ANNAMACHARYA INSTITUTE OF TECHNOLOGY AND SCIENCES::RAJAMPET

(AUTONOMOUS)

www.aitsrajampet.ac.in

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

ACADEMIC REGULATIONS (R17)

AND

COURSE STRUCTURE & SYLLABI

For the students admitted to

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

from the Academic Year 2017-18

and

B. Tech., Lateral Entry Scheme from the Academic Year 2018-19

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, skilful, 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 disseminate inclusive 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.

PROGRAM OUTCOMES

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

PROGRAM SPECIFIC OUTCOMES (PSOs)

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 2017-18)

and

B. Tech. Lateral Entry Scheme

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

The following rules and regulations will be applicable for the batches of Four year B.Tech. degree admitted from the academic year 2017-18 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. (Mechanical Engineering)
   5. 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 I B.Tech. II Sem & III B.Tech I-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	–	01
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.

S. No.	Description	Marks	Examination and Evaluation	Scheme of Evaluation
		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.
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

S. No.	Description	Marks	Examination and Evaluation	Scheme of Evaluation
			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 Viva Voce	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.

Challenge valuation

Student can apply challenge valuation by paying stipulated fee. The photo copy of the answer booklet shall be given to the student on notified date.

- If the improvement is 15% of maximum marks or more, the new marks will be awarded to the student. Otherwise there will be no change in the old marks

- If the improvement is 15% of max marks or more 90% of the fee paid will be refunded to the student. If the student's status changes from fail to pass, 50% of fee will be refunded to the student. Otherwise the student will forfeit the amount which he/she paid.

- No challenge valuation for Laboratory Examination.

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.

6.5 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.

6.6 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.

6.7 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.

6.8 Massive Open Online Course (MOOC):

MOOC is one of the courses introduced in IV year I 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 2018 - 2019):

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 **143** 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 **143** 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 **195/143 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:

- 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.
- 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
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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Regulations: **R17**   Programme Code: **G1**

I Year B. Tech., I Semester

Subject Code	Subject Name	L	T	P	C
7GC11	Technical English and Professional Communication	4	1	0	4
7GC12	Engineering Chemistry	3	1	0	3
7GC14	Engineering Mathematics-I	4	1	0	4
7G111	Problem solving techniques and C Programming	3	1	0	3
7G513	Basic Engineering Drawing	1	0	3	4
7GC18	Engineering Chemistry and Engineering Workshop Lab	0	0	3	2
7G112	Programming in C Lab	0	0	3	2
7GC17	English Language Communication Skills Lab	0	0	4	2
7G113	IT Workshop	0	0	3	2
		15	4	16	26

I Year B. Tech., II Semester

Subject Code	Subject Name	L	T	P	C
7GC21	Environmental Science	4	1	0	4
7GC23	Engineering Physics	3	1	0	3
7GC24	Engineering Mathematics-II	4	1	0	4
7G121	Data Structures	3	1	0	3
7G221	Basic Electrical and Electronics Engineering	4	1	0	4
7GC26	Engineering Physics Lab	0	0	3	2
7G222	Basic Electrical and Electronics Engineering Lab	0	0	3	2
7G122	Data structures Lab	0	0	6	4
AUDIT COURSE	Gender Sensitization	2	0	0	0
Total		**20**	**5**	**12**	**26**

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

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Regulations: **R17**   Programme Code: **G1**

II Year B. Tech., I Semester

Subject Code	Subject Name	Hours / Week			C
		L	T	P	
7GC32	Engineering Mathematics-III	3	1	0	3
7GC33	Aptitude and Reasoning Skills	0	2	0	1
7G131	Advanced Data Structures Through C++	3	1	0	3
7G132	Database Management Systems	3	1	0	3
7G133	Digital Logic Design	3	1	0	3
7G134	Discrete Mathematics	3	1	0	3
7G135	Web Programming	3	1	0	3
7G136	Advanced Data Structures Lab Through C++	0	0	3	2
7G137	Database Management Systems Lab	0	0	3	2
7G138	Web Programming Lab	0	0	3	2
	Sports and Extension Activities	0	0	1	0
	Total	**18**	**08**	**10**	**25**

II Year B. Tech., II Semester

Subject Code	Subject Name	Hours / Week			C
		L	T	P	
7GC42	Probability and Statistics	3	1	0	3
7G141	Computer Organization	3	1	0	3
7G142	Design and Analysis of Algorithms	3	1	0	3
7G143	Formal Languages and Automata Theory	3	1	0	3
7G144	Object Oriented Programming Using Java	3	1	0	3
7G145	Operating Systems	3	1	0	3
7G146	Seminar-1	0	0	2	1
7G147	DAA Lab	0	0	3	2
7G148	JAVA Lab	0	0	3	2
7G149	Operating Systems Lab	0	0	3	2
	Total	**18**	**6**	**11**	**25**

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Regulations: **R17**   Programme Code: **G1**

III Year B. Tech., I Semester

Subject Code	Subject Name	L	T	P	C
7G151	Advanced Java Programming	3	1	0	3
7G152	Compiler Design	3	1	0	3
7G153	Computer Networks	3	1	0	3
7G154	Python Programming	3	1	0	3
7G155	Software Engineering	3	1	0	3
7G356	Microprocessors and Interfacing	3	1	0	3
7GC52	English for Competitive Examinations	0	2	0	1
7G156	Advanced Java Programming Lab	0	0	3	2
7G157	Microprocessors and Interfacing LAB & Python Programming Lab	0	0	3	2
7G158	Computer Networks and Compiler Design Lab	0	0	3	2
Audit Course	Stress Management/ Professional Ethics	2	0	0	0
Total		**20**	**8**	**9**	**25**

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Regulations: **R17**   Programme Code: **G1**

III Year B. Tech., II Semester

Subject Code	Subject Name	Hours / Week			C
		L	T	P	
7G161	Data mining and Data warehousing	3	1	0	3
7G162	Internet of Things	3	1	0	3
7G163	Object Oriented Analysis and Design	3	1	0	3
7G164	Software Testing Methodologies	3	1	0	3
	PROFESSIONAL ELECTIVE–I	3	1	0	3
7G165	**MOOC**	3	1	0	3
7G16A	Seminar-II	0	0	2	1
7G16B	Software Testing Methodologies & Case Tools Lab	0	0	3	2
7G16C	Data Mining Lab & IOT Lab	0	0	3	2
7GC61	Advanced English Communication Skills Lab	0	0	3	2
Total		**18**	**6**	**11**	**25**

LIST OF PROFESSIONAL ELECTIVE– I	
7G166	Artificial Intelligence
7G167	Cryptography and Network Security
7G168	Mobile Ad hoc Networks
7G169	Real Time Systems

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Regulations: **R17**   Programme Code: **G1**

IV Year B. Tech., I Semester

Subject Code	Subject Name	Hours / Week			C
		L	T	P	
7G171	Big Data Analytics	3	1	0	3
7G172	Enterprise Programming	3	1	0	3
7BA74	Industrial Management& Entrepreneurship	3	1	0	3
7G173	Mobile Application Development	3	1	0	3
	PROFESSIONAL ELECTIVE–II	3	1	0	3
	Open Elective	3	1	0	3
7G17A	**CVV**	0	0	2	1
7G17B	Big data Lab	0	0	3	2
7G17C	Enterprise Programming Lab	0	0	3	2
7G17D	Mobile Application Development Lab	0	0	3	2
Total		**18**	**6**	**11**	**25**

LIST OF PROFESSIONAL ELECTIVE– II	
7G174	Client Server Computing
7G175	Distributed Systems
7G176	Machine Learning
7G177	Software Project Management

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

LIST OF OPEN ELECTIVES SUBJECTS		Offered By Department of
7G674	Disaster Management	CE
7G274	System Modelling and Simulation	EEE
7G574	Total Quality Management	ME
7G575	Integrated Product Development	ME
7G376	Industrial Electronics	ECE
7G377	Medical Instrumentation	ECE

7G178	Cyber Laws	CSE
7G179	Principles of Programming Languages	CSE
7BA72	Intellectual Property Rights	DBA
7BA73	Human Resource Management	DBA

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

Regulations: **R17**   Programme Code: **G1**

IV Year B. Tech., II Semester

Subject Code	Subject Name	Hours / Week			C
		L	T	P	
	PROFESSIONAL ELECTIVE–III	3	1	0	3
	PROFESSIONAL ELECTIVE–IV	3	1	0	3
	PROFESSIONAL ELECTIVE–V	3	1	0	3
7G18D	Seminar-III	0	0	2	1
7G18E	Project	0	0	12	8
Total		**9**	**3**	**14**	**18**

LIST OF PROFESSIONAL ELECTIVE–III	
7G181	Cloud Computing
7G182	Operations Research
7G183	Semantic web and Social Networks
7G184	Service Oriented Architecture

LIST OF PROFESSIONAL ELECTIVE–IV	
7G185	Advanced Computer Architecture
7G186	Digital Image Processing
7G187	Software Architecture
7G188	Soft Computing

LIST OF PROFESSIONAL ELECTIVE–V	
7G189	Computer Graphics & Human Computer Interaction
7G18A	Computer Vision
7G18B	Design Patterns Through JAVA
7G18C	Web Services

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

ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES::RAJAMPET

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I Year B. Tech., I Semester

(7GC11) TECHNICAL ENGLISH AND PROFESSIONAL COMMUNICATION

(Common to all branches)

Course Objectives:
- To improve the language proficiency of the students in English with respect to accuracy and fluency
- To enable the students to acquire comprehension skills to study academic subjects with greater felicity
- To develop English communication skills of the students in formal and informal situations
- To enable the students to gain familiarity with the dynamics of communication, stumbling blocks in communication

Course Outcomes:
1. Students will increase their vocabulary through the study of word parts, use of context clues, idiomatic expressions, and practice with a dictionary
2. Students exhibit effective writing skills and create effective documents in technical communication such as letters, reports and emails
3. Students will understand the factors that influence the use of grammar and vocabulary in speech and writing
4. Students shall develop professional communication skills, which are necessary for effective collaboration and cooperation with other students
5. Students will learn to effectively utilize his body language to communicate in his academic and professional career.

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

Technical Communication: Features, Distinction between General and Technical communication; Language as a tool of communication; Elements of Human Communication

Unit -II

Sure Outcomes: Climatic Change and Human Strategy

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

Levels of Communication: Intrapersonal; Interpersonal, Organizational, Mass communication
The Flow of Communication: Downward, Upward, Lateral or Horizontal (Peer group)

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

Non-verbal Communication: Kinesics; Proxemics; Paralinguistic features; Chronemics. Role of Body Language during Presentation, GD and Interview.

Unit -IV

Sure Outcomes: Water: The Elixir of Life

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

Barriers to Communication: Definition of Noise; Classification of Barriers; overcoming barriers Listening: Types of Listening; Traits of a Good Listener; Active vs. Passive Listening; Empathetic Listening

Unit -V

Sure Outcomes: The Secret of Work

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

The Models of Communication: Linear; Interactive; Transactional; Johari Window; Transactional Analysis

Communicative Styles: Assertive, Aggressive, Passive-aggressive, Submissive, Manipulative

Textbooks:

1. *Sure Outcomes* published by Orient Black Swan (with CD)
2. *Technical Communication*, Principles and Practices, Meenakshi Raman and Sangeeta Sharma, 3rd Edition, Oxford University Press, 2015

The books prescribed serve as students' handbooks. The reader comprises essays which are particularly relevant to the needs of 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 to write short paragraphs and essays. The main aim is to encourage two-way communication in place of one-sided lecture.

References:

1. Developing Communication Skills, 2/e. by Krishna Mohan & Meera Banerji , Macmillan, 2009
2. Essential Grammar in Use, (with CD), Raymond Murphy, 3/e, Cambridge University Press, 2009
3. English Grammar and Composition, David Grene, Mc Millan India Ltd.
4. Everyday Dialogues in English by Robert J. Dixson, Prentice-Hall of India Ltd., 2006.
5. Basic Communication Skills for Technology, Andrea J Ruthurford, Pearson Education, Asia.
6. English for Technical Communication, Aysha Viswamohan, Tata Mc-Graw Hill
7. Communication Skills for Technical Students, Farhathullah, T.M., Orient Blackswan, 2008
8. English for Technical Communication, Vol. 1 & 2, by K. R. Lakshmi Narayanan, Sci tech. Publications.

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

Mode **of**
Evaluation:

Course Outcomes & Program Outcomes Mapping:

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

ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES::RAJAMPET

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I Year B. Tech., I Semester

(7GC12) ENGINEERING CHEMISTRY

(Common to CSE, 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. Sesha Maheswaramma and Mrudula Chugh, 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

(7GC14) ENGINEERING MATHEMATICS – I

(Common to all branches)

Course Objectives:

- The subject gives the knowledge about matrices and applications to solve linear equations.
- The course intends to provide an overview of Eigen values and Eigen vectors which occur in Physical and engineering problems.
- To understand the differential equations of first order with their applications.
- To provide an overview of differential equations of second and higher order with their applications
- To understand the concepts of mean value theorems and functions of several variables

Course Outcomes:

1. Students will be able to apply this knowledge to solve linear equations.
2. Student will understand the concept of modeling or translating a physical or any other.
3. Students will be able to solve first order differential equations and their applications.
4. Students will learn the usage of higher order differential equations that are applied to real world problems.
5. Students will exhibit an ability to identify, formulates, and solve the problems on functions of several variables.

Unit-I

Real Matrices: Types - definitions - Elementary transformations – Rank – Echelon form– Consistency-Solution of Linear System of Homogenous and Non Homogeneous equations.

Eigen Values & Eigen Vectors: Eigen Values, Eigen vectors – Properties, Cayley – Hamilton Theorem.

Unit-II

Diagonalization of matrix - Quadratic form, Reduction of quadratic form to canonical form - nature - Linear Transformation –Orthogonal Transformation.

Complex Matrices - Hermitian, Skew-Hermitian, Unitary matrices- Eigen Values, Eigen vectors – Properties.

Unit-III

Differential Equations of first order & first degree, Linear and Bernoulli equations. Applications to Newton's law of cooling, law of natural growth and decay, orthogonal trajectories.

Unit-IV

Non-homogeneous linear differential equations of second and higher order with constant coefficients with RHS term of the type e^{ax}, $\sin ax/\cos ax$ polynomial in x, $e^{ax} \sin ax / e^{ax} \cos ax / e^{ax} x^n$, $x \sin ax/x \cos ax$, method of variation of parameters. Applications to oscillatory electrical circuits.

Unit-V

Rolle's Theorem – Lagrange's Mean Value Theorem (without proof). 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.

Text Books:

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

Reference Books:

1. Advanced Engineering Mathematics, EriwinKreyszig, 9th edition, Wiley International edition.
2. Engineering Mathematics, H.K.Dass and Verma Rama, S. Chand, 2007.
3. Engineering Mathematics, Pal and Bhunia, First edition, Oxford University,2015.
4. Higher Engineering Mathematics, B.V. Ramana, Tata McGraw Hill Publishing Company limited, 2006.
5. Higher Engineering Mathematics, John Bird 7th Edition, Routledge-Taylor and Francis Group London, 2014.

