOOLS AND QUALITY SYSTEMS : Quality Function Deployment (QFD) – House of Quality, QFD Process, Benefits, Taguchi Quality Loss Function, Total Productive Maintenance (TPM) – Concept, Improvement Needs, Need for ISO 9000 and Other Quality Systems, ISO 9000:2000 Quality System – Elements, Implementation of Quality System, Quality Auditing

Unit-IV

INTRODUCTION TO RELIABILITY : Importance of reliability, performance cost and reliability, quality and safety, system configuration with examples, stochastic processes, bathtub concept, MTBF, MTTR, hazard rate, failure rate, probability and sampling, cumulative probability distribution function, data and distributions.

Unit-V

RELIABILITY IN DESIGN AND LIFE CYCLE COSTING : Survival rate, bath-tub curve analysis of characteristics of failure regimes, design synthesis, reliability effort function, safety margin, allocation of reliabilities by AGREE, ARINC, proportional distribution of unreliability, heuristic method, mean and median methods.

Text Books :

1. Joel E. Rose, *Total Quality Management*, 3rd Edition, Kogan Page Ltd., USA 1999

2. Srinath, L. S., *Reliability Engineering*, Affiliated East West Press, New Delhi 2005

Reference Books :

1. James R.Evans& William M.Lidsay, "The Management and Control of Quality", (5th Edition), South-Western (Thomson Learning), 2002 (ISBN 0-324-06680-5).
2. Feigenbaum.A.V. "Total Quality Management", McGraw Hill, 1991.
3. Zeiri. "Total Quality Management for Engineers", Wood Head Publishers, 1991.
4. E. E. Lewis, "Introduction to Reliability Engineering", John Wiley & Sons.

Mode of evaluation:

Continuous Internal Examination (CIE)		Continuous Evaluation	Semester End Examination (SEE) 70 Marks
Mid1 20 Marks	Mid2 20 Marks	10 Marks	

Course Outcomes & Program Outcomes Mapping:

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

ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES::RAJAMPET
(AN AUTONOMOUS INSTITUTION)

IV Year B. Tech. II Semester

(5G57E) INTEGRATED PRODUCT DEVELOPMENT
(OPEN ELECTIVE)

Course Objectives:

The course aims to provide the student with the ability

- To understand the various society inputs required to develop the product and methodology to be followed to develop the product.
- To understand the various requirements for the product system design, modeling and optimization of the total product system.
- To know the various activities involved in the Design and Testing of a Product and its components.
- To understand the usage of Rapid prototype technology to develop the prototypes of components, assembling of components, manufacturing of components, testing the product as per the test standards and certification from various approval agencies.
- To know the various activities involved in the productmaintenance, estimation of product life, Intellectual Property Rights and configuration of management.

Course Outcomes:

- Learn the various society inputs required to develop the product and methodology to be followed to develop the product.
- Understand the various requirements for the product system design, modeling and optimization of the total product system.
- Learn the various activities involved in the Design and Testing of a Product and its components.
- Learn the usage of Rapid prototype technology to develop the prototypes of components, assembling of components, manufacturing of components, testing the product as per the test standards and certification from various approval agencies.
- Know the various activities involved in the product maintenance, estimation of product life, Intellectual Property Rights and configuration of management.

Unit-I

FUNDAMENTALS OF PRODUCT DEVELOPMENT Global Trends Analysis and Product decision: Types of various trends affecting product decision - Social Trends- Technical Trends- Economical Trends- Environmental Trends- Political/ Policy Trends- PESTLE Analysis. Introduction to Product Development Methodologies and Management: Overview of Products and Services- Types of Product Development- Overview of Product Development methodologies - Product Life Cycle - Product Development Planning and Management .

Unit-II

REQUIREMENTS AND SYSTEM DESIGN Requirement Engineering: Types of Requirements- Requirement Engineering- Analysis -Traceability Matrix and Analysis- Requirement Management. System Design & Modeling: Introduction to System Modeling- introduction to System Optimization- System Specification-Sub-System Design- Interface Design.

Unit-III

DESIGN AND TESTING Conceptualization -Industrial Design and User Interface Design- Introduction to Concept generation Techniques-Concept Screening & Evaluation- Concept Design- S/W Architecture- Hardware Schematics and simulation-Detailed Design:

Component Design and Verification- High Level Design/Low Level Design of S/W Programs- S/W Testing-Hardware Schematic- Component design- Layout and Hardware Testing.

Unit-IV

IMPLEMENTATION & INTEGRATION Prototyping: Types of Prototypes -Introduction to Rapid Prototyping and Rapid Manufacturing. System Integration- Testing- Certification and Documentation: Introduction to Manufacturing /Purchase and Assembly of Systems- Integration of Mechanical, Embedded and S/W systems- Introduction to Product verification and validation processes - Product Testing standards, Certification and Documentation.

Unit-V

SUSTENANCE ENGINEERING AND BUSINESS DYNAMICS Sustenance - Maintenance and Repair- Enhancements Product End of Life (EoL): Obsolescence Management-Configuration Management- EoL Disposal.

The Industry - Engineering Services Industry overview- Product development in Industry versus Academia The IPD Essentials- Introduction to vertical specific product development processes- Product development Trade-offs- Intellectual Property Rights and Confidentiality- Security and configuration management

Text Books:

1. NASSCOM student Handbook "Foundation Skills in Integrated Product Development".
2. Anita Goyal, Karl T Ulrich, Steven D Eppinger, “Product Design and Development”, 4th Edition, 2009, Tata McGraw-Hill Education, ISBN-10-007-14679-9

Reference Books:

1. George E.Dieter, Linda C.Schmidt, “Engineering Design”, McGraw-Hill International Edition, 4th Edition, 2009, ISBN 978-007-127189-9
2. Kevin Otto, Kristin Wood, “Product Design”, Indian Reprint 2004, Pearson Education,ISBN. 9788177588217
3. Yousef Haik, T. M. M. Shahin, “Engineering Design Process”, 2nd Edition Reprint, Cengage Learning, 2010, ISBN 0495668141
4. Clive L.Dym, Patrick Little, “Engineering Design: A Project-based Introduction”, 3rd Edition, John Wiley & Sons, 2009, ISBN 978-0-470-22596-7
5. Product Design Techniques in Reverse Engineering and New Product Development, KEVIN OTTO & KRISTIN WOOD, Pearson Education (LPE), 2001.
6. The Management and control of Quality-6th edition-James R. Evens, William M Lindsay Pub:son south-western(www.swlearning.com)

Mode of evaluation:

Continuous Internal Examination (CIE)		Continuous Evaluation	Semester End Examination (SEE) 70 Marks
Mid1 20 Marks	Mid2 20 Marks	10 Marks	

Course Outcomes & Program Outcomes Mapping:

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

ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES::RAJAMPET
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IV Year B. Tech. II Semester

(5G377) NANOTECHNOLOGY AND APPLICATIONS
(OPEN ELECTIVE)

Course Objectives:

The course aims to provide the student with the ability

- To learn the fundamentals of Nano materials and technology.
- To understand the applications and limitation of Nano Technology.

