

**RAJEEV GANDHI MEMORIAL
COLLEGE OF ENGINEERING AND TECHNOLOGY
AUTONOMOUS
NANDYAL-518501, KURNOOL DIST., A.P., INDIA**

INFORMATION TECHNOLOGY



ESTD: 1995

Applicable for students admitted into B.Tech (Regular) from 2010-11
&
B.Tech (Lateral Entry Scheme) from 2011-12

COURSE STRUCTURE AND DETAILED SYLLABUS

RAJEEV GANDHI MEMORIAL COLLEGE OF ENGG & TECHNOLOGY, NANDYAL

AUTONOMOUS

INFORMATION TECHNOLOGY

NANDYAL-518501, KURNOOL DIST., A.P., INDIA

(Affiliated to J.N.T.U.A, Anantapur)

ACADEMIC REGULATIONS, COURSE STRUCTURE AND DETAILED SYLLABUS

B.Tech (Regular) from 2010-11 and B.Tech (Lateral Entry Scheme) from 2011-12

For pursuing four year under graduate Bachelor Degree Programme of study in Engineering (B.Tech), Two year Master (post graduate) Degree of study in Engineering (M.Tech), Two year Master (post graduate) degree of study in Business Administration (MBA), Three year Master (post graduate) Degree of study in Computer Applications (MCA) offered by Rajeev Gandhi Memorial College of Engineering and Technology, Nandyal - 518501 under Autonomous status and herein referred to as RGM CET (Autonomous):

All the rules specified herein approved by the Academic Council will be in force and applicable to students admitted from the Academic Year 2010-11 onwards. Any reference to “Institute” or “College” in these rules and regulations stands for Rajeev Gandhi Memorial College of Engineering and Technology (Autonomous).

All the rules and regulations, specified here after shall be read as a whole for the purpose of interpretation as and when a doubt arises, the interpretation of the Chairman, Academic Council is final. As per the requirements of statutory bodies, the Principal, Rajeev Gandhi Memorial College of Engineering and Technology shall be the Chairman, Academic Council.

The candidate seeking admission into the first year of study of four year B.Tech degree Programme should have

- i) Passed either Intermediate Public Examination (IPE) conducted by the Board of Intermediate Education, Andhra Pradesh with Mathematics, Physics and Chemistry as optional subjects (or any equivalent examination certified by Board of Intermediate Examinations) or a Diploma in Engineering in the relevant branch conducted by the Board of Technical Education, Andhra Pradesh (or any equivalent certified by State Board of Technical Education) for admission.
- ii) Secured a rank in the EAMCET examination conducted by A.P. State Council for Higher Education (APSCHE) for allotment of a seat by the Convener, EAMCET, for admission.

Admission Procedure:

As per the norms of A.P. State Council of Higher Education (APSCHE), Government of Andhra Pradesh, admissions are made to the first year of Four year B.Tech. Degree programme as follows:-

- a) As per the norms of Government of Andhra Pradesh, A-Category (based on the rank obtained in EAMCET) seats will be filled by the Convener, EAMCET.
- b) As per the norms of Government of Andhra Pradesh, B-Category seats will be filled by the management.

INFORMATION TECHNOLOGY**Admission to the Second year of Four year B.Tech Degree Programme in Engineering:**

- i) Candidates qualified in ECET and admitted by the Convener, ECET, in such cases for admission, when needed permission from the statutory bodies are to be obtained.
- ii) 10% of the sanctioned strength in each programme of study (of RGM CET) shall be filled by the Convener, ECET as lateral entry.

List of Programmes offered

- 1) B.Tech – Regular (& Lateral Entry)
- 2) M.Tech – Regular
- 3) MBA – Regular
- 4) MCA – Regular

1. Academic Regulations for 2010 B.Tech (Regular)

(Effective for the students admitted into the I year from the Academic Year 2010-2011)

The B.Tech Degree will be conferred by the Jawaharlal Nehru Technological University, Anantapur, to students who are admitted to the program and fulfil all the requirements for the award of the Degree as specified below.

1.0 Award of B.Tech. Degree

The student will be declared eligible for the award of the B. Tech. degree if he fulfils the following academic regulations:

- 1.1) Pursued a course of study for not less than prescribed course work duration and not more than double the prescribed course work duration.
- 1.2) Registered for 240 credits and secured 232 credits with compulsory subjects as listed in Table-1 below.

Table 1: Compulsory Subjects

S.No	Subject Particulars
1.	All the first year subjects
2.	All practical subjects
3.	All audit courses/soft skills/open electives
4.	Mini project
5.	Seminar
6	Comprehensive viva voce
7.	Project work

2.0 Forfeit of seat

Students, who fail to fulfil all the academic requirements for the award of the degree within **eight academic years** from the year of their admission, shall forfeit their seat in B.Tech course.