Mode of Evaluation:

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

Course Outcomes & Program Outcomes Mapping:

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

ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES::RAJAMPET

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I Year B. Tech., I Semester

(7G111)PROBLEM SOLVING TECHNIQUES AND 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	PO1 1	PO1 2	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	-

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I Year B. Tech., I Semester

(7G513) BASIC ENGINEERING DRAWING

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

Course Outcomes:

1. Students will be able to know and understand the conventions and the methods of Engineering Drawing with proper dimensions and annotations for two-dimensional Engineering drawings.
2. Able to understand the application of industry standards and techniques applied in Engineering Drawing.
3. Comprehend general projection theory, with an emphasis on the use of orthographic projection to represent three-dimensional objects in two-dimensional views.
4. Can employ 3D pictorial sketching to aid in the visualization process and to efficiently communicate ideas graphically.
5. Students will be able to improve their visualization skills, analyze a drawing and bring out any inconsistencies to put forth inferences graphically.

UNIT I

Introduction to Engineering Drawing - Lettering, Geometrical Constructions.

Conics– Construction of Ellipse, Parabola and Hyperbola (General method only). Construction of Ellipse using special methods like Concentric Circles method, Oblong method & Arcs of Circles method only.

UNIT – II

Projections of points, Projections of lines - Inclined to one planes and inclined to both the planes (Elementary treatment)

UNIT – III

Projections of Planes –Inclined to one planes and inclined to both the planes. (Elementary treatment)

UNIT – IV

Projections of solids:

Cylinder, Cone, Prism and Pyramid - Axis Inclined to one plane and inclined to both the planes

UNIT – V

Isometric projections of Lines, Planes and Simple Solids.

Conversion of Orthographic views into Isometric views & Isometric views to Orthographic views.

TEXT BOOKS:

1. Engineering drawings by N.D.Bhatt

2 Engineering graphics by K.L. Narayana & P.Kannayya

REFERENCES:-

1. Engineering drawing and graphics by Venugopal/ New age

2. Engineering drawing by Johle / TMI

Mode of Evaluation:

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

Course Outcomes & Program Outcomes Mapping:

Course Outcomes	POs											
	1	2	3	4	5	6	7	8	9	10	11	12
CO1	3	2				1			2	2		
CO2	3	2		1		2			2	3		
CO3	3	2							2	3		
CO4	3	2							2	3		
CO5	3	2							2	3		

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I Year B. Tech., I Semester

(7GC18) ENGINEERING CHEMISTRY AND ENGINEERING WORKSHOP LAB

ENGINEERING CHEMISTRY LAB

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 6 of the following experiments has to be performed
VOLUMETRIC ANALYSIS
Redox Titrations
1. Estimation of iron (II) using Diphenylamine indicator (Dichrometry – Internal indicator method)

Water analysis
2. Determination of total hardness of water by EDTA method
3. Estimation of calcium hardness using murexide indicator
4. Estimation of Dissolved Oxygen by Winkler's method
5. Determination of Alkalinity of Water.

Iodometry
6. Determination of Copper by Iodometry

INSTRUMENTATION
Colorimetry

7. Estimation of Iron in Cement by Colorimetry.

Conductometry

8. Conductometric titration of mixture of acids Vs strong base (Neutralization titration)
9. Determination of pH of various water samples.

Fuel analysis

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

Lubricants

11. Determination of Viscosity of oils using Redwood Viscometer I
12. Determination of Viscosity of oils using Redwood Viscometer II
13. Determination of Flash and fire points of Lubricants

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.

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)
20 Marks	10 Marks	70 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	-	-	-	-	-	-	-	-

ENGINEERING WORKSHOP LAB

This syllabus is a part of above course.

Course Objectives:

The budding Engineer may turn out to be a technologist, scientist, entrepreneur, practitioner, consultant etc. There is a need to equip the engineer with the knowledge of common and newer engineering materials as well as shop practices to fabricate, manufacture or work with materials. Essentially he should know the labour involved, machinery or equipment necessary, time required to fabricate and also should be able to estimate the cost of the product or job work. Hence engineering work shop practice is included to introduce some common shop practices and on hand experience to appreciate the use of skill, tools, equipment and general practices to all the engineering students.

Course outcomes:

1) An ability to identify and apply suitable tools for manufacturing of components in workshop trades of Carpentry & Tin smithy.

2) 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 40 x 25 mm soft wood stock

b. Sheet metal shop– Two jobs (exercises) from: Tray, cylinder, hopper or funnel from out of 22 or 20 gauge G.I. sheet.

c. 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.

2. TRADES FOR DEMONSTRATION:

a. Plumbing

b. Fitting

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, SaravanaPandian, 4/e Vikas.
4. Dictionary of Mechanical Engineering, GHF Nayler, Jaico Publishing House.

Mode of Evaluation:

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

Course Outcomes & Program Outcomes Mapping:

CO'S	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
1	3											3
2	1								2			3

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

(7G112)PROGRAMMING IN C LAB

(Common to all 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)
20 Marks	10 Marks	70 Marks

Course Outcomes mapping with Program Outcomes & PSOs:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11	PO1 2	PSO1	PSO2	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
(AN AUTONOMOUS INSTITUTION)

I Year B. Tech., I Semester

(7GC17) ENGLISH LANGUAGE COMMUNICATION SKILLS LAB

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)
20 Marks	10 Marks	70 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

(7G113) I.T WORKSHOP

Course Objectives:

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

Course Outcomes:

1. Able to identify various parts of a computer and to learn Assembling of a Computer
2. Able to explain installation of various operating systems like windows, linux
3. Able to administer about Networking of computers and use Internet facility for Browsing and Searching.
4. Able to distinguish different anti-virus software's to enhance the system performance
5. 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 troubleshooting 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.

1. Desktop computer
2. Server computer
3. Switch (computer science related)
4. Microprocessor kit

5. Micro controller kit
6. Lathe machine
7. Generators
8. Construction material
9. Air conditioner
10. UPS and Inverter
11. RO system
12. Electrical Rectifier
13. CRO
14. Function Generator
15. 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.

16. Desktop operating system
17. Server operating system
18. Antivirus software
19. MATLAB
20. CAD/CAM software
21. 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)
20 Marks	10 Marks	70 Marks

Course Outcomes mapping with Program Outcomes & PSOs:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3

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

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

(7GC21) ENVIRONMENTAL SCIENCE

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.

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 ErachBharucha 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	PO1	PO2	PO3	PO 4	PO 5	PO 6	PO7	PO8	PO9	PO10	PO11	PO12
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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I Year B. Tech., II Semester

(7GC23) ENGINEERING PHYSICS
(Common to CSE, 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 Universitypress.
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)
Mid1 20 Marks	Mid2 20 Marks	10 Marks	70 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

ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES::RAJAMPET
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I Year B. Tech., II Semester
(7GC24) ENGINEERING MATHEMATICS – II
(Common to all branches)

Course Objectives:

- 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

ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES::RAJAMPET
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I Year B. Tech., II Semester
(7G121) 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 construct non- 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 Structure 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)
Mid1 20 Marks	Mid2 20 Marks	10 Marks	70 Marks

Course Outcomes mapping with Program Outcomes & PSOs:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
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
(AN AUTONOMOUS INSTITUTION)
I Year B. Tech.,II Semester
(7G221)BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

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

1. Able to apply fundamental concepts to find response of electrical circuits.
2. Able to identify the types of DC-Machines and their applications
3. Able to calculate the efficiency of DC-Machines.
4. Able to explain the principle operation of Transformer, Induction Motor and their application.
5. Able to draw the slip-Torque characteristics of Induction motor.
6. Able to identify the semi-conductor devices and their applications.
7. Able to explain the types of heating
8. 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, 2ndEd.
3. Mill man and Halkias, *Electriconics devices and circuits*.

Mode of Evaluation:

Continuous Internal Examination (CIE)	Continuous Evaluation	Semester End Examination

Mid1 20 Marks	Mid2 20 Marks	10 Marks	(SEE) 70 Marks

Course Outcomes & Program Outcomes Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
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)

I Year B. Tech., II Semester

(7GC26) ENGINEERING PHYSICS LAB

(Common to CSE, 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)
20 Marks	10 Marks	70 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

(7G222)BASIC ELECTRICAL AND ELECTRONICS ENGINEERING LAB

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)
20 Marks	10 Marks	70 Marks

Course Outcomes & Program Outcomes Mapping:

	PO 1	PO 2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	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
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I Year B. Tech., II Semester

(7G122) DATA STRUCTURES LAB

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)
20 Marks	10 Marks	70 Marks

Course Outcomes mapping with Program Outcomes & PSOs:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
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

GENDER SENSITIZATION
(Audit Course)

Course Objectives:

- To develop students' sensibility with regard to issues of gender in contemporary India.
- To provide a critical perspective on the socialization of men and women.
- To introduce students to information about some key biological aspects of genders.
- To expose the students to debates on the politics and economics of work.
- To help students reflect critically on gender violence.
- To expose students to more egalitarian interactions between men and women.

Unit-I

UNDERSTANDING GENDER:

Gender: Why should we study it?(Towards a world of Equals: Unit-1) Socialization: Makin Women, Making Men (Towards a world ofEquals:Unit-2)

Introduction, Preparing for Womanhood, Growing up Male, First lessons in Caste, Different Masculinities. Just relationships: Being together as Equals (Towards a World of Equals: Unit-12) Mary Kom and other. Love and Acid just do not mix, Love Letters, Mothers and Fathers.

UNIT-II:

GENDER ANDBIOLOGY:

Missing Women: Sex Selection and its consequences (Towards a world of Equals: Unit-

4) Declining Sex Ratio, Demographic Consequences Gender Spectrum: Beyond the Binary (Towards a World of Equals: Unit-10) Two or Many? Struggles with Discrimination. Additional Reading: Our Bodies, Our Health (Towards a World of Equals: Unit-13)

UNIT-III

GENDER ANDLABOUR:

Housework: The Invisible Labour (Towards a World of Equals: Unit-3) "My Mother

doesn't Work". "Share the Load".Women's Work: Its Politics and Economics (Towards a World ofEquals:Unit-7) Fact and Fiction, Unrecognized and Unaccounted work

UNIT-IV

ISSUES OF VIOLENCE:

Sexual Harassment: Say No!(Towards a World of Equals: Unit-6) Sexual Harassment, not Eve-teasing-Coping with Everyday Harassment. Domestic Violence: Speaking Out (Towards a World of Equals: Unit-8) Is Home a Safe Place?-When Women Unite [Film], Rebuilding Lives Thinking about Sexual Violence (Towards a World of Equals: Unit-11) Blaming the Victim-"I Fought for my Life….."

UNIT-V

GENDER STUDIES:

Knowledge: Through the Lens of Gender (Towards a World ofEquals-Unit-5) Point of View. Gender and the Structure of Knowledge. Whose History? Questions for Historians and Others (Towards a World Equals:Unit-9) Reclaiming a Past. Writing other Histories.

Text Book:

"Towards a world of equals: A Bilingual Textbook on gender", A. Suneeta, Uma Bhrugubanda, DuggiralaVasanta, Rama Melkote, Vasudha Nagaraj, Asma Rasheed, GoguShyamala, Deepa Sreenivas and SuiseTharu.

Note: Since it is interdisciplinary Course, Resource Person can be drawn from the fields of English Literature or Sociology or Political Science or any other qualified faculty who has expertise in this field.

Reference Books:

1. Sen, Amartya. "Morethan oneMillion Women areMissing." New York ReviewofBooks 37.20(20 December1990).print "

2. TripiLahiri, BytheNumbers: Where Indian Women Work, Women's Studies Journal(14 November2012)<http://blogs.wsj.com/Indiareal time/2012/11/14/by-the- numbers- where- Indian-Women-work/>

3. K. Satyanarayanaand Susie Tharu(Ed.) Steal Nibs AreSprouting: NewDalit Writing From SouthIndia,Dossier 2:Telugu and Kannada

4. Vimala. "vantillu (the kitchen)". Women writingin India: 600 BC to thepresent volumeII; The20thcentury. Ed. SusieTharuand K.Lalita. Delhi: Oxford universitypress, 1995, 599-601.

5. Shatrughna, veena etal. women's workand its impact on child health and nutrition, Hyderabad, national instituteof nutrition,Indian council of medical research.1993.

6. Gautam,LielaandGita Ramaswamy. "A'Conversation' between aDaughter and aMother". Broadsheet on contemporaryPolitics, special issueon sexualityand harassment; Gender politics on campus today, Ed. Madhumeeta Sinha and Asma Rasheed. Hyderabad: AnveshiResearch center forwomen's Studies, 2014.

7. Abdulali Sohaila. "Ifought for mylife….and won".   Availab

8. VirginiaWoolf. ARoom of one's own. Oxford; Black swan. 1992.

Course Outcomes:

1. Students will have developed a better understanding of important issues related to gender in contemporary India.

2. Students will be sensitized to basic dimensions of the biological, sociological, psychological and legal aspects of gender. This will be achieved through discussion of

materials derived from research, facts, everyday life, literature and film.

3. Students will attain a clear grasp of how gender discrimination works in our society and

how to counterit.

4. Students will acquire insight into the gendered division of labour and its relation to politics and economics.

5. Men and women students and professionals will be better equipped to work and live together as equals.

6. Students will develop a sense of appreciation of women in all walks of life.

7. Through providing accounts of studies and movements as well as the new laws that provide protection and relief to women, the text book will empower students to understand and respond to gender violence in a mature way.

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II Year B. Tech., I Semester

Engineering Mathematics-III (7GC32)
(Common to All branches)

Course Objectives:

- The subject gives the knowledge about the solution of algebraic and transcendental equations and to solve differential equations by numerical methods.

- The course intends to provide an over view about interpolation, numerical differentiation and integration.

- The course explains the concept of curve fitting and partial differential equations.

- The course provides an opportunity to learn how to solve Fourier series and Fourier integral transforms in all engineering fields.

Course Outcomes: Student will be able to

1. Apply the knowledge of numerical methods to solve algebraic, transcendental and ordinary differential equations.

2. Improve the ability of data analysis in numerical differentiation and integration with the help of interpolation.

3. Derive the equations of various curves by the method of least squares to assess the relation between them and to solve partial differential equations.

4. Derive Fourier series for the given periodic function in any arbitrary intervals.

5. Apply the knowledge of Fourier integrals and Fourier transforms to solve differential equations.

UNIT-I

Solution of algebraic and Transcendental Equations-Bisection Method-Method of false Position-Newton-Raphson method.
Numerical solutions of ordinary differential Equations-Taylor's Series-Euler's methods–Runge-Kutta fourth order Method-Milne's predictor-corrector method. (Without proofs)

UNIT-II

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

Numerical Differentiation - Numerical Integration – Trapezoidal rule – Simpson's 1/3 Rule – Simpson's 3/8 Rule.

UNIT –III

Curve fitting: Fitting a straight line-second degree parabola-Exponential curve – power curve by the method of least squares.

Partial differential equations: Formation of partial differential equations by eliminating arbitrary constants and arbitrary functions-solutions of linear equation– Nonlinear equation by Charpit's method-Method of separation of variables.

UNIT-IV

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-V

Fourier Integrals and Fourier transforms: Fourier Integral theorem-Fourier Transforms-Fourier sine transform - Fourier Cosine Transform-Properties-Inverse Transforms -Finite Fourier sine and Cosine Transforms.