Course Outcomes:

Upon completion of the course, students can

- Learn the basics of Nano Materials and Nano Scale
- Knows the fundamentals of Quantum Mechanics.
- Understands the basics of different Nano Materials.

Unit-I

INTRODUCTION: Introduction to nanotechnology and materials, Nano materials, Introduction to nano-sizes and properties comparison with the bulk materials, Different shapes and sizes and morphology.

FABRICATION OF NANO MATERIALS: Top Down Approach Grinding, Planetory milling and Comparison of particles, Bottom Up Approach, Wet Chemical Synthesis Methods, Micro emulsion Approach, Colloidal Nano particles Production, Sol Gel Methods, Sono chemical Approach, Microwave and Atomization, Gas phase Production Methods : Chemical Vapour Depositions.

Unit-II

KINETICS AT NANOSCALE: Nucleation and growth of particles, Issues of Aggregation of Particles, Oswald Ripening, Stearic hindrance, Layers of surface charges, Zeta Potential and pH.

Carbon Nano materials: Synthesis of carbon bucky-balls, List of stable carbon allotropes extended, fullerenes, metallo fullerenes, solid C60, bucky onions, nano tubes, nano cones.

Unit-III

QUANTUM MECHANICS: Quantum dots and its Importance, Pauli exclusion principle, Schrödinger's equation, Application of quantum Dots: quantum well, wire, dot, characteristics of quantum dots, Synthesis of quantum dots Semi-conductor quantum dots

Unit-IV

NANOMATERIALS CHARACTERIZATION: Fractionation principles of Particle size measurements, Particle size and its distribution, XRD, Zeta potential, Electronic band structure Electron statistics Application:

Unit-V

NANOBIOLOGY: Biological synthesis of nano particles and applications in drug delivery, Nano containers and Responsive Release of active agents, Layer by Layer assembly for nano spheres, Safety and health Issues of nano materials, Environmental Impacts, Case Study for Environmental and Societal Impacts.

Text Books:

1. Kulkarni Sulabha K, Nanotechnology: Principles and Practices, Capital Publishing Company, 2007
2. Stuart M. Lindsay, Introduction to Nanoscience, Oxford University Press, 2009.
3. Robert Kelsall, Ian Hamley, Mark Geoghegan, Nanoscale Science and Technology, John Wiley & Sons, 2005.

4. Gabor L. Hornyak , H.F. Tibbals , Joydeep Dutta , John J. Moore Introduction to Nanoscience and Nanotechnology CRC Press
5. Davies, J.H. 'The Physics of Low Dimensional Semiconductors: An Introduction', Cambridge University Press, 1998

Mode of evaluation:

Continuous Internal Examination (CIE)		Continuous Evaluation	Semester End Examination (SEE) 70 Marks
Mid1 20 Marks	Mid2 20 Marks	10 Marks	

Course Outcomes & Program Outcomes Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11	PO12	PSO 1	PSO 2	PSO3
CO1	1	1	2	2	3	2	2	2	2	3	3	2	2	2	1
CO2	2	2	3	2	3	2	2	2	2	3	2	2	3	2	1
CO3	1	2	3	3	3	2	2	2	2	1	3	2	3	2	1

ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES::RAJAMPET
(AN AUTONOMOUS INSTITUTION)

IV Year B. Tech. II Semester

(5G378)MEDICAL INSTRUMENTATION
(OPEN ELECTIVE)

Course Objectives:

The course aims to provide the student with the ability

- To learn the fundamentals of Electroneurogram and Blood Pressure.
- To understand the applications of Blood flow measurement and Pulse Oximeter.

Course Outcomes:

Upon completion of the course, students can

- Learn the basics of Human being Bio potentials.
- Know the fundamentals of Blood flow and volume measurement.

Unit-I

GENERAL INTRODUCTION: The cell, body fluids, Musculoskeletal system, respiratory system, gastrointestinal system, Nervous system, endocrine system and circulatory system. Origin of Bio potentials: electrical activity of Excitable cells: the resting state, The active state, Volume conductor fields, Functional organization of the peripheral nervous system: Reflex are & Junctional transmission.

Unit-II

THE ELECTRONEUROGRAM (ENG): The H-Reflex, The Electromyogram (EMG), The Electrocardiogram (ECG), heart and the circulatory system, Electro conduction system of the heart and heart problems, ECG waveform and Physical significance of its wave features, Electrical behavior of cardiac cells, The standard lead system, The ECG preamplifier, DC ECG Amplier, Defibrillator protection circuit, Electro surgery Unit filtering, Functional blocks of ECG system, Multichannel physiological monitoring system, Common problems encountered and remedial techniques.

Unit-III

BLOOD PRESSURE: indirect measurement of blood pressure, korotkoff sounds, auscultatory method using sphygmo manometer, Oscillometric and ultrasonic non invasive pressure measurement, Direct measurement of blood pressure H2O manometers, electronic manometry, Pressure transducers,. Pressure amplifier designs, Systolic, diastolic mean detector circuits

Unit-IV

BLOOD FLOW AND VOLUME MEASUREMENT: indicator dilution methods, Transit time flow meter, DC flow meter, Electromagnetic flow meter AC electromagnetic flow meter, Quadrature suppression flow meter, Ultrasonic flow meter, Continuous-wave Doppler flow meter, Electric impedance plethysmography, chamber plethysmography, Photo plethysmography.

Unit-V

PULSE OXIMETR: Principles of Operation, Absorption Spectrum, Sensor design, Pulse oximeter, Therapeutic and Prosthetic Devices. Cardiac Pacemakers: Lead wires and electrodes, Synchronous Pacemakers, rate responsive pacemaking, Defibrillators, cardioverters, Electrosurgical-unit, Therapeutic applications of laser, Lithotripsy Haemodialysis.

TEXT BOOKS:

1. John G Webster, Medical Instrumentation: Application and Design , John Wiley,3rd Ed. 2012.
2. Joseph J. Carr & John M. Brown , Introduction to biomedical Equipment Technology, 4th Ed., Prentice Hall India, 2001

Mode of evaluation:

Continuous Internal Examination (CIE)		Continuous Evaluation	Semester End Examination (SEE) 70 Marks
Mid1 20 Marks	Mid2 20 Marks	10 Marks	

Course Outcomes & Program Outcomes Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO1	2	2	2	2	3	2						2	2	3	
CO2	2	2	2	2	3	2						2	2	3	

ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES::RAJAMPET
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IV Year B. Tech. II Semester

(5G181) .NET TECHNOLOGIES
(OPEN ELECTIVE)

Course Objectives:

The Objective of the course is the student should be able to do the following things:

- Understand the components and ecosystem of Microsoft .NET framework.
- Apply object oriented programming concepts to develop C#.Net applications.
- Analyze data base connectivity through ADO.NET.
- Implement server side programming concepts through ASP.NET framework.
- Learn Web services to discover, access and use remote applications and data.