Text Books:

1. Higher Engineering Mathematics, B. S. Grewal, 42ndedition, Khanna Publishers, New Delhi.

Reference Books:

1. Advanced Engineering Mathematics, Erwin Kreyszig, 8th edition, New Age International (Pvt) Limited.

2. A text book of Engineering Mathematics, B. V. Ramana, Tata McGraw Hill.

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	

Mapping of COs and POs:

Course Outcomes	Program Outcomes														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

1	3	-	-	-	3	-	-	-	-	-	-	2	3	3	-
2	3	3	-	2	-	-	-	-	-	-	-	1	3	3	-
3	3	-	-	3	2	-	-	-	-	-	-	2	-	3	3
4	3	2	-	-	-	-	-	-	-	-	-	2	-	3	-
5	3	2	-	-	2	-	-	-	-	-	-	3	3	-	-

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

Aptitude and Reasoning Skills (7GC33)
(Common to CE and CSE)

Course Objectives:

- To equip students with aptitude and reasoning skills in order to help them succeed in competitive exams.

- To help students improve their knowledge of quantitative and reasoning skills, which in turn helps them comprehend and solve various mathematical problems in professional life.

Course Outcomes:

1. The student will be able to apply the knowledge of general mathematical models discussed to solve a variety of problems pertaining to Quantitative functions

2. The Student will be able to read between the lines and understand various mathematical and reasoning concepts, puzzles, charts and interpret their logic

UNIT-I

Quantitative Aptitude 1: Number Systems- HCF and LCM -Square Roots and Cube Roots-Averages-Problems on ages-Allegations-Percentages-Profit and loss - Mensuration- Area, Volume and Surface Areas- Permutation and Combination- Decimal Fractions- Simplification. (12 contact hours)

UNIT-II

Reasoning 1: Directions-Blood Relations-Problems on Cubes-Series and Sequences- Odd man out- Coding and Decoding. (8 contact hours)

UNIT-III

Quantitative Aptitude 2: Ratio and Proposition and variation-Inequalities- Time and Work-Time and Distance-Pipes and Cisterns -Simple interest and Compound- interest-

Calendar-Clocks-True Discount, Banker's Discounts-Data Interpretation, Tabulation, Bar Graphs, Pie charts, Line Graphs (10 contact hours)

UNIT-IV

Reasoning 2: Data Sufficiency-Logical deductions-Arrangements and Combinations-Groups and Teams-Puzzles. (7 contact hours)

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.
3. Shakuntala Devi, Puzzles to Puzzle you, Orient Paper Backs   Publishers(OPB), New Delhi, 2005.

Reference Books:

1. Arun Sharma, How to Prepare for Quantitative Aptitude, TMH Publishers, New Delhi, 2003.

2. Sharon Weiner-Green, Irn K.Wolf, Barron's GRE, Galgotia Publications, New Delhi, 2006.

3. Shakuntala Devi, More Puzzles, OPB, New Delhi, 2006.

4. Ravi Narula, Brain Teasers, Jaico Publishing House, New Delhi, 2005.

5. 5.George J Summers, Puzzles and Teasers, Jaico Publishing House,Mumbai, 2005

Mode of evaluation:

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

Mapping of COs and POs:

Course Outcomes	Program Outcomes														
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
1	3	-	-	-	-	-	-	-	-	-	-	2	3	3	-
2	2	-	-	-	-	3	-	-	-	-	-	1	3	3	-

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

Advanced Data Structures Through C++(7G131)

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:

1. Able to understand the basic concepts of C++ and its functions
2. Able to understand and apply the Object Oriented Concepts and performance analysis for algorithms
3. Able to apply and analyze the abstract data types such as Stacks, Queues, and Dictionaries
4. Able to categorize tree data structures such as binary search trees, AVL, Red-black, Splay trees
5. 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.**Course**

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:

	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	3	-	-
CO2	3	3	3	-	-	-	-	-	-	-	-	-	3	-	-
CO3	3	3	3	-	2	-	-	-	3	-	-	3	-	3	3
CO4	3	3	-	-	-	-	-	-	3	-	1	3	-	3	3
CO5	3	3	3	-	2	-	-	-	-	-	-	-	-	-	3

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

DATABASE MANAGEMENT SYSTEMS (7G132)

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:

1. Able to Explain the underlying concepts of database system architecture and technologies
2. Able to Apply database schema for a given scenario using ER model and normalization
3. Able to Devise queries using relational algebra, Relational Calculus and SQL
4. Able to Identify and eliminate redundancies in a database schema using normalization.
5. 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, 5th 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	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO10	PO11	PO12	PSO 1	PSO 2	PSO 3
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 B. Tech I Semester

DIGITAL LOGIC DESIGN (7G133)

Course Objectives:

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

Course Outcomes:

After the completion of this course, the student will:

1. Able to describe the binary number theory, binary codes and Boolean algebra.
2. Able to build the given logical functions using Basic gates and Universal gates and to evaluate the Boolean Function using K-maps.
3. Able to design various combinational circuits.
4. Illustrate the functionality of flip-flops for analysis and design of sequential circuits.
5. 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 ArrayLogic, Sequential Programmable Devices, Introduction to HDL.

Text Book:

Digital Design, 4th Edition,M.MorrisMano,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:

	PO1	PO2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2	PSO 3
CO1	3														
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 B. Tech I Semester

DISCRETE MATHEMATICS (7G134)

Course Objectives:

- 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:

1. Able to understand the logic statements, expressed in terms of predicate quantifiers and logical connectives and solve using rules of inference.
2. Classify algebraic structure and relations for a given mathematical problem.
3. To understand the basic results in combinatorics and binomial thermos.
4. Able to describe the various types of recurrence relations and apply the methods to find out their solutions.
5. 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 Sub graphs, 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)
Mid1 20 Marks	Mid2 20 Marks	10 Marks	70 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	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	

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II B. Tech I Semester

7G135-WEB PROGRAMMING

Course Objectives:

This course make the students

- Understand and apply the HTML concepts in developing the web pages
- Apply the CSS to the web pages.
- Understand the JavaScript programming language
- Understand the JavaScript framework JQuery

Course Outcomes:

After completion of the course Students will be able to:

1. Understand and apply the basic html markups in designing web pages.
2. Apply and design the web pages with images, audio, videos, tables and form controls.
3. Apply the cascading style sheets to web pages.
4. Understand and apply the JavaScript concepts in designing web pages
5. Understand and apply the JQuery concepts in designing web pages.

UNIT -I

Structuring Documents for the Web-A Web of Structured Documents, Introducing HTML5, Tags and Elements, Attribute Groups Core Attributes, Internationalization, Core Elements ,Basic Text Formatting, Understanding Block and Inline Elements, Grouping Content, Working with Lists, Text Processing tags, **Links and Navigation :**Basic Links, Understanding Directories and Directory Structures, Understanding URLs, Creating In-Page Links with the <a> Element

UNIT-II

Images, Audio, and Video -Adding Images Using the <img> Element, Using Images as Links Adding Flash, Video, and Audio to Your Web Pages **Tables:** Introducing Tables, Basic Table Elements and Attributes, Adding a Caption to a Table, Grouping Sections of a Table, Nested Tables, Accessible Tables. **Forms:** Introducing Forms, Creating a Form with the <form> Element, Form Controls, Creating Labels for Controls and the <label> Element, Structuring Your Forms with <fieldset> and <legend> Elements, Focus, Disabled and Read-Only Controls, Sending Form Data to the Server, Creating More Usable Form Fields.

UNIT-III

Cascading Style Sheets: Introducing CSS, Where You Can Add CSS Rules, CSS Properties Controlling Text, Text Formatting, Text Pseudo-Classes, Styling Text, Selectors Lengths, Introducing the Box Model, An Example Illustrating the Box Model, Links, Backgrounds, Lists, Tables, Miscellaneous Properties.

Introduction to XML: Difference between HTML and XML, Basic structure and Syntax of XML Document, DTD, sample examples.

UNIT-IV

Learning JavaScript-Introduction to JavaScript,How to Add a Script to Your Pages, comments in JavaScript, Create an External JavaScript ,The Document Object Model, JavaScript Programming console, General Programming Concepts, Variables, Operators, String Operators (Using + with Strings), Functions, Conditional Statements, Looping, Events, Built-in Objects, Writing JavaScript, A- Word about Data Types.

UNIT-V

Working with jQuery: introduction to jQuery, adding jQuery to Your Page, jQuery Basics, jQuery and the DOM, Managing Events with jQuery, Ajax with jQuery, jQuery UI.

Text Books:

1. Beginning HTML and CSS Rob Larsen, Wrox Programmer to Programmer

Reference Books:

1. JavaScript and JQuery: Interactive Front-End Web Development, Jon Duckett, Wiley Publications

2. Web Design with HTML, CSS, JavaScript and jQuery Set, Jon Duckett, Wiley Publications

3. jQuery in Action, Bear Bibeault, Yehuda Katz, and Aurelio De Rosa,Third Edition, Manning Publications

4. https://www.w3schools.com/

Mode of evaluation:

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

Mapping of COs and POs:

Course	Program Outcomes														
Objectives	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	-	-	3	3	-	3	-	-	3	-	3	3	-	3	3
2	-	-	3	3	-	3	-	-	3	-	3	3	-	3	3
3	-	3	3	3	3	-	-	-	3	-	3	3	-	3	-
4	-	3	3	3	3	3	-	-	3	-	3	3	2	-	3
5	-	3	3	3	3	3	-	-	3	-	3	3	2	3	-

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II B. Tech I Semester

Advanced Data Structures Lab Through C++ (7G136)

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:

1. Able to know about Object oriented programming concepts like Encapsulation, Constructors & Destructor, function overloading
2. Able to construct OOP concepts like Operator overloading, inheritance, and polymorphism
3. Able to use Abstract Data Types for data structures with templates
4. Able to design the different trees and their operations
5. 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). 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 forpriority 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)
20 Marks	10 Marks	70 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

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II B. Tech I Semester

DATABASE MANAGEMENT SYSTEMS LAB (7G137)

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 **StoredProcedure**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. Raghurama Krishnan, Johannes Gehrke, *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)
20 Marks	10 Marks	70 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	PSO3
CO1	2	2	3	3		1					3	3	3		2
CO2	2	2		3	3									2	
CO3			3	3	3				3		3	3		2	
CO4			3	3	3				3		3	3	3		2
CO5				3	3				3		3	3	3		

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II B. Tech I Semester
7G138-Web Programming Lab (7G138)

Course Objectives:

- Students will easily can develop Static web pages
- Students can apply CSS to webpages
- Students can write client side scripting programs using JavaScript.

Course Outcomes:

After completion of the course Students will be able to:

1. Apply the basic html markups in designing web pages.
2. Apply and design the web pages with images, audio, videos, tables and form controls.
3. Apply the cascading style sheets to web pages.
4. Apply the JavaScript concepts in designing web pages
5. Apply the jQuery concepts in designing web pages

1. Create HTML Pages contains
   a. Basic text formatting Elements
   b. Block and Inline Elements
2. Create Html pages Contains
   a. Different Types of LISTs
   b. Text Processing Tags

3) Create HTML Pages Contains links and Navigation
   a) How to link between pages of your site
   b) How to link to other sites
   c) How to structure the folders on your website
   d) How to link to specific parts of a page in your site

4) Create HTML Pages which can work with Images, Audio and Video elements
5) Create HTML Pages contains Table element.
6) Create HTML Pages with Form elements.
7) Apply Different types of CSS to the HTML pages.
   a. Styling Text .
   b. Styling LINKS.
   c. Styling Backgrounds.
   d. Styling Lists.
   e. Styling Tables.
8) Simple XML Script with DTD.
9) Simple JavaScript Programs for the following
   a)Functions.
   b)Control Statements.
   c)Loop Statements.

10. Handling JavaScript Events.
    a. Window Events.
    b. User Events (Actions performed on HTML FORM elements using Keyboard and Mouse)
11. Sample Java Script Programs to work with BUILT-IN Objects.
12. Working with jQuery: Environment setting to work with jQuery
    a. Sample jQuery Programs to work with DOM.
    b. Event Handling.
13. Sample program for jQuery with Ajax.
14. Sample web page with jQuery UI.

Text Books:

1. Beginning HTML and CSS Rob Larsen, Wrox Programmer to Programmeer.

Reference books:

1. JavaScript and JQuery: Interactive Front-End Web Development, Jon Duckett, Wiley Publications
2. Web Design with HTML, CSS, JavaScript and jQuery Set, Jon Duckett, Wiley Publications
3. jQuery in Action, Bear Bibeault, Yehuda Katz, and Aurelio De Rosa, Third Edition, Manning Publications
4. https://www.w3schools.com

Mode of evaluation:

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

Mapping of COs and POs:

Course Objectives	Program Outcomes														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	-	-	3	3	-	2	-	-	3	-	2	3		3	3
2	-	-	3	3	-	2	-	-	3	-	2	3		3	3
3	-	3	3	3	3	-	-	-	3	-	2	3		3	
4	-	3	3	3	3	2	-	-	3	-	2	3	3		3
5	-	3	3	3	3	2	-	-	3	-	2	3	3	3	

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II B. Tech II Semester

PROBABILITY AND STATISTICS (7GC42)
(Common to CE, ME, CSE)

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)
Mid1 20 Marks	Mid2 20 Marks	10 Marks	70 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	2	3	
CO2	3	3		3								3	2	3	
CO3	3	3		3								3		3	2
CO4	3	3		3	2							3		3	
CO5	3	3		3	2							3			2

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II B. Tech II Semester

COMPUTER ORGANIZATION (7G141)

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 and understand 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

1. Show the basic structure and operation of a computer.
2. Illustrate register-transfer-level language and able to identify state of art in memory
3. Demonstrate control memory and micro programs.
4. Perform arithmetic operations and analyze memory organization.
5. 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	70 Marks

Course Outcomes & Program Outcomes Mapping:

	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2	PSO3
CO1	3	-	3	3	-	-	-	-	-	-	-	3	3	3	-
CO2	3	3	3	-	-	-	-	-	-	3	1	-	3	3	-
CO3	3	3	-	3	-	-	-	-	-	-	-	3	-	3	-
CO4	3	3	3	-	3	-	-	-	-	-	-	3	3	3	-
CO5	-	3	-	3	3	-	-	-	-	3	-	3	-	-	1

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

7G142- DESIGN AND ANALYSIS OF ALGORITHMS

Course Objectives:

- 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)
Mid1 20 Marks	Mid2 20 Marks	10 Marks	70 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	PSO 2	PSO 3
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 B. Tech II Semester

FORMAL LANGUAGES AND AUTOMATA THEORY(7G143)

Course Objectives:

1. Students will demonstrate knowledge of basic mathematical models of computation and describe how they relate to formal languages

2. Prove the equivalence of languages described by finite state machines and regular expressions.

3. To Identify a language's location in the Chomsky hierarchy (regular sets, context-free, context-sensitive, and recursively enumerable languages)

4. Be able to prove the equivalence of languages described by pushdown automata and context free grammars.

5. 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, Greibatchnormal 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. S

Mode of Evaluation:

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

OBJECT ORIENTED PROGRAMMING USING JAVA (7G144)

Course Objectives:

- Student will understand and apply the concepts of OOP's using java and create console based applications.
- Students will be able to understand, apply and analyze the reusability concepts like packages, interfaces, and exception handling
- Students will be able to understand and implement the multi threading and collection frame work in real time applications developed using JAVA.
- Students will be able to understand and apply the Generic programming and Lambda Expressions.
- Students will be able to apply and analyze the Collection Frame work.

Course Outcomes:

After Completion of the Course Students are getting…

1. Ability to Understand and apply fundamentals of object-oriented programming features through Java Programming Language.
2. Ability to apply and analyze reusability concepts like Inheritance, interfaces and packages in real time applications developed using JAVA.
3. Ability to acquire knowledge on multithreading, exception handling and apply the same in developing real time java based applications.
4. Ability to understand and apply Generic Programming and Lambda Expressions.
5. Ability to understand and apply the Collection framework.