Course Outcomes:

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

- Understand the fundamentals of Microsoft .NET framework to develop, access, and interact with Internet applications.
- Implement Object oriented programming concepts through C#.NET framework.
- Apply ADO.NET to access data and data services from a database.
- Analyze ASP.NET to build dynamic sites, web applications and web administrations.
- Apply web services like WSDL and UDDI to exchange data between applications or systems.

Unit-I

INRODUCTION TO .NET FRAMEWORK: .NET Overview- Behind Microsoft .NET- The .NET Platform-.NET Framework Design Goals- .NET Framework- Common Language Runtime –CLR Environments and Executables-Metadata-JIT Compilation-Automatic Memory Management-Assemblies and Manifests-Intermediate Language(IL)- CTS and CLS- CLR Execution.

Unit-II

INTRODUCTION TO C# .NET PROGRAMMING: A Demonstration of Visual C#- Common Elements in Visual C- C# Core Language Features- Types- Classes- Structures- Enumeration- Inheritance- Interfaces- Polymorphism- Arrays and Collections- Generics- Operator Overloading- Delegates and Events- Introduction to LINQ Programming- Exception Handling- MSIL Programming.

Unit-III

APPLICATION DEVELOPMENT USING ADO .NET: Features of ADO .NET- Architecture of ADO .NET- ADO .NET Providers- Accessing Database using ADO .NET- Connection Opening and Closing- Command Object- Data Adapter- Dataset- Data Tables- Controlling table views with Data Views and Data Relation Objects- Data-binding in Windows Forms and Web Forms.

Unit-IV

INTRODUCTION TO ASP.NET: Introduction- Working in ASP.NET Controls- Session and Cookies- Caching- Authentication and Authorization-Web User Controls- Working with Web Config file- Implementing Security- Crystal Reports-Creating Setup and Deployment.

Unit-V

WEB SERVICES: Introduction to Web Services- Web Services Protocol and Standards- WSDL-Overview of UDDI- Calling a Web Service from a Browser- Calling a Web Service by using a proxy- Creating a Simple Web Service-AJAX

Text Books:

1. Thuan L. Thai. .NET Framework Essentials. O'Reilly, 2003, 3rd Ed.

2. Donis Marshall. Programming Microsoft Visual C# 2008. Microsoft Press 2008.
3. Francesco Balena. Programming Microsoft Visual Basic .NET. Microsoft Press 2006.

Reference Books:

1. Rebecca M. Riordan. Microsoft ADO.NET Step by Step. Microsoft Press2002.
2. Kogent, ASP.NET 3.5 Black Book, Dream Tech Publications, 2010.
3. Andy Wigley, Peter Roxburgh. Building Microsoft ASP.NET Applications for Mobile Devices. Microsoft Press 2003, 2nd Ed.

Mode of evaluation:

Continuous Internal Examination (CIE)		Continuous Evaluation	Semester End Examination (SEE) 70 Marks
Mid1 20 Marks	Mid2 20 Marks	10 Marks	

Course Outcomes & Program Outcomes Mapping:

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO3
CO1	3	-	-	-	3	1	-	-	3	-	3	3	3	-	-
CO2	3	3	3	1	3	-	-	-	3	3	3	3	3	-	2
CO3	3	-	3	-	3	1	-	-	3	3	-	3	3	-	2
CO4	3	-	3	-	3	-	-	-	-	3	3	3	3	-	-
CO5	3	3	-	-	3	3	-	-	3	-	3	-	3	-	-

ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES::RAJAMPET
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IV Year B. Tech. II Semester

(5G473) CYBER LAWS
(OPEN ELECTIVE)

Course Objectives:

- To explain the basic information on cyber security.
- To understand the issues those are specific to amendment rights.
- To have knowledge on copy right issues of software's.
- To understand ethical laws of computer for different countries.

Course Outcomes:

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

- Critically evaluate ongoing developments in law relating to information technologies
- Display an understanding of how these developments relate to one another.
- Examine areas of doctrinal and political debate surrounding rules and theories;
- Evaluate those rules and theories in terms of internal coherence and practical outcomes;
- Draw on the analysis and evaluation contained in primary and secondary sources.

Unit-I

FUNDAMENTALS OF CYBER SECURITY Introduction-Cyber Security and its Problem-Intervention Strategies: Redundancy, Diversity and Autarchy.

Unit-II

ISSUES IN CYBER SECURITY Private ordering solutions, Regulation and Jurisdiction for global Cyber security, Copy Right-source of risks, Pirates, Internet Infringement, Fair Use, postings, criminal liability, First Amendments, Data Loss.

Unit-III

INTELLECTUAL PROPERTY RIGHTS Copy Right-Source of risks, Pirates, Internet Infringement, Fair Use, postings, Criminal Liability, First Amendments, Losing Data, Trademarks, Defamation, Privacy-Common Law Privacy, Constitutional law, Federal Statutes, Anonymity, Technology expanding privacy rights.

Unit-IV

PROCEDURAL ISSUES Duty of Care, Criminal Liability, Procedural issues, Electronic Contracts & Digital Signatures, Misappropriation of information, Civil Rights, Tax, Evidence.

Unit-V

LEGAL ASPECTS OF CYBER SECURITY Ethics, Legal Developments, Late 1990 to 2000, Cyber security in Society, Security in cyber laws case. studies, General law and Cyber Law-a Swift Analysis.

Reference Books:

1. Jonathan Rosenoer,"Cyber Law: The law of the Internet", Springer-Verlag, 1997.
2. Mark F Grady, FransescoParisi, "The Law and Economics of CyberSecurity", Cambridge University Press, 2006.

Mode of evaluation:

Continuous Internal Examination (CIE)		Continuous Evaluation	Semester End Examination (SEE) 70 Marks
Mid1 20 Marks	Mid2 20 Marks	10 Marks	

Course Outcomes & Program Outcomes Mapping:

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

ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES::RAJAMPET
(AN AUTONOMOUS INSTITUTION)

IV Year B. Tech., II Semester

(5GA71) INTELLECTUAL PROPERTY RIGHTS
(OPEN ELECTIVE)

Course Objectives:

- The course is designed broadly to promote understanding of procurement, development, maintenance, evaluation and overall effective utilization of manpower.

Course Outcome:

- After completion of the course the student will be able to understand all functions of human resource management.

Unit-I

CONCEPT OF PROPERTY: Meaning of Property, Kinds of property: Movable and Immovable property; Tangible and Intangible property; Intellectual property; Private and Public property, Possession and ownership.

Unit-II

INTELLECTUAL PROPERTY RIGHTS: Introduction and the need for Intellectual Property Rights (IPR), IPR in India – Genesis and Development, Forms of Intellectual Property-Copyright, Trademarks, Patents, Designs, Geographical Indicators, Merchandise, Franchise and Forms of Unfair Competition. Competing rationales of the legal regimes for the protection of Intellectual Property.

Unit-III

COPYRIGHTS & TRADEMARKS: CopyRight: Meaning of Copyright, Copyright in literary, dramatic, musical work and cinematograph films Ownership, Assignment, Author's special rights, Importation and infringement, Fai ruse provisions. **Trademarks:** Definition; conception of trademarks, Registration, Distinction between trademark and property mark, Standards of proof in passing off action.