UNIT–I

The Java Language: The History and Evolution of Java, Java's Magic: The Bytecode, The Java Buzzwords, The Evolution of Java, Java SE 8. **Object- Oriented Programming -**Two Paradigms, Abstraction, The three OOP Principles, A First Simple Program-Entering the Program, Compiling the Program, Running the Program, Overview of Java, Data Types, Variables, Arrays, operators and control statements.

Classes and Objects:

Class Fundamentals, Declaration of Objects, Assigning Object Reference Variables, Introducing Methods, Adding a Method to the Class, Returning a Value, Adding a Method That Takes Parameters, Constructors, Parameterized Constructors, The this Keyword, Instance Variable Hiding, Garbage Collection, The finalize( ) Method, Overloading Methods, Overloading Constructors, Using Objects as Parameters, A Closer Look at Argument Passing, Returning Objects, Recursion, Introducing Access Control, Understanding static, Introducing final, Arrays Revisited, Introducing Nested and Inner Classes, Exploring the String Class.

UNIT– II

Inheritance : Inheritance Basics, Member Access and Inheritance, A Practical Example, Accessing super class members, Usage super key word, Creating a Multilevel Hierarchy, Accessing Constructors in inheritance, Method Overriding, Dynamic Method Dispatch, Abstract Classes, Using final with Inheritance. Object Class.

Packages and Interfaces: Packages, Defining a Package, Finding Packages and CLASSPATH, A Short Package Example, Access Protection, an Access Example, Importing Packages.

Interfaces: Defining an Interface, Implementing Interfaces, Nested Interfaces, Applying Interfaces, Variables in Interfaces, Interfaces Can Be Extended, Default Interface Methods, Default Method Fundamentals, A More Practical Example, Multiple Inheritance Issues, Use static Methods in an Interface, Final Thoughts on Packages and Interfaces

UNIT–III

Exception Handling: Exception-Handling Fundamentals, Exception Types, Uncaught Exceptions, Using try and catch, Displaying a Description of an Exception, Multiple catch Clauses, Nested try Statements, throw, throws, finally, Java's Built-in Exceptions, Creating Your Own Exception Subclasses.

Multithreaded Programming: The Java Thread Model, Thread Priorities, Synchronization, Messaging, The Thread Class and the Runnable Interface, The Main Thread, Creating a Thread, Implementing Runnable, Extending Thread, Choosing an Approach, Creating Multiple Threads, Using isAlive( ) and join( ), Thread Priorities, Synchronization Using Synchronized Methods, The synchronized Statement, Interthread Communication, Deadlock, Suspending, Resuming, and Stopping Threads, Obtaining A Thread's State, Using Multithreading.

UNIT–IV

Generics : What Are Generics, Generics Work Only with Reference Types, A Generic Class with Two Type Parameters, The General Form of a Generic Class, Bounded Types, Using Wildcard Arguments, Bounded Wildcards Creating a Generic Method, Generic Constructors, Generic Interfaces, Raw, Generic Class Hierarchies, Using a Generic Superclass, A Generic Subclass, Run-Time Type Comparisons Within a Generic Hierarchy, Casting, Overriding Methods in a Generic Class, Type Inference with Generics, Erasure, Bridge Methods, Ambiguity Errors, Some Generic Restrictions, Type Parameters Can't Be Instantiated, Restrictions on Static Members, Generic Array Restrictions, Generic Exception Restriction .

Lambda Expressions: Introducing Lambda Expressions, Lambda Expression Fundamentals, Functional Interfaces, Some Lambda Expression Examples, Block Lambda Expressions, Generic Functional Interfaces, Passing Lambda Expressions as Arguments, Lambda Expressions and Exceptions, Lambda Expressions and Variable Capture, Method References, Method References to static Methods, Method References to Instance Methods, Method References with Generics, Constructor References, Predefined Functional Interfaces.

UNIT–V

java.util Package:

The Collections Framework: Collections Overview, The Collection Interfaces: The Collection Interface, The List Interface, The Set Interface, The Sorted Set Interface; The Collection Classes: The Array List Class, The Linked List Class, The Hash SetClass, The LinkedHashSet Class, The TreeSet Class, The EnumSetClass, Accessing a Collection via an Iterator, Using an Iterator, The For-Each Alternative to Iterators, Spliterators, Storing User-Defined Classes in Collections, The Random Access Interface, Working with Maps, The Map Interfaces, The Map Classes, The Collection Algorithms. Arrays, The Legacy Classes and Interfaces, The Enumeration Interface, Vector, Stack, Dictionary, Hashtable,

Properties, Using store( ) and load( ), Parting Thoughts on Collections, StringTokenizer, Scanner, The Scanner Constructors, Scanning Basics, Some Scanner Examples.

Text Book:

1. Herbert Schildt.Java. The complete reference, TMH. 9thEdition.

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)
Mid1 20 Marks	Mid2 20 Marks	10 Marks	70 Marks

Mapping of COs and POs:

	Program Outcomes														
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
1	3	3	-	-	-	-	-	-	-	-	-	-	2	3	-
2		3	3	2	-	-	-	-	-	-	-	-	-	3	2
3	3	3	3	2	-	-	-	-	-	-	-	-	2	-	-
4	3	3	3	-	-		-	-	-	-	-	-	-	3	-
5	3	3	3	-	-	-	-	-	-	-	-	-	-	-	2

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

OPERATING SYSTEMS (7G145)

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:

Continuous Internal Examination (CIE)		Continuous Evaluation	Semester End Examination (SEE)
Mid1 20 Marks	Mid2 20 Marks	10 Marks	70 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	PS O1	PS O2	PS O3
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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II B. Tech II Semester

DESIGN AND ANALYSIS OF ALGORITHMS LAB (7G147)

Course Objectives:

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

- Analyze the asymptotic performance of algorithms.
- Write rigorous correctness proofs for algorithms.
- Demonstrate a familiarity with major algorithms and data structures.
- Apply important algorithmic design paradigms and methods of analysis.
- Synthesize efficient algorithms in common engineering design situations.

Course Outcomes:

Students who complete the course will have demonstrated the ability to do the following:

1. Analyze worst-case running times of algorithms using asymptotic analysis.
2. Describe the divide-and-conquer paradigm and explain when an algorithmic design situation calls for it. Synthesize divide-and-conquer algorithms. Derive and solve recurrences describing the performance of divide-and-conquer algorithms.
3. Trace the greedy paradigm and explain when an algorithmic design situation calls for it. Synthesize greedy algorithms, and analyze them
4. Outline the dynamic-programming paradigm and explain when an algorithmic design situation calls for it. Synthesize dynamic-programming algorithms, and analyze them.
5. Narrate the Back tracking and Branch and Bound paradigm and explain when an algorithmic design situation calls for it.

Program 1: Sort a given set of elements using the Quicksort method and determine the time required to sort the elements. Repeat the experiment for different values of n, the number of elements in the list to be sorted and plot a graph of the time taken versus n.

Program 2: Implement a parallelized Merge Sort algorithm to sort a given set of elements and determine the time required to sort the elements. Repeat the experiment for different values of n, the number of elements in the list to be sorted and plot a graph of the time taken versus n.

Program 3: Find Minimum Cost Spanning Tree of a given undirected graph Prim's algorithm.

Program 4: Find Minimum Cost Spanning Tree of a given undirected graph using Kruskal's algorithm.

Program 5: Implement the 0/1 knapsack problem by the following.

a) Greedy algorithm.   b) Dynamic programming algorithm

Program 6: Find optimal ordering of matrix multiplication using Dynamic programming method.

Program 7: Implement dynamic programming algorithm to solve all pairs shortest path problem.

Program 8: Uses dynamic programming algorithm to solve the optimal binary search tree problem.

Program 9: Consider the problem of eight queens on an (8x8) chessboard. Two queens are said to attack each other if they are on the same row, column, or diagonal. Implements

backtracking algorithm to solve the problem i.e. place eight non-attacking queens on the board.

Program 10: Implement the 0/1 knapsack problem using the Branch and bound algorithm.

Program 11: Implement the traveling sales person's problem using the Branch and Bound.

Text Books:

1. Richard F.Gilberg, BehrouzA.Forouzan, Thomson, "Data Structures, A Pseudocode Approach with C++", 1st ed., Business Information Press, 2007.

2. D.S.Malik, Thomson, "Data Structures Using C++", 1st ed., Cengage Learning, 2007.

3. Ellis Horowitz, SatrajSahni and Rajasekharam, "Fundamentals of Computer Algorithms", 2nd ed., Galgotia publications pvt. Ltd, 2006.

Mode of evaluation:

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

Mapping of COs and POs:

Course Outcomes	Program Outcomes														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	3	3											3	3	3
2	3	3	3	3	3									3	3
3	3	3	3	3	3									3	3
4	3	3	3	3	3									3	3
5	3	3	3	3	3									3	3

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

JAVA LAB (7G148)

Course Objectives:

- Understand fundamentals of programming such as variables, conditional and iterative execution, methods, etc.

- Understand fundamentals of object-oriented programming in Java, including defining classes, invoking methods, using class libraries, etc.

- Be aware of the important topics and principles of software development.

- Have the ability to write a computer program to solve specified problems.

- Be able to use the Java SDK environment to create, debug and run simple Java programs

Course Outcomes:

1. Design and implement the programs to demonstrate classes, objects and encapsulation.
2. Demonstrate and implement the principles of inheritance, polymorphism, constructor overloading, and method overloading
3. Understanding the use of packages, creation of packages, importing the packages and the importance of the collection of framework
4. Implementation of multithread programming, Thread Priority, Exception Handling and Creation of own Exceptions.
5. 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 at least 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 interfaces.

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:

Any four programs on Generic Programming,

Week 10:

Any four programs on Lambda expressions.

Week 11:

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 12:

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

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

Week 13:

a)Write a program to implement queue ADT.

b)Write a program to implement linkedlist

Text Books:

1. H.M.Dietel and P.J.Dietel, Java How to Program 6thEdition, Pearson Education/PHI

2. Y.Daniel Liang, Introduction to Java programming, Pearson Education, 6thEdition.

3. Cay Horstmann,Big Java, 2ndedition, Wiley Student Edition, Wiley India Private

Limited.

4. Herbert Schildt.Java. The complete reference, TMH. 9thEdition.

Mode of evaluation:

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

Mapping of COs and POs:

Course Outcomes	Program Outcomes														
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
1	1	-	3	-	3	3	3	1	3	-	3	-	2	3	-
2	-	-	3	3	3	-	3	-	-	-	3	-	-	3	2
3	-	-	3	3	3	3	3	-	3	-	3	-	2	-	-
4	-	-	3	-	3	3	3	1	3	-	3	-	-	3	-
5	-	-	3	-	3	3	-	1	3	-	3	-	-	3	2

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

OPERATING SYSTEMS LAB (7G149)

Course Objectives:

Students will understand how to write programs for

- The threads, the process scheduling and synchronization
- deadlock, detect and avoid deadlock
- paging technique and its replacement algorithms
- file management techniques

Course Outcomes:

Upon the completion of the lab, students will be:

1. Able to do experiments with the threads, the process scheduling and synchronization
2. Able to do experiments with deadlock, detect and avoid deadlock
3. Able to do experiments with paging technique and its replacement algorithms
4. Able to do experiments with file management techniques

System/ Software Requirement:

- Intel based desktop PCs LAN CONNECTED with minimum of 166 MHZ or faster processor with at least 64 MB RAM and 100 MB free disk space.
- Use any language for implementation.

List of Programs:

1. Simulate multithreaded concept using the Pthreads API.
2. Simulate the following CPU scheduling algorithms
a) FCFS   b) SJF   c) Round Robin   d) Priority
3. Simulate synchronization of producer-consumer problem.
4. Simulate process synchronization using
a) Binary semaphore.   b) Counting semaphore.
5. Simulate dining philosopher's problem solution using monitor.
6. Simulate
a) Bankers Algorithm for Dead Lock Avoidance
Dead Lock Detection.
7. Simulate the following page replacement algorithms
a) FIFO   b) LRU   c) LFU   d) optimal
8. Simulate Paging Technique of memory management.
9. Simulate file Allocation strategies:
a) Sequential   b) indexed   c) linked
10.Simulate the following File Organization Techniques

a) Single level directory   b) Two level   c) Hierarchical

Text Books:

- Thomas W. Doeppner, Operating Systems In Depth: Design and Programming, John Wiley & Sons.
- Dan Parks Sydow, Programming the Be Operating System: Writing Programs for the Be Operating System, O'Reilly.

Mode of Evaluation:

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

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III Year B.Tech., I Semester

(7G151) ADVANCED JAVA PROGRAMMING

Course Objectives:

This Course make the Students

1. Understand GUI Programming using JavaFX.
2. Understand and Apply the JavaFX controls in GUI applications.
3. Understand JDBC API.
4. Understand server side programming using SERVLETS and JSP

Course Outcomes:

After Completion of this course the Students will be able to..
1. Understand JavaFX GUI Programming Concepts.
2. Apply JavaFx Controls and event handling in GUI applications.
3. Understand and apply JDBC API to retrieve data from Data Base.
4. Understand and apply Servlets in server side programming.
5. Understand and apply JSPs in developing web applications.

Unit-1

Introducing JavaFX GUI Programming: IntroducingJavaFX GUI Programming, JavaFX Basic Concepts -The JavaFX Packages ,The Stage and Scene Classes ,Nodes and Scene Graphs , Layouts , The Application Class and the Lifecycle Methods,Launching a JavaFX Application . A JavaFX Application Skeleton ,Compiling and Running a JavaFX Program .The Application Thread . A Simple JavaFX Control: Label , Using Buttons and Events - Event Basics

,Introducing the Button Control ,Demonstrating Event Handling and the Button Drawing Directly on a Canvas.

Unit-2

Exploring JavaFX Controls-Using Image and ImageView ,ToggleButton, RadioButton, CheckBox,ListView ,ComboBox ,TextField , ScrollPane ,TreeView . Introducing Effects and Transforms, AddingTooltips ,Disabling a Control .JavaFX Menus :Menu Basics. An Overview of MenuBar, Menu, and MenuItem. Create a Main Menu . Add Mnemonics and Accelerators to Menu Items .Add Images to Menu Items. Use RadioMenuItem and CheckMenuItem . Create a Context Menu . Create a Toolbar .MenuDemoProgram .

Unit-3:

JDBC API : Introduction to JDBC API. System Requirements. Types of JDBC Drivers

A Brief Overview of Java DB. Creating a Database Table -Oracle Database .Connecting to a Database. Setting the Auto-Commit Mode .Committing and Rolling Back Transactions Transaction Isolation Level,.JDBC-Types-to-Java-Types Mapping .Knowing About the Database.Executing SQL Statements. Processing Result Sets.Making Changes to a

ResultSet.Handling Multiple Results from a Statement .

[text book; beginning java8 Apis extensions and libraries]

Unit-4

Introducing Servlets: Background,The Life Cycle of a Servlet .Servlet Development Options

Using Tomcat A Simple Servlet .Create and Compile the Servlet Source Code . Start Tomcat

.Start a Web Browser and Request the Servlet .The Servlet API :Thejavax.servlet Package . Reading Servlet Parameters .The javax.servlet.httpPackage .

Handling HTTP Requests and Responses . Handling HTTP GET Requests .Handling HTTP POST Requests .Using Cookies .Session Tracking .Accessing Databases with JDBC using servlets.

Unit-5

JSP Basics: What's Wrong with Servlets? Running Your First JSP ,How JSP Works ,The JSP Servlet Generated Code ,The JSP API ,The Generated Servlet Revisited ,Implicit Objects.

JSP Syntax, Directives , Scripting Elements , Standard Action Elements , Comments Converting into XML Syntax. Developing JSP Beans: Calling Your Bean from a JSP Page, A Brief Theory of JavaBeans ,Making a Bean Available, Accessing Properties Using jsp:getProperty and jsp:setProperty , Setting a Property Value from a Request ,JavaBeans Code Initialization The SQLToolBean Example , Using JSP Custom Tags Writing Your First Custom Tag, The Role of the Deployment Descriptor, The Tag Library Descriptor ,The Custom Tag Syntax ,The JSP Custom Tag API ,The Life Cycle of a Tag Handler

[text book: Java for the Web with Servlets, JSP, and EJB: A Developer's Guide to J2EE Solutions By Budi Kurniawan]

TEXT BOOKS:

1. JAVA The Complete Reference 9[th]edition ,Herbert Schildt Oracle Press[unit-1,2,4].
2. Beginning java8 Apis extensions and libraries, KishoriSharan, Apress[unit-3]

Java for the Web with Servlets, JSP, and EJB: A Developer's Guide to J2EE Solutions By Budi Kurniawan.[unit-5]

Mode of Evaluation:

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

Course Outcomes & Program Outcomes Mapping:

CO'S	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO 1	3	2	3	3	3								3	3	3
CO 2		2	3	3	3								3	3	3
CO 3	3		3	3	3								3	3	3
CO 4	3		3	3	3								3	3	3
CO 5	3		3	3	3								3	3	3

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

COMPLIER DESIGN (7G152)

Course Objectives:

- To describe the design of a compiler including its phases and components
- To demonstrate top down parser.
- To organize bottom parser and syntax directed translation.
- To evaluate conversion of popular programing language constructs into Intermediate code forms and symbol table format.
- To distinguish different optimization techniques and design object code generation algorithms in the design of compiler.

COURSE OUTCOMES

- Able to define the complier implementation.
- Able to implement top down parser.
- Able to perform bottom up parser and examine syntax directed translation.
- Able to justify the intermediate code forms and symbol table.
- Able to apply different optimization techniques and develop code generation algorithms in the design of compiler.

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.

   "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)
Mid1 20 Marks	Mid2 20 Marks	10 Marks	70 Marks

Course Outcomes & Program Outcomes Mapping:

Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	-	-	-	3	-	3	-	-	-	-	1	3	3	3
CO2	-	3	-	3	3	2	-	-	-	-	2	-	-	3	-
CO3	3	3	-	3	3	-	3	-	-	-	-	-	3	-	3
CO4	3	3	2	3	-	-	3	-	-	-	-	-	3	-	3
CO5	3	-	2	3	3	2	3	-	1	-	2	-	-	3	-

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III Year B.Tech., I Semester

COMPUTER NETWORKS (7G153)

(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 implement DNS and Network Security.

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 implement DNS and Network Security.

Unit–I

INTRODUCTION: Network Hardware, Network Software, Reference Models-OSI, TCP/IP, Examples of Networks-The Internet, 4G Mobile Phone Networks, RFID and Sensor Networks.

PHYSICAL LAYER: Guided Transmission, Wireless Transmission, Public switched telephone networks-Structure of the telephone system, FD

M, TDM, Switching.

Unit– II

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

MEDIUM ACCESS SUB LAYER: The Channel Allocation Problem, Multiple access protocols, 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: Congestion Control Algorithms. Quality of Service-Application Requirements, Traffic Shaping, The Network layer in the Internet-The

IPV4protocol, IP- addresses, Internet control protocols, IPV6.

Unit– IV

TRANSPORT LAYER: Transport Services, Elements of Transport protocols, The Internet Transport Protocols-TCP and UDP protocols.

Unit– V

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

NETWORK SECURITY: Introduction to Cryptography, DES—The Data Encryption Standard, RSA.

Text Book:

Andrew S Tanenbaum, *Computer Networks*. Pearson Education/PHI, 5[th]Ed.

Reference Books:

1. Behrouz A. Forouzan,*Data Communications and Networking*. TMH, 3[rd]Ed.
2. S.Keshav, *An Engineering Approach to Computer Networks*. Pearson Education, 2[nd]Ed.
3. W.A. Shay, *Understanding communications and Networks*. Thomson, 3[rd]Ed.

Mode of Evaluation:

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

Course Outcomes & Program Outcomes Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1			3				1					2	1		
CO2		3	3	2										3	
CO3		3	3	2										3	
CO4		3	3											3	
CO5						1					1	2		3	1

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III Year B.Tech., I Semester

PYTHON PROGRAMMING (7G154)

Course Objectives:

- To learn the basic programming constructs of python programming.
- To learn implementation of object oriented systems in python programming.
- To learn creation and usage of files and regular expressions in python programming
- To learn implementation of multithreading in python programming

Course Outcomes: After Successful completion of this course student,

- Able to understand the basic programming concepts of python programming
- Able to acquire knowledge on the usage of strings, characters, functions, lists, tuples, dictionaries in python programming.
- Able to apply object oriented programming concepts in python programming.
- Able to understand the usage of files and regular expressions in python programming.
- Able to apply the multi-threading in python programming.

Unit–I

Introduction to python, writing first python program, and data types in python, operators, input and output, control statements, arrays in python

Unit–II

Strings and Characters: Creating Strings, Length of a String, Indexing in Strings, Slicing the Strings, Repeating the Strings, Concatenation of Strings, Checking Membership, Comparing Strings, Removing Spaces from a String, Finding Sub Strings, Counting Substrings in a String, Strings are Immutable, String Testing Methods, Formatting the Strings, Working with Characters, Sorting Strings, Searching in the Strings, Finding Number of Characters and Words, Inserting Sub String into a String, **Functions, Lists and Tuples, Dictionaries**

Unit–III

Introduction to OOPS: Specialty of Python Language, **Classes and Objects:** Creating a Class The Self Variable, Constructor, Types of Variables, Namespaces, Types of Methods, Passing Members of One Class to Another Class, Inner Classes, **Inheritance and Polymorphism:** Constructors in Inheritance, Overriding Super Class Constructors and Methods, The super() Method, Types of Inheritance, Method Resolution Order (MRO),Polymorphism, Duck Typing Philosophy of Python, Operator Overloading, Method Overloading, Method Overriding, **Abstract classes and Interfaces:** Abstract Method and Abstract Class,

Interfaces in Python, Abstract Classes vs. Interfaces,**, Exceptions:** Errors in a Python Program, Exceptions, Exception Handling, Types of Exceptions, The Except Block, The assert Statement, User-Defined Exceptions

Unit–IV

Files: Types of Files in Python, Opening a File, Closing a File, Working with Text Files Containing Strings, Knowing Whether a File Exists or Not, Working with Binary Files, The with Statement, Pickle in Python, The seek() and tell() Methods**, Regular Expressions in Python:** Regular Expressions, Sequence Characters in Regular Expressions, Quantifiers in Regular Expressions, Special Characters in Regular Expressions, Using Regular Expressions on Files

Unit–V

Threads: Single Tasking, Multitasking, Differences between a Process and a Thread, Concurrent Programming and GIL, Uses of Threads, Creating Threads in Python, Thread Class Methods, Single Tasking using a Thread, Multitasking using Multiple Threads, Thread Synchronization, Deadlock of Threads, Avoiding Deadlocks in a Program, Communication between Threads, Thread Communication using notify() and wait() Methods, Thread Communication using a Queue, Daemon Threads

Text Book:

Core Python Programming, R.Nageswara Rao, Dream Tech Press (Wiley India), 2017 Edition

Reference Books:

1. Learn Python the Hard Way: A Very Simple Introduction to the Terrifyingly Beautiful World of Computers and Code Zed Shaw, (Zed Shaw's Hard Way Series, Third Edition
2. Automate the Boring Stuff with Python: Practical Programming for Total Beginners, Al Sweigart, 1st Edition, Kindle Edition
3. Dive into Python 3, Mark Pilgrim , Apress 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 Objectives	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	-	3	3	-	-	-	3	3	3	3	3	-	-
CO2	3	-	-	3	3	-	-	-	3	-	-	3	3	-	2
CO3	3	3	-	3	3	-	-	-	3	3	3	3	3	-	2

CO4	3	3	-	3	3	-	-	-	-	3	-	3	3	-	-
CO5	-	-	1	3	3	-	-	-	-	3	3	3	3	-	-

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III Year B.Tech., I Semester

SOFTWARE ENGINEERING (7G155)

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, PankajJalote, 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)
Mid1 20 Marks	Mid2 20 Marks	10 Marks	70 Marks

Course Outcomes & Program Outcomes Mapping with PSO's:

Course Outcomes	PO's												PSO's		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	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	-	-	-	-

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III Year B.Tech., I Semester

MICROPROCESSORS & INTERFACING (7G356)

(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)
Mid1 20 Marks	Mid2 20 Marks	10 Marks	70 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$_{11}$	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
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III Year B.Tech., I Semester

(7GC52) 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)
20 Marks	10 Marks	70 Marks

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

(7G156)ADVANCED JAVA PROGRAMMING LAB

Course Objectives:

This Course make the Students

1. Understand and Apply the JavaFX controls in GUI applications.
2. Understand and retrieve data from data base using JDBC API.
3. Understand server side programming using SERVLETS and JSP

Course Outcomes:

After Completion of this course the Students will be able to..

1. Apply JavaFX GUI Programming Concepts.
2. Apply JavaFx Controls and event handling in GUI applications.
3. Apply JDBC API to retrieve data from Data Base.
4. Apply Servlets in server side programming.
5. Apply JSPs in developing web applications.

Week-1

1. Create Simple JavaFx appliication skeleton.
2. Demonstrate a JavaFX label.
3. Demonstrate JavaFX events and buttons
4. Demonstrate drawing on canvas

Week-2

5. Load and display an image.Demonstrate an image in a label. Use an image with a button.
6. Demonstrate a toggle button.
7. A simple demonstration of Radio Buttons and event handling.
8. Radio button example demonstrates how the currently selected button in a group can be obtained under program control, when it is needed, rather than responding to action or change events.

Week-3

9. Demonstrate Check Boxes.
10. Demonstrate a list view, adding scrollbars, enabling multiple selections in the list.
11. Demonstrate a combo box.
12. Demonstrate a text field.

Week-4

13. Demonstrate a scroll pane
14. Demonstrate a TreeView
15. Demonstrate rotation, scaling, glowing, and inner shadow on JavaFx controls
16. Demonstrate different types of Menus

Week-5

17.Java Program to get connection with Oracle Database, execute SQL Statements and handling the Result set.

Week-6

18.Simple servlet program

19.Program to read servlet Perameters

20.Program to handle HTTP

Get and POST Request using servlets

Week-7

21.Program for using Cookies i8n servlets.

22.Program for session tracking in servlets.

23.Program to access and perform operations on Database using servlets.

Week-8

24.Simple JSP Program

25.Program to call a Java Bean in JSP

26.Program to access properties Using jsp:getProperty and jsp:setProperty.

27.Simple JSP page with custom tags.

TEXT BOOKS:

1. JAVA The Complete Reference 9th edition , Herbert Schildt Oracle Press[week-1,2,3,4 and 6,7].
2. Beginning java8 Apis extensions and libraries, Kishori Sharan, Apress [week-5]
3. Java for the Web with Servlets, JSP, and EJB: A Developer's Guide to J2EE Solutions By Budi Kurniawan.[week-8]

Mode of Evaluation:

Day to Day Evaluation	Internal lab Evaluation	Semester End lab Examination (SEE)
20 Marks	10 Marks	70 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
CO 1	3	2	3	3	3								3	3	3
CO 2		2	3	3	3								3	3	3
CO 3	3		3	3	3								3	3	3
CO 4	3		3	3	3								3	3	3
CO 5	3		3	3	3								3	3	3

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

MICROPROCESSORS AND INTERFACING LAB & PYTHON PROGRAMMING LAB (7G157)

MICROPROCESSORS AND INTERFACING LAB

Course Objectives:

- To learn Assembly Language programming.
- To understand programmable peripheral devices and their Interfacing.

Course Outcomes:

Upon the completion of course student will be

- Able to write Assembly Language programs.
- Able to understand the operations and applications of microprocessors
- Able 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. 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 directio

Mode of Evaluation:

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

Course Outcomes & Program Outcomes Mapping (PART-A):

	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	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

PYTHON PROGRAMMING LAB

Course Objectives:

- To learn the basic programming constructs of python programming.
- To learn implementation of object oriented systems in python programming.
- To learn creation and utilization of files and regular expressions in python programming
- To learn implementation of multithreading in python programming

Course Outcomes:

After Successful completion of this course student,

- Able to understand the basic programming concepts of python programming
- Able to apply the knowledge of strings, characters, functions, lists, tuples, dictionaries in python programming.
- Able to practice the implementation of object oriented concepts in python programming.
- Able to understand the usage of files and regular expressions in python programming.
- Able to analyze multi-threading in python programming.
1. Install Python ecosystem and execute "Hello World" program.
2. Practice
a. Python data types
b. Python operators
c. Input and output statements.
d. Control statements
3. Implement following operations on python arrays.
a. Finding maximum and minimum elements
b. Matrix multiplication
c. Transpose of a matrix
d. Read Matrix elements in mXn matrix and Print matrix elements in sorting order in the same mXn dimensional matrix.
4. Implement python program to work with various string operations.
5. Implement following concepts using python functions

  a. Returning Multiple Values from a Function

 b. Pass by Object Reference

  c. Variable Length Arguments

 d. Anonymous Functions or Lambdas

6. Implement following tasks on Lists

a. Number of Occurrences of an Element

b. Finding Common Elements in Two Lists

7. Implement following tasks on Dictionaries

a. Sorting the Elements of a Dictionary using Lambdas

b. Linear probing

8. Implement the following OOP concepts.

a. Any two forms of Inheritance

b. Method Overlaoding

c. Overloading any one unary and binary operator

d. super() method(optional)

e. Runtime Polymorphism using Interfaces

9. Implement Exception handling mechanism

a. Handling any two Built-in Exceptions

b. Creating your own user defined exception

c. Usage of assert statement

10. Implement following programs on files

a. Counting no of words, characters, digits, special characters in the file

b. Usage of 'with' statement

11. Implement python program to handle various operations with pickle.

12. Practice any three programs on python regular expressions.

13. Create four threads, first thread print odd number series, second thread prints even number series, third thread prints prime number series and fourth thread prints Fibonacci series from 100-1.

14. Implement Producer-Consumer problem with thread synchronization.

15.   a. Practice stacks and queues using built-in python data structures.

          b. Implement single linked list

Text Book:

1. Core Python Programming, R.Nageswara Rao, Dream Tech Press (Wiley India), 2017 Edition

Reference Books:

1. Learn Python the Hard Way: A Very Simple Introduction to the Terrifyingly Beautiful World of Computers and Code Zed Shaw, (Zed Shaw's Hard Way Series, Third Edition

2. Automate the Boring Stuff with Python: Practical Programming for Total Beginners, Al Sweigart, 1st Edition, Kindle Edition

3. Dive into Python 3, Mark Pilgrim , Apress publications

Mode of Evaluation:

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

Course Outcomes & Program Outcomes Mapping

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

ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES::RAJAMPET
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III Year B.Tech., I Semester
COMPUTER NETWORKS AND COMPILER DESIGN LAB (7G158)

Course Objectives:

- To understand the encryption and decryption algorithms.
- To implement routing algorithms in computer networks.
- To design compiler components.
- To enlighten the student with knowledge base in compiler design and its applications

COURSE OUTCOMES

After completion of course the student is able

- To understood the encryption and decryption algorithms.
- To analyze routing algorithms in computer networks.
- To construct compiler components.
- To summarize compiler design and its applications

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

Course Outcomes & Program Outcomes Mapping:

Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	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

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/Henely Management 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

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

DATA MINING and DATA WAREHOUSING (7G161)

COURSE OBJECTIVES:

The objective of this course is to make the students

- Learn the types of the data to be mined and apply preprocessing methods on raw data.
- To design data warehouses and techniques for mining frequent patterns, associations, and correlations.
- To understand different classification algorithms and estimate the accuracy of algorithms.
- To inculcate knowledge on different clustering algorithms.
- To identify the various types of complex data and its applications.