Unit-IV

PATENTS, DESIGNS &GEOGRAPHICALINDICATORS: Conception of Patent, Patentable Inventions, Process of obtaining a Patent: application, examination, opposition and sealing of patents; Rights and obligations of a Patentee, International Patents, Transfer of technology, know-how and problems of self-reliant development. Basic provisions related to Designs, Geographical Indicators.

Unit-V

INTERNATIONAL INSTRUMENTS CONCERNING INTELLECTUAL PROPERTYRIGHTS: The Berne Convention, Universal Copyright Convention, The Paris Union, The World Intellectual Property Rights Organization (WIPO), UNESCO, TRIPS, TRIMS, and WTO.

Reference Books:

- Intellectual Property Rights: Basic Concepts, MMSKarki, Atlantic,2009.
- Intellectual Property Rights, Pandey,Neeraj, Dharani,Khushdeep.
- Intellectual Property Rights in India: General Isuues and Implications, Dr.Prankrishna Pal,RegalSeries.
- Intellectual Property, W.R.Cornish,Sweet& Maxwell,London,2012.
- Principles of Intellectual Property, N.S.Gopala krishnan & T.G.Agitha, Eastern Book Company,Lucknow, 2009.

Mode of evaluation:

Continuous Internal Examination (CIE)		Continuous Evaluation	Semester End Examination (SEE) 70 Marks
Mid1 20 Marks	Mid2 20 Marks	10 Marks	

Course Outcomes & Program Outcomes Mapping:

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

ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES::RAJAMPET
(AN AUTONOMOUS INSTITUTION)

IV Year B. Tech., II Semester

(5GA72)HUMAN RESOURCE MANAGEMENT
(OPEN ELECTIVE)

Course Objective

- The course is designed broadly to promote understanding of procurement, development, maintenance, evaluation and overall effective utilization of manpower

Course Outcome

- After completion of the course the student will be able to understand all functions of human resource management

Unit-I

INTRODUCTION TO HUMAN RESOURCE MANAGEMENT: Definition, Introduction Nature of HRM, Scope of HRM, Functions of HRM-Managerial Functions, Operative Functions, Role of HRM. Personnel Management and HRM, Competitive Challenges influencing HRM, Ethical Aspects of HRM.

Unit-II

HUMAN RESOURCE PLANNING: Introduction to Human Resource Planning (HRP), Nature of HRP, Need and Importance of HRP in Organizations, Factors Affecting HRP, HRP Process, Barriers to Human HRP. Human Resource Information System**. Job Analysis and Job Design**–Definition, Steps in Job Analysis, Methods for Collecting Job Analysis Data, Job Description, Job Specification, Job Design-Methods of Job Design.

Unit-III

PROCUREMENT OF MANPOWER: Recruitment-Meaning and Definition, Process of Recruitment, Factor Affecting Recruitment, Sources of Recruitment, Methods of Recruitment. **Selection**–Introduction, Selection Procedure, Selection Decision Outcomes, Placement and Orientation.

Unit-IV

DEVELOPMENT OF MANPOWER: Employee Training–Concept, Need for Employee Training, Process of Employee Training, Methods of Employee Training, Advantages & Disadvantages. **Executive Development**–Objectives, Importance, Factors Influencing Executive Development, Process, Methods of Executive Development, Career Planning and Development.

Unit-V

COMPENSATING, MAINTAINING AND EVALUATING THE MANPOWER: Compensation-Objectives, components of pay structure in India, Wage Policy in India - Minimum Wage, Fair Wage and Living Wage. **Discipline and Grievance Procedures**-Disciplinary Procedure, Grievance Handling Procedure, importance and approaches of Industrial Relations, Collective Bargaining Process. **Performance Appraisal -** Definition, Purpose of appraisal, Procedures and Techniques including 360degree Performance Appraisal, Job Evaluation.

Reference Books:

1. Noe A. Raymond John Hollenbeck,Barry Gerhart and PatrickWright-Human Resource Management(TataMcGrawHill.).
2. IanBeardwell&LenHolden-HumanResourceManagement,(MacmillanIndiaLtd.).
3. AswathappaK-Human Resource and Personnel Management (TataMcGrawHill,5thEd.).
4. RaoVSP –Human Resource Management, Text and Cases (Excel Books, 2nd Ed.).
5. Ivansevich–Human Resource Management(TataMcGrawHill,10thEd.).

6. Dessler–Human Resource Management(PrenticeHall,10thEd.).
7. Bernardi–Human Resource Management(TataMcGrawHill,4thEd.).
8. Human Resource Management,T.NChhabra,DhanpatRai &Sons Pvt Ltd.

Mode of evaluation:

Continuous Internal Examination (CIE)		Continuous Evaluation	Semester End Examination (SEE) 70 Marks
Mid1 20 Marks	Mid2 20 Marks	10 Marks	

Course Outcomes & Program Outcomes Mapping:

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

ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES::RAJAMPET
(AN AUTONOMOUS INSTITUTION)

IV Year B.Tech., II Semester

(5G182)ADVANCED COMPUTER ARCHITECTURE
(PROFESSIONAL ELECTIVE-IV)
(Common for CSE & IT)

Course Objectives:

- To learn Program, Network Properties of various parallel computer models.
- To know about new trends in Operating and designing various parallel computers.

Course Outcomes

- Able to calculate performance measures of different parallel computers.
- Able to find the difference between parallel computer with and without shared-memory organization.
- Able to design Instruction Pipeline and able to pass message's using system interconnect.
- Able to find out differences between properties of Data Flow Architectures and other types.
- Able to know about design issues of a processor and the parallelism used in various advanced processors.

Unit– I

Parallel Computer Models: - The state of computing-Multiprocessors and Multi computers-Multisector and SIMD Computers-PRAM and VLSI Models.

Program and Networks Properties: - Conditions of Parallelism- Program Partitioning and Scheduling- Program Flow Mechanisms-System Interconnect Architectures.

Principles of Scalable Performance: - Performance Metrics and Measures- Parallel Processing Applications-Speedup Performance Laws-Scalability Analysis and Approaches.

Unit– II

Processors and Memory Hierarchy: - Advanced Processor Technology-Superscalar and Vector Processors- Memory Hierarchy Technology.

Bus, Cache and Shared Memory: - Bus Systems-Cache Memory Organizations-Shared-Memory Organizations.

Unit– III

Pipelining and Super Scalar Techniques: - Linear Pipeline Processors-Nonlinear Pipeline Processors-Instruction Pipeline Design.

Multiprocessors and Multi computers: -Multiprocessor System Interconnects-Cache Coherence and Synchronization Mechanisms-Message-Passing Mechanisms.

Unit–IV

Multivector and SIMD Computers: - Vector Processing Principles-Multivector Multiprocessors-Compound Vector Processing-SIMD Computer Organizations-The Connection Machine CM-5.

Scalable, Multithreaded, and Dataflow Architectures: - Latency –Hiding Techniques-Principles of Multithreading-Scalable and Multithreaded Architectures- Dataflow and Hybrid Architectures.