COURSE OUTCOMES

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

- To understand and apply the data preprocessing techniques.
- To design data warehouses and techniques for mining frequent patterns, associations, and correlations.
- To solve different classification problems and estimate the accuracy of classification algorithms.
- To understand and analyze different clustering techniques.
- To create various types of complex data such as spatial, text and multimedia.

UNIT-I

INTRODUCTION: Fundamentals of data mining, Data Mining Functionalities, Classification of Data Mining systems, Major issues in Data Mining.

Data Preprocessing: Needs Preprocessing the Data, Data Cleaning, Data Integration and Transformation, Data Reduction, Discretization and Concept Hierarchy Generation.

UNIT II

WARE HOUSING: Data Warehouse and OLAP Technology for Data Mining Data Warehouse, Multidimensional Data Model, Data Warehouse Architecture, From Data Warehousing to Data Mining.

MINING ASSOCIATION RULES IN LARGE DATABASES: Basic Concepts and a Road Map, Efficient and Scalable Frequent Item set Mining Methods, Mining Various Kinds of Association Rules, From Association Mining to Correlation Analysis.

UNIT III

CLASSIFICATION AND PREDICTION: Issues Regarding Classification and

Prediction, Classification by Decision Tree Induction, Bayesian Classification, Classification by Back propagation, Other Classification Methods, Prediction, Classifier Accuracy.

UNIT IV

CLUSTER ANALYSIS INTRODUCTION: Types of Data in Cluster Analysis, A Categorization of Major Clustering Methods, Partitioning Methods, Hierarchical Methods Density-Based Methods, Grid-Based Methods, Model-Based Clustering Methods, Outlier Analysis.

UNIT V

MINING COMPLEX TYPES OF DATA AND DATA MINING APPLICATIONS: Mining

Spatial Databases, Mining Multimedia Databases, Mining Text Databases, Mining the World Wide Web,Data Mining Applications.

TEXT BOOKS:

1. Data Mining, Concepts and Techniques - Jiawei Han &Micheline Kamber Harcourt India.

REFERENCES:

1. Data Mining Introductory and advanced topics, Margaret H Dunham, Pearson Education.
2. Data Mining Techniques, Arun K Pujari, University Press.
3. Data Warehousing in the Real World, Sam Anahory& Dennis Murray. Pearson Edn Asia.
4. Data Warehousing Fundamentals, PaulrajPonnaiah Wiley Student Edition.
5. The Data Warehouse Life cycle Tool kit, Ralph Kimball Wiley Student Edition

Mode of Evaluation:

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

Course Outcomes & Program Outcomes Mapping:

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	3	3	3	3	3	-	-	-	3	-	-	-	3	-	3
3	3	3	3	3	3	-	-	-	-	-	-	-	3	2	3
4	3	3	3	3	3	-	-	-	-	-	-	-	3	-	-
5	3	3	3	3	-	3	-	-	-	-	-	-	3	-	3

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III Year B.Tech., II Semester

INTERNET OF THINGS (7G162)

COURSE OBJECTIVES:

- To understand the terminology, technology and its applications of IoT.
- To analyze various concept of M2M (machine to machine) with necessary protocols.
- To understand and memorize the software platforms which are used for developing the applications.
- To learn the concepts of python programming language which is used to develop the IoT projects.
- To Design Applications for real time scenario using the concepts of hardware platforms.

COURSE OUTCOMES:

After completion of the course student will be able to

- Understand and learn, the identifier and basics of RFID
- Analyze M2M (machine to machine) and IoT platform Design Methodology.
- Understand and memorize wireless embedded protocols which are used for developing the applications.
- Learn the concepts of python programming to Create IoT projects
- Design Applications for real time scenario using various concepts of hardware platforms.

Unit– I

   Introduction to Internet of Things: Introduction to Internet of Things, History of IoT, Physical Design of IoT, Logical Design of IoT, IoT Enabling Technologies, IoT Levels & Deployment Templates, Applications of IoT.

Unit– II

   IoT and M2M: Introduction, M2M, Difference between IoT and M2M, SDN and NFV for IoT.

   IoT Platforms Design Methodology: Introduction, IoT Design Methodology.

Unit– III

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– IV

IoT Systems-Logical Design Using Python: Introduction, Installing Python, Python Data Types and Data Structures, Control Flow, Functions, Modules, Packages and File Handling.

Unit– V

IoT Physical Devices and Endpoints: What is an IoT Device, Exemplary Device: Raspberry Pi, About the Board, Linux on Raspberry Pi, Raspberry Pi Interfaces, Programming Raspberry Pi with Python, Other IoT Devices.

Text Books:

1. Internet of Things, A Hands-On Approach, Arshdeep Bahga, Vijay Madisetti, University Press,2015.
2. 6LoWPAN:The WirelessEmbedded Internet, Zach Shelby and Carsten Bormann,Wiley publications, first edition,2009.(Unit III).

Reference Books:

1. The Internetof Things Connecting Objects to the Web, HakimaChaouchi,Wiley publications,2010.
2. Designing the Internet of Things,Adrian McEwen, Hakim Cassimally, Wiley 2014.
3. Enterprise IoT, A Definitive Handbook by Naveen Balani.

Mode of Evaluation:

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

Course Outcomes & Program Outcomes Mapping:

Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	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

CO 5	3	-	3	3	1	1	1	1	1	1	1	3	3	3	3

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III Year B.Tech., II Semester

(7G163)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:

- Choose appropriate modeling concepts principles which can helps users to understand the software system.
- Demonstrate understanding of ideas to design and develop software systems based on object-oriented thinking.
- Apply knowledge of object-oriented analysis and design methods with a clear emphasis on UML to model software systems.
- Analyze and explore the conceptual model into various scenarios and applications.
- Design software systems to meet desired needs of user.

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)
Mid1 20 Marks	Mid2 20 Marks	10 Marks	70 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	PSO2	PSO3
CO1	-	3	-	-	2	-	-	-	-	-	-	-	-	-	-
CO2	-	-	-	-	-	-	-	-	-	3	2	-	-	-	-
CO3	3	-	-	-	3	-	-	-	-	-	-	-	3	-	3
CO4	-	3	-	-	3	-	-	-	-	-	-	-	-	-	-
CO5	-	-	3	-	3	-	-	-	-	2	2	-	3	-	3

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

SOFTWARE TESTING METHODOLOGIES (7G164)

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:

- **Understand** 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:

BorisBeizer, *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.

Mode of Evaluation:

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

Mapping of COs, POs 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	-	-	-
2	3	3	3						3			3	-	-	-
3	3		3						3			3	-	-	3
4	3		3					3	3		3	3	-	3	3
5	3		3					3	3		3	3	-	3	3

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

ARTIFICIAL INTELLIGENCE (7G166)
(PROFESSIONAL ELECTIVE-I)

Course Objectives:

- To comprehend the building blocks of AI in terms of intelligent agents.
- To understand the main approaches of artificial intelligence such as heuristic search, game search and logical inference.
- To know how decision theory and planning is processed on the agents.
- To verify the different types of objects in uncertain world for an agent
- To identify the solution in uncertain knowledge with reasoning.

Course Outcomes:

After completion of the course student will be

1. Able to recite the importance of artificial intelligence in real world environment.
2. Able to understand the artificial intelligence algorithms for hands-on experience.
3. Able to apply the various resolutions in an uncertain environment for obtaining a solution.
4. Able to analyze the types of objects and mental events
5. Able to select the appropriate actions with partial knowledge.

Unit– I

Introduction to 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, Defining the Problem as a State Space Search, Problem Characteristics.

Unit– II

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– III

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.

Unit– IV

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– V

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,Fuzzy Logic.

Text Books:

1. Stuart Russell and Peter Norvig, Artificial Intelligence: A Modern Approach, 2ndEdition, 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 Intelligence: 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:

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

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

CRYPTOGRAPHY AND NETWORK SECURITY (7G167)
(PROFESSIONAL ELECTIVE-I)

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

OSI Security Architecture, Security Attacks –Passive and Active Attacks-Security Services- Confidentiality, Authentication, Integrity, Non-repudiation, access Control and Availability and Mechanisms - A model for Internetwork security.

Unit– II

Symmetric Encryption Principles -symmetric encryption algorithms-cipher block modes of operation. Approaches of Message Authentication-Secure Hash Functions and MAC. Public key cryptography principles-public key cryptography algorithms-digital signatures.

Unit–III

Kerberos - version4, Key distribution using asymmetric encryption,

X.509 -certificates, Authentication procedure.

E-mail Security- Pretty Good Privacy -Notation, operational description, keys and key rings. S/MIME- MIME, S/MIME functionality and messages.

Unit–IV

IP Security Overview-IP Security Policy-Encapsulating Security Payload- Key Management- Oakley Key Determination Protocol.

Web Security considerations- Secure Socket Layer (SSL) and Transport Layer Security (TLS)- Secure Electronic Transaction –SET overview, key features of SET,SET participants,

Dual signature.

Unit–V:

Intruders- Intrusion Detection-Types of Malicious Software-classification of Viruses-Characteristics of Firewall – types of firewalls.

Text Books:

1. Network Security Essentials (Applications and Standards) by William Stallings, Pearson, Fourth Edition.
2. Hack Proofing your network, Russell, Dreamtech, Second edition.

Reference Book:

Cryptography and Network Security third Edition by William stallings.

Mode of Evaluation:

Continuous Internal Examination (CIE)		Continuous Evaluation	Semester End Examination (SEE)
Mid1 20 Marks	Mid2 20 Marks	10 Marks	70 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	2
CO2	-	-	2	-	1	3	-	3	-	2	1	-	2	3	
CO3	-	-	-	-	-	3	3	3	-	-	-	-		3	2
CO4	2	-	-	-	-	-	3	-	2	2	-	-		3	
CO5	-	-	2	-	-	3	3	3	-	-	-	-	2	3	

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

MOBILE AD HOC NETWORKS (7G168)
(PROFESSIONAL ELECTIVE-I)

Course Objectives:

- To know the difference between Cellular and Ad hoc Networks and applications areas of Ad hoc networks.
- To recognize the importance of MAC protocols and its classification.
- To understand the various routing protocols in Ad hoc Networks.
- To learn the various routing protocols of Multicasting in wireless Ad hoc Networks.
- To know how to conserve the Energy and achieve the Quality of Service Parameters.

Course Outcomes:

After completion of the course student will be able to

1. Recognize the importance of the Ad hoc networks in wireless Media and its real time applications.
2. Identify the suitable contention based protocol for avoiding collisions in MAC layer.
3. Compare the various routing protocols based on different parameters in ad hoc networks.
4. Use a multicast routing protocol based on the type of routing.
5. Observe the factors that affects the QoS and energy of a mobile node in remote areas.

Unit– I

Introduction to Adhoc Networks: Introduction, Cellular And Ad Hoc Wireless Networks, Applications of Ad Hoc Wireless Networks, Issues In Ad Hoc Wireless Networks, Ad Hoc Wireless Internet.

Unit– II

MAC Protocols For Ad hoc Wireless Networks: Issues in Designing a MAC Protocol For Ad Hoc Wireless Networks, Design Goals of a MAC Protocol For Ad Hoc Wireless Networks, Classifications of MAC Protocols , Contention-Based Protocols , Contention-Based Protocols With Reservation Mechanisms, Contention-Based MAC Protocols With Scheduling Mechanisms.

Unit– III

Ad hoc Routing Protocols: Introduction, Issues in Designing a Routing Protocol for Ad Hoc Wireless Networks, Classifications of Routing Protocols - Table-Driven Routing Protocols, Destination Sequenced Distance Vector (DSDV) , Wireless Routing Protocol (WRP), Cluster Head Gateway Switch Routing, Source-Initiated On-Demand Approaches - Ad hoc On• Demand Distance Vector Routing (AODV), Dynamic Source Routing (DSR), Temporally Ordered Routing Algorithm (TORA), Location-Aided Routing (LAR), Power-Aware Routing (PAR), Zone Routing Protocol (ZRP).

Unit– IV

Multicast Routing In Ad hoc Networks: Introduction, Issues in Designing a Multicast Routing Protocol , Operation of Multicast Routing Protocols, An Architecture Reference Model for Multicast Routing Protocols, Classifications of Multicast Routing

Protocols, Tree• Based Multicast Routing Protocols, Mesh-Based Multicast Routing Protocols, Energy-Efficient Multicasting.

Unit– V

QUALITY OF SERVICE & ENERGY MANAGEMENT : Introduction, Issues and Challenges in Providing QoS in Ad hoc Wireless Networks, Classifications of QoS Solutions, MAC Layer Solutions,

Energy Management in Ad hoc Wireless Networks-Introduction, Need for Energy Management in Ad hoc Wireless Networks, Classification of Energy Management Schemes, Battery Management Schemes, Transmission Power Management Schemes, System Power Management Schemes.

Text Books:

1.C.Siva Ram Murthy and B.S.Manoj, Ad hoc Wireless Networks Architectures and protocols, 2nd edition, Pearson Education. 2007

Reference Books:

1. Charles E. Perkins, Ad hoc Networking, Addison – Wesley, 2000
2. Stefano Basagni, Marco Conti, Silvia Giordano and Ivan stojmenovic, Mobile ad hoc networking, Wiley-IEEE press, 2004.

3.Mohammad Ilyas, The handbook of adhoc wireless networks, CRC press, 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	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1						2	2					1			3
CO2		3	1	3									3	3	
CO3		3	1	3	3								3	3	
CO4		3	3	3	3								3	3	
CO5		3	1	3			3						3	3	

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III Year B.Tech., II Semester

REAL TIME SYSTEMS (7G169)
(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 real time 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	PO10	PO11	PO12	PSO1	PSO2	PSO3
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	

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III Year B.Tech., II Semester

CASE TOOLS LAB (7G16B)
(Common to CSE and IT)

Course Objectives:

- **Determine** the need of classes and their behavior in Object Oriented software development
- **Classify** the importance of relations and using those in drawing different models
- **Define** the usage of use case, interaction and activity diagrams
- **Know** the working strategy of component and deployment diagrams.

COURSE OUTCOMES:

1. **Understand** the classes, attributes and operations from the given problem description
2. **Identify** the requirements through Use-Case, and logical View
3. **Analyze** structural and behavioral concepts of the entire system
4. **Develop** a model using UML concepts by different types of diagrams like Use Case, Class, Sequence Diagram etc.,

System requirements:

Software requirements: IBM Rational Rose Enterprise Edition – V7.0

Hardware requirements: with min of 1GB RAM, Dual core processor and 150GB of Hard Disk.

The student should take up the problem description of ATM system and find classes, its Attributes and operations from ATM system description.

No of experiments:

- Find classes, its attributes and behavior.

The student should take up the case study of ATM system and Model it in different views

I.e. Use case view, logical view, component view, Deployment view.

- Design a Class Diagram for ATM system,

Design a Sequence Diagram for ATM system

- Design a Collaboration Diagram for ATM system
- Design a Use case Diagram for ATM system
- Design a Activity Diagram for ATM system
- Design a State Chart Diagram for ATM system
- Design a Component Diagram for ATM system
- Design a Deployment Diagram for ATM system
- The student should take up case study of any system on their own and Model all the above diagrams in different views.

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:

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

Mapping of COs and Po's and PSOs:

	PO's												PSO's		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	-	-	-	3	-	-	-	3	-	-	-	3	-	-
CO2	3	-	3	-	3	-	-	-	3	-	-	-	3	3	-
CO3	-	-	3	2	3	-	-	-	3	-	-	-	-	3	-
CO4	-	-	3	2	3	-	-	-	3	-	-	-	-	3	-

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III Year B.Tech., II Semester

DATA MINING &INTERNET OF THINGS LAB (7G16C)

DATA MINING LAB:

Course Objectives:

The objective of this course is to make the students

- To organize different datasets with preprocessing techniques and perform association rule 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.

COURSE OUTCOMES:

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

- To organize different datasets with preprocessing techniques and perform association rule 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.

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.

Subtasks : (Turn in your answers to the following tasks)

1. Demonstration of preprocessing on dataset creditg.arff.
2. Demonstration of Association Rule process using Apriori algorithm.
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 and demonstrate the classification rule process using j48 algorithm.
4. 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 credit 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.

5. 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 CREDIT_G ARFF data file to

get all the attributes initially before you start selecting the ones you want.)

6. 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. Do you think it is a good idea to prefer simple decision trees with tree pruning instead of having long complex decision trees?

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)
- o Weka resources: Introduction to Weka (html version) (download ppt version)
- o Download Weka
- o Weka Tutorial
- o ARFF format
- o Using Weka from command line

Mode of Evaluation:

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

Course Outcomes &Program Outcomes Mapping:

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	3	3	3	3	3	-	-	-	3	-	-	-	3	-	3
3	3	3	3	3	3	-	-	-	-	-	-	-	3	-	2
4	3	3	-	-	3	-	-	-	-	-	-	-	3	-	2
5	3	3	3	3	-	3	-	-	-	-		-	3	-	3

INTERNET OF THINGS LAB

Course Objectives:

- To understand the terminology, technology and its applications of IoT.
- To memorize the software platforms which are used for developing the applications.
- To learn the concepts of python programming language which was used to develop the IoT projects.
- To learn the concepts of Arduino IDE which is used to develop the IoT projects in Arduino Kits.

- To know the hardware platforms which is necessary to develop the IoT applications.

Course Outcomes:

After completion of the course student will be able to

- Understand the different types of sensors required for developing the IoT projects.
- Identify the difference between different hardware and software platforms which is necessary to develop the IoT applications.
- Create the IoT experiments in Arduino IDE.
- Create the IoT experiments with the help of Python programs and Raspberry Pi
- Design the IoT applications which maps to problems of real world Scenarios.

NAME OF THE EXPERIMENTS

1. Start Raseberry Pi, and try Various Linix Commands in Command Terminal Windows :

(is,cd,touch,mv,nm,man,mkdir,tar,gzip,cat,more,less,ps,sido,cron,chown,chgrp,ping etc)

2. Run some Python Programs On Pi like

- Read your Name and Print Hello Message With name read two numbers , and Print their Sum ,difference ,Product and Division .
- Word and character count of a given String
- Area of a given Shape (rectangles , Triangle and Circle) Reading Shape and appreciate Values from Standard input
    - Print a name "n" Times where name and n are read from standard input , using for and While loops .
- Handle divided by Zero Exception
- Print current time for ten minutes with an interval of 10 seconds

3. Light an LED Through Python Programs.
4. Flash an LED At a Given on Time And OFF Time Cycle ,where the Two Times are Taken From a File.
5. Access an Image Through a Pi Web Cam
6. Detect the motion of an object using the PIR sensor.
7. Blinking a multiple LED's Blink using ARDUINO IDE.
8. Controlling the traffic light signals using ARDUINO IDE.
9. Calculate the distance of an object with the help of UltraSonic Sensor in ARDUINO IDE.
10. Detect the Moisture of an Soil using Soil Moisture sensor in Arduino IDE.
11. Controlling the Led blink using Switch.
12. Measure the Temperature and humidity using DHT11 Sensor.

Mode of Evaluation:

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

Course Outcomes & Program Outcomes Mapping:

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

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

ADVANCED ENGLISH COMMUNCATION SKILLS LAB (7GC61)
(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

BIG DATA AND DATA ANALYTICS (7G171)

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 mapreduce and HDFS framework.
- Able to understand types and formats of mapreduce and anatomy of mapreduce job run.
- Able to describe the features of mapreduce and understand the installation of hadoop in cluster mode.
- Able to analyze the data with hadoop related project 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 Hadoop, Scaling Out, Hadoop Streaming, Hadoop Distributed File system.
HADOOP I/O: Data Integrity, Compression, Serialization, File-Based Data Structures.

Unit–III

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

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)
Mid1 20 Marks	Mid2 20 Marks	10 Marks	70 Marks

Mapping of COs and Pos 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	-	-	-	-	-	-	-	-	-	-	-	-	
2	-	-	3	3	3	3	3	-	-	-	-	3	3	3	
3	3	3	3	-	-	3	-	-	-	-	-	3	3	3	
4	3	-	-	-	-	-	-	-	-	-	-	3	-	-	
5	-	3	3	3	3	3	3	-	-	-	-	3	3	3	

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

ENTERPRISE PROGRAMMING (7G172)

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.

Introducing PDO: Using PDO, Installing PDO,PDO's database support, Connecting to a DB server and selecting a database,Getting and setting attributes, Error Handling, Query Execution, Prepared statements, Retrieving data.

Unit– V

INTRODUCTION ToAJAXs: 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 XMLHttpRequestObject,XMLHttpRequest Methods, XMLHttpRequest Properties,

Cross-Browser Usage,Sending a Request to the Server,Ajax examples on Form validation and Database Operations.

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)		Continuous Evaluation	Semester End Examination (SEE)
Mid1 20 Marks	Mid2 20 Marks	10 Marks	70 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	-	-
CO2	-	-	3	-	3	-	-	-	3	-	-	-	-	-	-
CO3	-	-	-	-	3	-	1	-	3	-	-	-	3	-	2
CO4	-	-	3	-	3	-	-	-	3	-	-	3	3	-	-
CO5	1	-	3	-	3	-	-	-	3	-	-	3	3	-	2

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

INDUSTRIAL MANAGEMENT & ENTREPRENEURSHIP (7BA74)

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	

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

MOBILE APPLICATION DEVELOPMENT (7G173)

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, Using Android Studio for Android Development.

Activities, fragments & Intents: Understanding activities, linking activities using intents, fragments, 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:

1. Beginning Android programming with android studio 4th edition, J. F. DiMarzio, Published by John Wiley & Sons, Inc.

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)
Mid1 20 Marks	Mid2 20 Marks	10 Marks	70 Marks

Course Outcomes & Program Outcomes Mapping:

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	-	-
2	3	-	-	-	3	-	-	-	3	-	-	3	3	-	-
3	3	-	-	-	3	-	-	-	3	-	-	3	3	-	-
4	3	-	3	-	3	-	3	-	3	-	-	3	3	-	3
5	3	-	3	-	3	1	3	-	3	-	-	3	3	-	3

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

IV Year B.Tech., I Semester

CLIENT SERVER COMPUTING (7G174)
(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 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)
Mid1 20 Marks	Mid2 20 Marks	10 Marks	70 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	2			3		3
CO2			3		3	1			3	2				2	
CO3	3		3		3				3				3		3
CO4	3	2	3	2										2	
CO5	3	2		2							1		2		3

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

DISTRIBUTED SYSTEMS (7G175)

(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 able:
- 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, networking and Inter-networking, 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 Servicesand 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 BOOKS:

1. G Coulouris, J Dollimore and T Kindberg, *Distributed Systems Concepts and Design*, Pearson Education, 4thEd.

Mode of Evaluation:

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

Mapping of COs and POs and PSOs:

Course utcomes	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	2	-	3	-	-	-	-	3	3	3	3	-
4	-	-	3	-	-	-	-	-	-	-	3	-	-	3	3
5	-	-	3	2	-	-	-	-	-	-	-	3	3	3	-

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

IV Year B.Tech., I Semester

MACHINE LEARNING (7G176)

(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, Perceptrons, Multilayer networks and the back propagation algorithm, Remarks on the back propagation algorithm, An illustrative example face recognition Advanced topics in artificial neural networks

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

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)
Mid1 20 Marks	Mid2 20 Marks	10 Marks	70 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	1		1			1			3		3	
CO2	3		3		3							3	3	3	
CO3	3	3	3		3								3		2
CO4	3	3	3		3										2
CO5	3		3		3							3		3	

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

IV Year B.Tech., I Semester

SOFTWARE PROJECT MANAGEMENT (7G177)

(PROFESSIONAL ELECTIVE-II)

Course Objectives:

- To **understand** the basics of the project management 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 projects.
- To **know how to measure** the software quality and risk management in a modern project profiles.

Course Outcomes:

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

- **Understand** the conventional software Management and Software Economics factors that affect the development of a software project.
- **Recognize** Artifacts of the software process and can also use artifacts in Software Development life cycle.
- **Analyze** the workflows and can create check points of process in a project management.
- **Organize** the work breakdown structures and assign the roles & responsibilities in a project organization for establishing an active network.
- **Apply** project metrics in managing software project

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, Pankaj Jalote, Pearson Education.2005.

Mode of Evaluation:

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

Course Outcomes and Program Outcomes Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
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
(AN AUTONOMOUS INSTITUTION)

IV Year B.Tech., I Semester

DISASTER MANAGEMENT (7G674)

(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 programmes 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–itsphases; 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	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2	PSO 3
CO1					2	1		2	2	2			2	2	
CO2	1							2	3	3		2			2
CO3	1					3		3	2	2				2	2
CO4								3	3	3		2			
CO5	1						2	3				3	2		

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

SYSTEM MODELLING & SIMULATION (7G274)

(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 the performance

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, 3rdEdition, 2003.

Reference Book:

Systems Simulation – Geoffrey Gordon, PHI, 1978.

Mode of evaluation:

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

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

TOTAL QUALITY MANAGEMENT (7G574)

(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

ReferenceBooks:

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)
Mid1 20 Marks	Mid2 20 Marks	10 Marks	70 Marks

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

IV Year B.Tech., I Semester

INTEGRATED PRODUCT DEVELOPMENT (7G575)

(OPEN ELECTIVE)

Course Objectives:

The course aims to provide the student with the ability

- To know the concepts of tools and techniques in the Integrated Product Development area of the Engineering Services industry.
- To Relate the engineering topics into real world engineering applications.

Course Outcomes:

- Students able to summarize the various trends affecting product decision.
- Students able to identify the requirements to create new product.
- Students able to compare different techniques involved in design creation and design testing.
- Students able to rephrase the methods of model creation and integration between software and hardware.
- Students able to illustrate the need of end of life and patenting

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)
Mid1 20 Marks	Mid2 20 Marks	10 Marks	70 Marks

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

IV Year B.Tech., I Semester

NANOTECHNOLOGY AND APPLICATIONS (7G376)

(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)
Mid1 20 Marks	Mid2 20 Marks	10 Marks	70 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$_{12}$	PSO1	PSO2	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., I Semester

MEDICAL INSTRUMENTATION (7G377)

(OPEN ELECTIVE)

Course Objectives:
- 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 H_2O 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:

	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	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
(AN AUTONOMOUS INSTITUTION)

IV Year B.Tech., I Semester

CYBER LAWS (7G178)

(OPEN ELECTIVE)

Course Objectives:

- To learn 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 gain knowledge on Procedural Issues and Digital signatures

- To understand ethical laws of computer for different countries.

Course Outcomes:

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

- Effectively explain the fundamentals of Cyber Security.

- Analyze the jurisdiction and sources of risks in global cyber security.

- Evaluate ongoing developments in law relating to information technologies

- Classify the procedural issues and civil rights for the society.

- Categorize the legal developments and different types of laws.

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.

Text Books:

1. Jonathan Rosenoer, "Cyber Law: The law of the Internet", Springer-Verlag, 1997.

Reference Books:

1. Mark F Grady, Fransesco Parisi, "The Law and Economics of Cyber Security", Cambridge University Press, 2006.

Mode of Evaluation:

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

Mapping of COs and Pos 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	3	-	-
2	3	-	-	-	-	3	-	3	-	-	-	3	3	-	-
3	3	3	-	3	-	3	2	3	-	2	-	3	-	-	-
4	3	3	-	3	-	3	2	3	-	2	-	3	-	-	-
5	3	3	-	3	-	3	-	3	-	-	-	3	3	-	-

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

IV Year B.Tech., I Semester

.NET TECHNOLOGIES (7G179)

(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)
Mid1 20 Marks	Mid2 20 Marks	10 Marks	70 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
(AN AUTONOMOUS INSTITUTION)

IV Year B.Tech., I Semester

INTELLECTUALPROPERTY RIGHTS (7BA72)

(OPEN ELECTIVE)

Course Objectives:

- This course is aimed at familiarizing students with the nuances of Intellectual Property Rights (IPR) so as to help them integrate the IPR process in their academic, research (project) activities and to facilitate the students to explore career options in IPR.

- To make the technological students familiar with basics of IPR and their implications in research, development and commercialization.

Course Outcome:

- The students will able to understand the issues related to intellectual properties. The knowledge gained by the students on copyrights, trademarks, patents, designs, etc. shall be useful to focus on new inventions and their commercialization.

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 in fringement, Fair use 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.BasicprovisionsrelatedtoDesigns,GeographicalIndicators.

Unit-V

INTERNATIONAL INSTRUMENTS CONCERNING INTELLECTUAL PROPERTY

RIGHTS: The Berne Convention, Universal Copyright Convention, The Paris Union, The World Intellectual Property Rights Organization (WIPO),UNESCO, TRIPS, TRIMS, and WTO.

Reference Books:

- IntellectualPropertyRights:BasicConcepts,MMSKarki,Atlantic,2009.
- IntellectualPropertyRights,Pandey,Neeraj, Dharani,Khushdeep.
- IntellectualPropertyRights inIndia:GeneralIsuuesandImplications,Dr.Prankrishna Pal,RegalSeries.
- IntellectualProperty,W.R.Cornish,Sweet& Maxwell,London,2012.
- Principles ofIntellectualProperty,N.S.Gopalakrishnan&T.G.Agitha,EasternBook Company,Lucknow,2009.

Mode of evaluation:

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

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

IV Year B.Tech., I Semester

HUMAN RESOURCE MANAGEMENT (7BA73)

(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

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 360 degree Performance Appraisal, Job Evaluation.

Reference Books:

1. NoeA.RaymondJohnHollenbeck,BarryGerhartandPatrickWright-HumanResourceManagement(TataMcGrawHill.).
2. IanBeardwell&LenHolden-HumanResourceManagement,(MacmillanIndiaLtd.).
3. AswathappaK-Human Resourceand PersonnelManagement(TataMcGrawHill,5thEd.).
4. RaoVSP –Human ResourceManagement, TextandCases (Excel Books, 2nd Ed.).
5. Ivansevich–Human Resource Management(TataMcGrawHill,10thEd.).
6. Dessler–Human Resource Management(PrenticeHall,10thEd.).
7. Bernardi–Human ResourceManagement(TataMcGrawHill,4thEd.).
8. Human Resource Management,T.NChhabra,DhanpatRai&Sons PvtLtd.