Unit– V

Instruction Level Parallelism:- Introduction-Basic Design Issues-Problem Definition-Model of a Typical Processor- Operand Forwarding-Reorder Buffer-Register Renaming-Tomasulo's Algorithm- Branch Prediction- Limitations in Exploiting Instruction Level Parallelism-Thread Level Parallelism.

Trends in Parallel Systems: - Forms of Parallelism-Case Studies: AMD Opteron, Intel Pentium Processors.

Text Book:

Advanced Computer Architecture- by Kai Hwang & Jotwani, 3rd Edition, McGraw-Hill Publications.

Reference Books:

1. Advanced Computer Architecture, D.Sima, T.Fountain, P.Kacsuk, Pearson Education.
2. Computer Architecture A quantitative approach 3rd edition john L.Hennessy& David A. Patterson, Morgan Kufmann(An Imprint of Elsevier).
3. Computer Architecture and parallel processing by Hwang and Briggs.

Mode of evaluation:

Continuous Internal Examination (CIE)		Continuous Evaluation	Semester End Examination (SEE) 70 Marks
Mid1 20 Marks	Mid2 20 Marks	10 Marks	

Course Outcomes & Program Outcomes Mapping with PSO's:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO1	3	3	3	3	3					3	1	3			
CO2	3	3	3	3	3					3		3			1
CO3	3	3	3	3	3				2	3		3	2	3	
CO4	3	3	3	3	3	3				3		3			
CO5	3	3	3	3	3	3	1	1	2	3		3			

ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES::RAJAMPET
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IV Year B.Tech., II Semester

(5G183)DIGITAL IMAGE PROCESSING
(PROFESSIONAL ELECTIVE-IV)

Course Objectives:

The course aims to provide the student with the ability

- To understand the Digital Image Processing methods and their applications.
- Ability to understand the knowledge of terminology and concepts used for representation and processing of Images.

Course Outcomes:

Upon completion of the course, students can

- Understand how images are acquired, sampled, quantized and represented in digital form
- Understand transform-domain representation of images (Fourier, Walsh etc.,), how images are enhanced and segmented to improve perception
- Have the knowledge to identify and apply the algorithms to compress and restore the images.
- Analyze the images in different formats such as binary, grey shade and color with respect to different areas.
- Design and formulate image processing methods with respect to real time problems

Unit– I

DIGITAL IMAGE FUNDAMENTALS – Image Sensing and acquisition, Image Sampling and Quantization, Some basic Relationship between pixels. An Introduction to mathematical tools used in Image Processing, 2-D DFT, Properties. Walsh transforms, Hadamard Transform.

Unit–II

IMAGE ENHANCEMENT: Some basic Intensity Transformation functions, Histogram Processing, Smoothing and Sharpening spatial filters, Image Smoothing and sharpening using Frequency domain filters

Unit– III

IMAGE RESTORATION: A model of the Image degradation, Noise models, Restoration in the presence of Noise only, Estimating the degradation function, Inverse filtering, Wiener filtering.

Unit–IV

COLOUR IMAGE PROCESSING: Color Models, Pseudo Color Image Processing, Basics of Full Color Image Processing.

Unit– V

IMAGE SEGMENTATION & COMPRESSION: Point, Line and Edge Detection, Thresholding – Global and Optimum Global, Region based segmentation, Coding Redundancy, Spatial and temporal Redundancy, Image Compression Models

Text Books:

1. Digital Image processing – R.C. Gonzalez & R.E. Woods, Addison Wesley/ Pearson education, 3rd Edition.
2. Digital Image processing – R.C. Gonzalez & R.E. Woods, Addison Wesley/ Pearson education, 2nd Edition, 2002.

Reference Books:

1. Fundamentals of Digital Image processing – A.K.Jain, PHI.
2. Digital Image processing using MAT LAB – Rafael C. Gonzalez, Richard E Woods and Steven L. Edition, PEA, 2004.

Mode of evaluation:

Continuous Internal Examination (CIE)		Continuous Evaluation	Semester End Examination (SEE) 70 Marks
Mid1 20 Marks	Mid2 20 Marks	10 Marks	

Course Outcomes & Program Outcomes Mapping with PSO's:

	P O1	P O2	P O3	P O4	P O5	P O6	P O7	P O8	P O9	PO 10	PO1 1	PO 12	PS O1	PS O2	PSO3
CO1	3	3	3	1	3	3				3		3	3	3	3
CO2	3	3	3	1	3	3				3		3	3	3	3
CO3	3	3	3	1	3	3				3		3	3	3	3
CO4	3	3	3	1	3	3				3		3	3	3	3
CO5	3	3	3	1	3	3				3		3	3	3	3

ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES::RAJAMPET
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IV Year B.Tech.,II Semester

(5G184)SOFTWARE ARCHITECTURE
(PROFESSIONAL ELECTIVE-IV)

Course Objectives:

- To understand interrelationships, principles and guidelines governing architecture and evolution overtime.
- To understand various architectural styles of software systems.
- To understand design patterns and their underlying object oriented concepts.
- To understand implementation of architectural patterns and providing solutions to real world software design problems.

Course Outcomes:

- Able to **Describe** the principles, techniques, and methods for design, analysis, and maintenance of software architectures
- Able to **compare** the Architectural style for designing their software.
- Able to integrate database with Software in Shared Environment and to do a case study in World Wide Web.
- Able to **categorize** the pattern types that are suited for Industrial Infrastructure.
- Able to **organize** an Architectural Design Tools to improve System Quality.

Unit–I

Introduction to Software Architecture: An Engineering Discipline for Software, Status of S/W Arch. Architecture Business Cycle, Where do Architectures come from. Software Processes and the Architecture Business Cycle, Features of Good Architecture.

Unit–II

Architecture Styles: Pipes and Filters, Data Abstraction and Object Oriented organization, Even-based Implicit Invocation, Layered Systems, Registers, Interpreters, Process Control, Other Familiar Architectures, Heterogeneous Architectures.

Unit– III

Shared Information Systems: Database Integration, Interpretation in Software Development Environments, Architectural Structures for Shared Information Systems.

Architectural Design Guidance: Guidance for User Interface Architectures, Case Study in Inter Operability: World Wide Web.

Unit– IV

Pattern Types: Architectural Patterns, Structural Patterns, Patterns for Distribution, Patterns for Interactive Systems

Formal Models and Specifications: Finalizing the Architectural of a Specific System, Architectural Style, Architectural Design Space, Case Study of an Industry Standard Computing. Infrastructure: CORBA

Unit–V

Architectural Description Languages: ADL's today, capturing Architectural Information in an ADL, Application of ADL's in system Development, Choosing an ADL, Example of ADL.

Reusing Architectural Assets Within An Organization: Creating Products and Evaluating a Product Line, Organizational Implications of a Product Line, Component Based Systems. Software Architectures in Figure: Legacy Systems. Achieving an Architecture, from Architecture to System.

Text Books:

1. Mary Show, David Garlan, "S/W Arch. Perspective: on an Emerging Discipline", 1996, PHI.
2. Len Bass, Paul Elements, Rick Kazman, "Software Architecture in Practice", 1998, PEA.

Reference Books:

1. Garmus, Herros, " Measuring the Software Process: A Practical Guide to Functional Measure", 1996, PHI.
2. Florac, Carleton, "Meas. Software Process: Stat. Proce. Cont. for Software process Improvemnts",1999, PEA.
3. W.Humphery, " Introduction to Team Software Process", 2002, PEA.
4. Peters, "Software Design: Methods and Techniques", 1981, Yourdon.
5. Buschmann, " Pattern Oriented Software Architecture", 1996, Wiley.
6. Gamma et al, "Design Patterns", 1995, PEA.
7. Gamma, Shaw, "An Introduction to Software Architecture", 1995, World Scientific.
8. Shaw, gamma, "Software Architecture", 1996, PHI.

Mode of evaluation:

Continuous Internal Examination (CIE)		Continuous Evaluation	Semester End Examination (SEE) 70 Marks
Mid1 20 Marks	Mid2 20 Marks	10 Marks	

Course Outcomes & Program Outcomes Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO1	3	3	-		-	1		-	-	-	3	3	3		
CO2	3	3	2		3			-	-	-	-		3		
CO3	3	3	2	3	3	-	3	-	3	1	3	3	3		2
CO4	-	-	-	3	3	-	-	-	3	-	3	3	3		
CO5		3	-	3	3			-	3	-	3	3	3		2

ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES::RAJAMPET
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IV Year B.Tech., II Semester

(5G485) SOFT COMPUTING
(PROFESSIONAL ELECTIVE - IV)
(Common for CSE & IT)

Course Objectives:

- To Introduce Basic Models Of Neural Networks.
- To Describe Design Of Various Neural Networks.
- To Classify Fuzzy Sets And Fuzzy Relationships.
- To Explain Fuzzy Logic And Propositions.
- To Introduce The Concepts Of Genetic Algorithm And Its Applications To Soft Computing.

Course Outcomes:

After completion of the course student will be able to

- Summarize Different Models Of Neural Networks.
- Analyze Various Neural Network Architectures And Counter Propagation Networks.
- Generalize Fuzzy Sets And Relationships.
- Define The Fuzzy Systems
- Analyze The Genetic Algorithms And Their Applications.

Unit-I

ARTIFICIAL NEURAL NETWORK: Introduction – Fundamental concept – Evolution of Neural Networks – Basic Models of Artificial Neural Networks – Important Terminologies of ANNs – McCulloch-Pitts Neuron – Linear Separability – Hebb Network. Supervised Learning Network: Perceptron Networks – Adaline – Multiple Adaptive Linear Neurons – Back-Propagation Network – Radial Basis Function Network.

Unit-II

ARTIFICIAL NEURAL NETWORK: Associative Memory Networks: Training Algorithms for Pattern Association – Auto associative Memory Network – Hetero associative Memory Network – Bidirectional Associative Memory – Hopfield Networks – Iterative Auto Associative Memory Networks – Temporal Associative Memory Network. Unsupervised Learning Networks: Fixed weight Competitive Nets – Kohonen Self-Organizing Feature Maps – Learning Vector Quantization – Counter propagation Networks – Adaptive Resonance Theory Networks – Special Networks.

Unit-III

FUZZY SET THEORY: Introduction to Classical Sets and Fuzzy sets – Classical Relations and Fuzzy Relations – Tolerance and Equivalence Relations – Noninteractive Fuzzy sets – Membership Functions: Fuzzification – Methods of Membership Value Assignments – Defuzzification – Lambda-Cuts for Fuzzy sets and Fuzzy Relations – Defuzzification Methods.

Unit-IV

FUZZY SET THEORY: Fuzzy Arithmetic and Fuzzy Measures: Fuzzy Rule Base and Approximate Reasoning: Truth values and Tables in Fuzzy logic – Fuzzy Propositions – Formation of Rules – Decomposition and Aggregation of rules – Fuzzy Reasoning – Fuzzy Inference Systems (FIS) – Fuzzy Decision Making – Fuzzy Logic Control Systems.

Unit-V

GENETIC ALGORITHM: Introduction – Basic Operators and Terminologies in GAs – Traditional Algorithm vs. Genetic Algorithm – Simple GA – General Genetic Algorithm – The Scheme Theorem – Classification of Genetic Algorithm – Holland Classifier Systems – Genetic Programming. Applications of Soft Computing: A Fusion Approach of Multispectral Images with SAR Image for Flood Area Analysis – Optimization of Travelling Salesman Problem using Genetic Algorithm Approach – Genetic Algorithm based Internet Search Technique – Soft Computing based Hybrid Fuzzy Controllers – Soft Computing based Rocket Engine – Control.

Text Book:

S.N. Sivanandan and S.N. Deepa, Principles of Soft Computing, Wiley India, 2007.ISBN: 10: 81-265-1075-7.

Reference Books:

1. S. Rajasekaran and G.A.V.Pai, Neural Networks, Fuzzy Logic and Genetic Algorithms,PHI, 2003.
2. Timothy J.Ross, Fuzzy Logic with Engineering Applications, McGraw-Hill, 1997.
3. J.S.R.Jang, C.T.Sun and E.Mizutani, Neuro-Fuzzy and Soft Computing, PHI, 2004,Pearson Education.

Mode of evaluation:

Continuous Internal Examination (CIE)		Continuous Evaluation	Semester End Examination (SEE) 70 Marks
Mid1 20 Marks	Mid2 20 Marks	10 Marks	

Course Outcomes & Program Outcomes Mapping:

	PO 1	PO 2	PO 3	PO 4	PO5	PO6	PO7	P O8	P O9	PO10	PO 11	PO12	PSO 1	PSO 2	PSO 3
CO1	3	3	3	3	3	-	-	-	-	-	3	3	3	-	-
CO2	3	3	3	-	3	-	-	-	-	-	3	3	3	-	-
CO3	3	3	-	3	3	-	-	-	-	-	3	3	-	2	-
CO4	3	3	-	3	3	-	-	-	-	-	3	3	-	2	-
CO5	3	3	3	-	3	-	-	-	-	-	3	3	-	-	1

ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES::RAJAMPET
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IV Year B.Tech., II Semester

(5G185) COMPUTER GRAPHICS AND HUMAN COMPUTER INTERACTION
(PROFESSIONAL ELECTIVE-V)

Course Objectives:

- To understand a comprehensive introduction to computer graphics leading to the ability to understand contemporary terminology, progress, issues, and trends.
- To understand geometric transformations, geometric algorithms, software systems, 3D object models, visible surface algorithms, image synthesis.
- To Know how to apply core theories, models and methodologies from the field of HCI.
- To understand current research in the field of HCI.