Mode of evaluation:

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

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

BIG DATA LAB (7G17B)

Course Objectives:
- To impart knowledge on installation and configuration process of hadoop in three different modes.
- To impart Knowledge on Big Data storage, processing, querying and reporting.
- To acquire skills on Big Data Tools to build effective distributed systems.
- To understand 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 installation process of Hadoop in different modes.
- Able to understand Big Data storage, processing, querying and reporting.
- Able to understand MapReduce and solve business problems
- Able to apply Big Data Technologies to solve real-world problems such as stock market, sentiments analysis and massively scalable architectures.
- Able to understand installation of Hive and HiveQL.

1. (i) Perform setting up and Installing Hadoop in its three operating modes:
a) Standalone
b) Pseudo distributed
c) Fully distributed
(ii) Use web based tools to monitor your Hadoop setup.
2. Hadoop commands
3. Implement the following file management tasks in Hadoop:
i) Adding files and directories.
ii) Retrieving files.
iii) Deleting files
4. Run a basic Word Count Map Reduce program to understand Map Reduce Paradigm
5. Write a Map Reduce program that mines weather data.
6.Implement Matrix Multiplication with Hadoop Map Reduce
    7.Practice on Hive Installation, Table Creation and Deletion, Loading Data into Hive, Partitioning, Bucketing and Joins.
8.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.
9.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.

10.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.

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:

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

Course Outcomes & Program Outcomes Mapping:

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

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

ENTERPRISE PROGRAMMING LAB (7G17C)

Course Objectives:

- 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:

Basic Programs in PHP using XAMPP server(from 2nd Unit)

Week3:

Object oriented concept examples using PHP(classes,inheritance,interfaces,..etc)

Week4:

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.

Logo	Web Site Name			
<mark>Home</mark>	Login	Registration	Catalogue	Cart
CSE ECE EEE CIVIL	Description of the Web Site			

Fig 1.1

2) LOGIN PAGE:
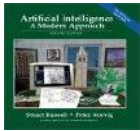
This page looks like below:

Logo	Web Site Name			
Home	<mark>Login</mark>	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	<mark>Catalogue</mark>	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 5 contains the remaining pages and their description.

Week 5:

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	<mark>Cart</mark>
CSE ECE EEE CIVIL	**Book name** **Amount** **Price** **Quantity** Java 2 $35.5 2 $70 XML bible $40.5 1 $40.5 **Total amount** $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 6:

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 7:

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 8:

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 9:

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).

Week10:

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).

Week11:

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

Week12& Week 13:

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.

Week14 & Week15:

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)
20 Marks	10 Marks	70 Marks

Course Outcomes & Program Outcomes Mapping:

	PO 1	PO 2	PO 3	PO4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2	PSO 3
Co-1	-	3	-	-	3	-	-	-	3	-	3	3	3	-	-
Co-2	-	3	3	-	3	-	-	-	3	-	3	3	3	-	-
Co-3	1	3	3	-	3	-	-	-	3	-	3	3	3	-	1
Co-4	-	3	3	-	3	-	-	-	3	-	3	3	3	-	-
Co-5	-	3	3	-	3	-	-	-	3	-	3	3	3	-	-

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

(7G17D) MOBILE APPLICATION DEVELOPMENT LAB

Course Objectives:

- To learn how to develop Applications in android environment.
- To learn how to develop user interface applications.
- To learn how to develop data persistence, messaging, location based services.

Course outcomes:

After successful completion of smart phone programming lab students will be:

- Able to acquire practical knowledge on Android programming.
- Able to understand the implementation aspects of user interfaces.
- Able to understand the implementation of image view and persistent data services.
- Able to acquire practical knowledge on messaging services.
- Able to understand the practical exposure on implementation of location based 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 an application that has as button, when the user clicks the button it should display second activity which has edit text and an OK button. When user writes something on the edit text and clicks the OK button it should go back to first activity and display content of edit text in the form of toast.

3. 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.

4. 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.

5. 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.

6. 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.

7. a)Create an application to display images in gallery and Image Views.

   b) Create an application to display analog and digital clock.

   8.a) Create a user registration application that stores the user details in a database table.

   b) 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.

9.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, mobile number etc.

10. Create an application that saves user information like name, age, gender etc. in shared preference and retrieves them when the program restarts.

11. Create an alarm that rings every Sunday at 8:00 AM. Modify it to use a time picker to set alarm time.

12. Develop an application that shows the current location's latitude and longitude continuously as the device is moving (tracking).

13. Create an application that shows the current location on Google maps.

14. Create an application that illustrates sending E-mail.

15. Create an application that illustrates SMS messaging.

Note:

Android Application Development with MIT App Inventor For the first one week, the student is advised togo 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 lab Evaluation	Semester End lab Examination (SEE)
20 Marks	10 Marks	70 Marks

Course Outcomes & Program Outcomes Mapping:

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	-	-
2	3	-	-	-	3	-	-	-	3	-	-	3	3	-	-
3	3	-	-	-	3	-	-	-	3	-	-	3	3	-	-
4	3	-	3	-	3	-	3	-	3	-	-	3	3	-	3
5	3	-	3	-	3	1	3	-	3	-	-	3	3	-	3

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

CLOUD COMPUTING (7G181)
(PROFESSIONAL ELECTIVE-III)

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 vendor lock-in, intercloud, 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, Workflows coordination of multiple activities, Coordination based on a state machine model -the Zoo Keeper, The Map Reduce programming model, Apache Hadoop,

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 ofvirtual machines, The darker side of virtualization, Software fault isolation.

Unit–IV

Cloud Resource Management: Policies and mechanisms for resource management, Stability of a two level resource allocation architecture, Feedback control based on dynamic thresholds, Coordination of specialized autonomic performance managers,

Storage systems : Evolution, Storage models, file systems, databases, General parallel File 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)
Mid1 20 Marks	Mid2 20 Marks	10 Marks	70 Marks

Course Outcomes & Program Outcomes Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Co-1	3	2	3	-	3	-	-	-	3	3	3	3	3	-	3
Co-2	3		3	-	-	-	3	-	-	-	3	-	3	-	3
Co-3	3	3	3	-	3	3	3	-	2	-	-	3	3	-	3
Co-4	3	-	-	-	3	-	3	-	3	2	3	-	3	-	3
Co-5	3	2	3	-	-	3	-	-	2	-	-	2	3	-	3

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

OPERATIONS RESEARCH (7G182)
(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 decision making situations within business contexts, understand and apply operations research techniques to industrial applications.

Course Outcomes:

Student will be able to

- 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 Research, Kedarnath and Ramnath Publications
2. Taha, Introduction to Operations Research. PHI
3. Hiller & Libermann, Introduction to Operations Research. TMH.

References:
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)
Mid1 20 Marks	Mid2 20 Marks	10 Marks	70 Marks

Mapping of COs with Pos:

Course Outcomes	Program 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					

ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES::RAJAMPET
(AN AUTONOMOUS INSTITUTION)
IV Year B.Tech., II Semester

SEMANTIC WEB AND SOCIAL NETWORKS (7G183)
(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)
Mid1 20 Marks	Mid2 20 Marks	10 Marks	70 Marks

Course Outcomes and Program Outcomes Mapping:

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	P O 10	P O 11	PO 12	PSO1	PSO2	PSO3
CO 1	-	-	-	-	-	-	-	-	3	-	-	3	3	-	-
CO 2	3	-	-	-	2	-	-	-	3	-	-	3	3	-	-
CO 3	-	-	-	-	-	-	-	-	3	-	-	3	-	-	-
CO 4	-	-	-	-	2	-	-	-	3	3	-	3	3	-	2
CO 5	3	-	-	-	-	2	2	-	-	3	-	-	3	-	-

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

IV Year B.Tech., II Semester

SERVICE ORIENTED ARCHITECTURE (7G184)
(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.
- **Demonstrate** 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 technology and Java

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-Centric SOA, 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, PearsonEducation
6. XML and Web Services, Ron Schmelzer et al. Pearson Education.
7. SOA Governance, William A. Brown, Robert G. Laird, Clive Gee &TilakMitra, PearsonEducation.

Mode of Evaluation:

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

Course Outcomes & Program Outcomes Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
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., II Semester

ADVANCED COMPUTER ARCHITECTURE (7G185)
(PROFESSIONAL ELECTIVE-IV)

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- Multivector 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, Architectural Development Track.

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)
Mid1 20 Marks	Mid2 20 Marks	10 Marks	70 Marks

Course Outcomes & Program Outcomes Mapping with PSO's:

	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	PS O3
CO 1	3	3	3										3	3	
CO 2	3	3	3	3									3	3	
CO 3	3	3	3	3	1										
CO 4	3	3	3			2									
CO 5	3	3	3			2						1	3	3	

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

IV Year B.Tech., II Semester

DIGITAL IMAGE PROCESSING (7G186)
(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.
- Analyse 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)
Mid1 20 Marks	Mid2 20 Marks	10 Marks	70 Marks

Course Outcomes & Program Outcomes Mapping with PSO's:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	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

SOFTWARE ARCHITECTURE (7G187)
(PROFESSIONAL ELECTIVE-IV)

Course Objectives:

- To learn the fundamentals concepts of the software architecture.
- To acquire the knowledge of various architectural styles.
- To understand design patterns and their underlying object oriented concepts.
- To implement the architectural Style and design space for a specific system.
- To understand the implementation of Architectural Design Tools

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 Architectural Style and Design that are suited for Specific system.
- 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

Formal Models and Specifications: Formalizing the Architecture of a Specific System, Architectural Style, Architectural Design Space, and Case Study of an Industry Standard Computing Infrastructure: CORBA.

Linguistic Issues: Requirements for Architecture-Description Language.

Unit–V

Tools for Architectural Design: A Universal Connector Language, Exploiting Style in Architectural Design Environment.

Software Product Lines: Overview, What makes software product lines work? , Architectures for Product Line, What makes Software Product Lines Difficult?

Text Books:

1. Mary Shaw, 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)
Mid1 20 Marks	Mid2 20 Marks	10 Marks	70 Marks

Course Outcomes & Program Outcomes Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
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

SOFT COMPUTING (7G188)
(PROFESSIONAL ELECTIVE-IV)

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 – Autoassociative Memory Network – Heteroassociative Memory Network – Bidirectional Associative Memory – Hopfield Networks – Iterative AutoAssociative 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: AFusion 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 FuzzyControllers − 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)
Mid1 20 Marks	Mid2 20 Marks	10 Marks	70 Marks

Mapping of COs and Pos and PSOs:

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

COMPUTER GRAPHICS AND HUMAN COMPUTER INTERACTION (7G189)
(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:

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

Course Outcomes Versus Program Outcomes Mapping

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

CO4	3	-	1	2	1	1	-	-	-	-	2	-
CO5	3	-	-	2	3	-	-	-	1	1	-	2

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

COMPUTER VISION (7G18A)
(PROFESSIONAL ELECTIVE-V)

Course Objectives:

* To provide a general introduction in the field of Computer Vision.
* To teach mathematical concepts and techniques in middle level visions.
* To analyse higher level image processing aspects like sufaces, outlines and graphs.
* To identify the accurate problems in image rendering.

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 explain typical pattern recognition techniques for object recognition.
* Able to analyze basic image processing and computer vision techniques
* Able to understand various problems in making a real world image in the virtual world.

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

Mode of Evaluation:

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

Course Outcomes Versus Program Outcomes Mapping:

Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	-	-	-	1	3	-	-	-	-	3	3	3	-
CO2	3	3	-	-	-	3	3	-	-	-	-	-	-	-	1
CO3	3	3	-	-	-	-	3	-	-	-	-	3	-	-	-
CO4	-	-	-	-	-	3	3	-	-	-	-	3	3	-	-
CO5		3	-	-	-	3	3	-	-	-	-	3	3	3	-

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

DESIGN PATTERNS THROUGH JAVA (7G18B)
(PROFESSIONAL ELECTIVE-V)

Course Objectives:
- To understand design patterns and their underlying object oriented concepts.
- To understand various Creational & Collection Patterns.
- To understand various Structural Patterns.
- To understand various Behavioral Patterns.
- To understand Concurrency Patterns.

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 theCreational & Collection patterns can be applied.
- Understand the context in which the Structural patterns can be applied.
- Understand the context in which theBehavioral 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, ParthaKuchana
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)
Mid1 20 Marks	Mid2 20 Marks	10 Marks	70 Marks

Course Outcomes & Program Outcomes Mapping:

Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
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

WEB SERVICES (7G18C)
(PROFESSIONAL ELECTIVE-V)

Course Objectives:

- Must have theoretical knowledge of all the programming languages, WEB services related technologies and API as detailed in the syllabus.
- Must understand fundamentals of SOAP, WSDL & UDDI.
- Must be able to design and develop a real life application considering WEB services server and UDDI registry

Course Outcomes:

- Able to understand the importance of Web Services.
- Able to apply knowledge on XML-RPC, SOAP.
- Able to understand fundamentals of WSDL.
- Able to Able to understand fundamentals of UDDI.
- Able to develop sample applications using WEB services.

Unit–I

Introduction: Introduction to Web Services, Web Service Architecture, XML Messaging, Service Description: WSDL, Service Discovery: UDDI, Service Transport, Using WEB service technologies together. Standards related to WEB service.

Unit–II

XML-RPC Essentials: XML-RPC Overview, the need for XML-RPC, XML-RPC Technical Overview, Developing using XML-RPC, beyond simple XML-RPC Calls. **SOAP Essentials:** SOAP 101, The SOAP Message, SOAP Encoding, SOAP via HTTP, SOAP and the W3C, SOAP Implementations, Using Apache SOAP: Installing Apache SOAP, Developing a simple SOAP message, Deploying SOAP Services, Programming using Apache SOAP: Working with Arrays, Working with JavaBeans, Working with Literal XML Documents, Handling SOAP Faults, Maintaining Session State.

Unit–III

WSDL: The WSDL Specification, Basic WSDL Example: HelloService.wsdl, Invoking WSDL, Basic WSDL Invocation methods(Part-1) Xmethods, Basic WSDL Invocation methods (Part-2) Xmethods, Generating WSDL Files, XML Schema Data Typing.

Unit–IV

UDDI Essentials: Introduction to UDDI, UDDI Technical Overview, UDDI Data Model, Searching UDDI, Publishing to UDDI, UDDI Implementations, Web Resources, UDDI Inquiry

API: The UDDI Inquiry API, Find Qualifiers, Finding and Retrieving UDDI Data, Publishing UDDI Data, UDDI4J Quick Reference API.

Unit–V

Developing Sample Applications using WEB services: Income Tax Calculation, Purchase order processing, Invoicing and Billing

Text Books:
1. Web Services Essentials By Ethan Cerami, Orielly, 2002.

Reference Books:
1. Java Web Services David A. Chappel & Jewell, Oreilly, 2009.
2. Web Services Concepts, Architectures and applications by Gustavo Alonso., Springer, 2009.

Mode of Evaluation:

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

Mapping of COs, POs 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			1			3
2	3	3	3		3	3			3			1			3
3	3	3	3		3	3			3			3		3	3
4	3	3	3		3	3		1	3			3		3	3
5	3	3	3		3	3		1	3			3	3	3	3