Course Outcomes:

- Able to understand the contemporary graphics hardware.
- Able to apply the object hierarchy in graphics applications.
- Able to apply and explain computer graphics animation, image processing techniques, Geometrical Transformations.
- Able to understand the guidelines, principles, and theories influencing human computer interaction.
- Able to illustrate mock ups and carry out user and expert evaluation of interfaces

Unit–I

INTRODUCTION TO COMPUTER GRAPHICS: Application areas of Computer Graphics, overview of graphics systems, video-display devices, raster-scan systems, random scan systems

2-D GEOMETRICAL TRANSFORMS: Translation, scaling, rotation, reflection and shear transformations, matrix representations and homogeneous coordinates, composite transforms, transformations between coordinate systems. (p.nos 204-227 of text book-1).

Unit–II

Geometric Display Primitives and Attributes: Geometric display primitives: Points, Lines and Polygons. Point display method – Line drawing: DDA

2-D VIEWING : The viewing pipeline, viewing coordinate reference frame, window to view-port coordinate transformation, viewing functions, Cohen-Sutherland and Cyrus-beck line clipping algorithms, Sutherland –Hodgeman polygon clipping algorithm(p.nos 237-249,257-261 of text book -1).

Unit–III

3-D GEOMETRIC TRANSFORMATIONS: Translation, rotation, scaling, reflection and shear transformations, composite transformations.

3-D viewing: Viewing pipeline, viewing coordinates, view volume and general projection transforms and clipping (p.nos 427-443, 452-481 of text book -1).

Unit–IV

INTRODUCTION TO HUMAN COMPUTER INTERACTION: Importance of user Interface – definition, importance of good design. Benefits of good design. A brief history of Screen design.

Unit–V

THE GRAPHICAL USER INTERFACE: popularity of graphics, the concept of direct manipulation, graphical system, Characteristics, Web user – Interface popularity, characteristics-Principles of user interface.

Text Books:

1. Donald Hearn and M.Pauine Baker, *Computer Graphics C version.* Pearson Education.
2. Wilbert O Galitz, *The essential guide to user interface design*. Wiley DreamTech.
3. Ben Shneidermann, *Designing the user interface*. Pearson Education Asia,3rdEd.

Reference Books:

1. James D.Foley, Andries Van Dam, Steven K.Feiner, Jhon F.Hughes, *Computer graphics principles and practicein c.* Pearson education, 2nd Ed.
2. Zhigandxiang, ROY Plastock, *Computer Graphics*, Schaum's outlines, TataMcGraw Hill, 2nd Ed.
3. Neuman and Sproul, *Principles of interactive Computer graphics*. TMH.
4. David F Rogers, *Procedural elements for Computer Graphics*, Tata Mc Graw hill, 2nd Ed.
5. Shalini Govil, Pai, *Principles of Computer Graphics*. 2005, Springer.
6. Steven Harrington, *Computer Graphics*. TMH.
7. F.S.Hill, S.M.Kelley, *Computer Graphics*. PHI.

Mode of evaluation:

<table>
<tr><td colspan="2">Continuous Internal Examination (CIE)</td><td>Continuous Evaluation</td><td rowspan="2">Semester End Examination (SEE)
70 Marks</td></tr>
<tr><td>Mid1
20 Marks</td><td>Mid2
20 Marks</td><td>10 Marks</td></tr>
</table>

Course Outcomes & Program Outcomes Mapping:

	PO1	PO2	PO3	PO 4	PO5	PO6	P O 7	P O 8	P O 9	P O 10	P O 11	P O 12	PSO 1	PSO 2	PSO 3
CO1	3	-	-	-	3	-	-	-	-	-	-	-	3	2	1
CO2	3	3	3		3	-	-	-	-	-	-	-	3	3	1
CO3	3	3	3	3	3	-	-	-	-	-	-	-	3	2	1
CO4	-	3	-	-	3	-	-	-	-	3	-	-	2	2	1
CO5	-	-	3	3	-	-	-	-	-	3	-	-	2	2	

ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES::RAJAMPET
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IV Year B.Tech., II Semester

(5G186)COMPUTER VISION
(PROFESSIONAL ELECTIVE-V)

Course Objectives:

- To provide a general introduction in the field of Computer Vision
- To teach mathematical concepts and techniques
- To solve real vision problems

Course Outcomes:

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

- Able to understand the fundamentals of image formation.
- Able to understand the major ideas, methods, and techniques of image processing and computer vision.
- Able to define typical pattern recognition techniques for object recognition.
- Able to define basic image processing and computer vision techniques
- Able to design a computer vision system for a real world application.

Unit–I

IMAGE FORMATION AND IMAGE MODELS: Geometric Camera Models - Geometric Camera Calibration - Radiometry - Measuring Light – Shadows and shading - Color

Unit–II

EARLY VISION - MULTIPLE IMAGES: The Geometry of Multiple Views - Stereopsis - Affine Structure from Motion - Projective Structure from Motion

Unit–III

MID LEVEL VISION: Segmentation by Clustering - Segmentation by Fitting a Model - Segmentation and Fitting using Probabilistic Methods - Tracking with Linear Dynamic Models

Unit–IV

HIGH LEVEL VISION – GEOMETRIC METHODS: Model-Based Vision - Smooth Surfaces and their Outlines - Aspect Graphs -Range Data

Unit–V

HIGH LEVEL VISION -PROBABILISTIC AND INFERENTIAL METHODS: Recognition by Relations between Templates - Geometric Templates from Spatial Relations – Application –Image Based Rendering

Text Books:

1. Forsyth D A and Ponce J, " *Computer Vision : A Modern Approach* "– Prentice Hall 2003
2. Horn B K P," Robot Vision", Cambridge MIT press 1986

Reference Books:

1. Y Shirai,"*Three Dimensional Computer Vision",* Springer Verlag 1987
2. Wechsler, "*Computational Vision",* Academic Press 1987
3. Haralick R M And Shapiro L G, "*Computer And Robot Vision* Vo I and II", Addison Wesley 1993
4. Jain R C Kasturi *R, "Machine Vision",* McGrawHill 1995

Online References:

http://kercd.free.fr/linksKCD.html

http://www.cs.ubc.ca/spider/lowe/vision.html
http://www.teiath.gr/seyp/optics/Vision.htm
http://www.visionscience.com/

Mode of evaluation:

Continuous Internal Examination (CIE)		Continuous Evaluation	Semester End Examination (SEE) 70 Marks
Mid1 20 Marks	Mid2 20 Marks	10 Marks	

Course Outcomes & Program Outcomes Mapping:

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO 1	3	3	-	3	-	1	-	-	-	-	3	1	3	-	-
CO 2	3	3	3	3	2	-	-	-	-	-	-	-	-	2	-
CO 3	3	3	-	-	2	-	-	-	-	-	3	-	3	2	-
CO 4	-	-	3	3	-	-	-	-	3	-	3	1	3	-	-
CO 5		-	3	-	-	-	-	-	3	-	3	1	3	-	-

ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES::RAJAMPET
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IV Year B.Tech., I Semester

(5G187) DESIGN PATTERNS THROUGH JAVA

Course Objectives:

- To understand interrelationships, principles and guidelines governing architecture and evolution over time.
- To understand various architectural styles of software systems.
- To understand design patterns and their underlying object oriented concepts.
- To understand implementation of design patterns and providing solutions to real world software design problems.
- To understand patterns with each other and understanding the consequences of combining patterns on the overall quality of a system

Course Outcomes:

At the end of this course students will be able to

- Know the underlying object oriented principles of design patterns.
- Understand the context in which the Creational & Collection patterns can be applied.
- Understand the context in which the Structural patterns can be applied.
- Understand the context in which the Behavioral patterns can be applied.
- Understand how the application of a pattern affects the system quality and its tradeoffs.

Unit–I

Introduction: Architectural to Software Design Patterns, What Is a Design Pattern? More about Design Patterns, design patterns to solve design problems, selecting a design pattern, How to use a design pattern.

Basic Patterns: Interface, Abstract Parent Class, Private Methods, Accessor Methods, Constant Data Manager, Immutable Object, Monitor.

Unit– II

Creational Patterns: Factory Method, Singleton, Abstract Factory, Prototype, Builder.

Collection Patterns: Composite, Iterator, Flyweight, Visitor.

Unit–III

Structural Patterns: Decorator, Adapter, Chain of Responsibility, Facade, Proxy, Bridge, Virtual Proxy, Counting Proxy, Aggregate Enforcer, Explicit Object Release, Object Cache.

Unit– IV

Behavioral Patterns-1: Command, Mediator, Memento, Observer, Interpreter, State, Strategy, Null Object.

Unit–V

Behavioral Patterns-2: Template Method, Object Authenticator, Common Attribute Registry.

Concurrency Patterns: Critical Section, Consistent Lock Order, Guarded Suspension, Read-Write Lock.

Text Books:

1. *Software Architecture Design Patterns* in Java, Partha Kuchana
2. Design Patterns: Elements of Reusable Object-Oriented Software, Erich Gamma, RichardHelm et al,PEA

Reference Books:

1. Luke Hohmann, Beyond Software architecture, Addison wesley, 2003.
2. David M. Dikel, David Kane and James R. Wilson, Software architecture, PrenticeHall PTR, 2001
3. Eric Freeman & Elisabeth Freeman .Head First Design patterns, O'REILLY,2007.
4. Steven John Metsker& William C. Wake .Design Patterns in Java Pearson education,2006
5. Deepak Alur, John Crupi& Dan Malks.J2EE Patterns, Pearson education, 2003.

Mode of evaluation:

Continuous Internal Examination (CIE)		Continuous Evaluation	Semester End Examination (SEE) 70 Marks
Mid1 20 Marks	Mid2 20 Marks	10 Marks	

Course Outcomes & Program Outcomes Mapping:

Course Outcomes	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO2	PSO 3
CO1	3	3	-	-	-	1	-	-	-	-	-	3	3	3	-
CO2	3	3	2	3	3	-	-	-	-	-	-	-	-	-	1
CO3	3	3	2	3	3	-	-	-	3	-	-	-	-	-	-
CO4	-	-	-	3	3	-	-	-	3	-	-	3	3	-	-
CO5		3	-	-	-	-	-	-	3	-	-	3	3	3	1

ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES::RAJAMPET
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IV Year B.Tech., II Semester

(5G188)WEB SERVICES
(PROFESSIONAL ELECTIVE-V)

Course Objectives:

- To Understand the Enabling Knowledge: understand the design rationale for SOAP based web services in terms of objectives, trade-offs and alternatives. Understand the architecture and design of the Apache Axis2 Web Service framework.
- To Understand the Critical analysis: Analyze and model requirements and constraints for the purpose of designing and implementing systems based on collaborating Web Services, with an emphasis on extensible and reusable architecture.
- To Understand the Problem solving: Design and implement Web Services that accommodates specified functional and non-functional requirements and constraints. Design web-based applications that consume such Web Services.

Course Outcomes:

- Understand the use of web services in B2C and B2B applications.
- Understand the design principles and application of SOAP, WSDL, UDDI and REST based web services.
- Design collaborating web services according to a specification.
- Implement an application that uses multiple web services in a realistic business scenario.
- Use industry standard open source tools such as Apache Axis2, Tomcat, Derby and Eclipse to build, test, deploy and execute web services and web applications that consume them.

Unit– I

Evolution and Emergence of Web Services: Evolution of distributed computing, Core distributed computing technologies, client/server, CORBA, JAVA RMI, Micro Soft DCOM, MOM, Challenges in Distributed Computing, role of J2EE and XML in distributed computing, emergence of Web Services and Service Oriented Architecture (SOA). Introduction to Web Services: The definition of web services, basic operational model of web services, tools and technologies enabling web services, benefits and challenges of using web services.

Unit–II

Web Services Architecture, Web services Architecture and its characteristics, core building blocks of web services, standards and technologies available for implementing web services, web services communication, basic steps of implementing web services, developing web services enabled applications.

Unit–III

Core fundamentals of SOAP: SOAP Message Structure, SOAP Encoding, SOAP message exchange models, SOAP communication and messaging, SOAP security. Developing Web Services using SOAP: Building SOAP Web Services, developing SOAP Web Services using Java, limitations of SOAP.

Unit–IV

Describing Web Services: WSDL, WSDL in the world of Web Services, Web Services life cycle, anatomy of WSDL definition document, WSDL bindings, WSDL Tools, limitations of WSDL, Discovering Web Services: Service discovery, role of service discovery in a SOA, service discovery mechanisms.

Unit–V

Web Services Interoperability: Means of ensuring Interoperability, Overview of .NET and J2EE. Web Services Security: XML security frame work, XML encryption, XML digital signature, XKMS structure, guidelines for signing XML documents.

Text Books:

1. Developing Java Web Services, R. Nagappan, R. Skoczylas, R.P. Sriganesh, Wiley India, rp – 2008.
2. Developing Enterprise Web Services, S. Chatterjee, J. Webber, Pearson Education, 2008.
3. XML, Web Services, and the Data Revolution, F.P.Coyle, Pearson Education.

Reference Books:

1. Building Web Services with Java, Second Edition, S. Graham and others, Pearson Edn., 2008.
2. Java Web Services, D.A. Chappell and T. Jewell, O'Reilly, SPD.
3. Java Web Services Architecture, McGovern, et al., Morgan Kaufmann Publishers, 2005.
4. J2EE Web Services, Richard Monson-Haefel, Pearson Education.
5. Web Services, G. Alonso, F. Casati and others, Springer, 2005.

Mode of evaluation:

Continuous Internal Examination (CIE)		Continuous Evaluation	Semester End Examination (SEE) 70 Marks
Mid1 20 Marks	Mid2 20 Marks	10 Marks	

Course Outcomes and Program Outcomes Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	-	-	-	-	3	-	-	-	-	-	3	-	3		
CO2	-	-	3	-	-	-	-	-	3	-	-	3	3		
CO3	-	-	3	-	3	-	-	-	3	-	3	3	3	2	
CO4	-	-	3	-	3	-	-	-	-	-	3	3	3	2	
CO5	-	-	3	-	3	-	-	-	3	-	-	3	3		1