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3.0 Courses of study

The following courses of study are offered at present as specializations for the B.Tech. Course

1. Civil Engineering.
2. Computer Science and Engineering.
3. Electrical and Electronics Engineering.
4. Electronics and Communication Engineering.
5. Electronics and Instrumentation Engineering.
6. Information Technology.
7. Mechanical Engineering.

and any other course as approved by the authorities of the University from time to time.

Table 2: Credits

	I Year				Semester			
	Periods /Week	Credits	Internal Marks	External Marks	Periods /Week	Credits	Internal Marks	External Marks
Theory	02	04	30	70	04	04	30	70
	03	05	30	70				
	03+1 *	05						
	03+1 *	06						
Practical	03	03	25	50	03	02	25	50
Practical / Drawing	03+1 *	02			06	04		
	06	06	30	70			30	70
Open Electives/Audit courses /Soft skills courses	03					02**	100	
Mini Project						02		50
Seminar						02	50	
Comprehensive Viva-voce						04		50
Project	-	-				12	50	100

[*Tutorial,

****Open Electives/Audit courses/Soft skills course credits will not be considered for the award of division. However all these courses have to be cleared through Internal evaluation by scoring minimum of 40%.The credits obtained in these courses will be taken in to account for award of degree.]**

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4.0 Distribution and Weightage of Marks

- 4.1 The performance of the student in each semester / I year shall be evaluated subject – wise with a maximum of 100 marks for theory and 75 marks for practical subject. In addition, mini-project, comprehensive viva, seminar shall be evaluated for 50 marks each and the project work shall be evaluated for 150 marks.
- 4.2 For theory subjects the distribution shall be 30 marks for Internal Evaluation (25 marks for internal test and 05 marks for assignments) and 70 marks for the End-Examination.
- 4.3 For the semester system, during the semester there shall be 2 tests for theory subjects. In each Internal test there shall be one compulsory (short answers) question and 3 descriptive questions. The duration of internal test will be for 2 hrs. First test to be conducted in 1 – 3 units and second test to be conducted in 4 - 6 units of each subject. For awarding of 25 Internal marks the performance of the student in two Internal examinations conducted one in the middle of the semester and the other towards the end of the semester giving a weightage of 0.75 for the better score and 0.25 for the other score will be considered. There shall be two assignments (problem based) in each semester for award of 05 marks so that Internal component (marks) will be 30 marks (25 marks for Internal test+05 marks for assignments).
- 4.4 For the I year class which shall be on yearly basis, there shall be 3 tests. For awarding of 25 Internal marks the performance of the student in three Internal examinations conducted as per the schedule giving a weightage of 0.5 for the best score, 0.25 for better score and 0.25 for the other score will be considered. The distribution of syllabus for the conduct of Internal tests in the first year shall be as follows:

Table 3: Units for Internal Tests

I Year		Semester
2 Units	First Internal test.	3 Units First Internal test. 3 Units Second Internal test.
3 Units	Second Internal test.	
3 Units	Third Internal test.	

In a year there shall be at least three assignments and in each semester there shall be two assignments for the award of 5 marks.

- 4.5 In the case of open electives/Audit courses and soft skills subjects two Internal examinations shall be conducted one in the middle of the semester and the other at end of the semester for 70 marks and the marks scored by the student in these exams with a weightage of 0.75 for better score and 0.25 for the other score will be awarded as Internal marks for 70. The remaining 30 marks are based on the average marks scored in two assignments.
- 4.6 No makeup test for Internal examination or assignments will be conducted in any subject or practical. The student, who is absent for any test shall be deemed to have scored zero in that test.

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5.0 Question Paper Pattern:

- 5.1 Each Internal Test question paper shall contain 5 questions, of which the First question is compulsory and three questions are to be answered from the remaining four. Compulsory question carries 10 marks (It contains 5 questions of two marks - no choice in first question). The remaining 3 questions carry 5 marks each.
- 5.2 The End Examination question paper will have 7 questions and students have to write 5 questions. However, the first question is compulsory and it consists of 7 short answer questions, each carrying 2 marks. The next 4 questions are to be answered from the remaining 6 questions and each carries 14 marks.
- 5.3 For practical subjects there shall be a continuous evaluation during the semester for 25 Internal marks and 50 End Examination marks. Of the 25 marks for Internal, 20 marks shall be awarded for day-to-day work and 5 marks to be awarded by conducting an Internal laboratory test. The End Examination shall be conducted by the teacher concerned and an external Examiner from other institutions.
- 5.4 For the subject having design and / or drawing, (such as Engineering Graphics, Machine Drawing etc) and estimation, the distribution shall be 30 marks for Internal evaluation (15 marks for day-to-day work and 5 marks for Internal tests and 10 marks for assignments) and 70 marks for End Examination. There shall be two Internal tests in a Semester and the best of the two shall be considered for the award of marks for Internal tests. However in the I year class, there shall be three Internal tests and the average of best two will be taken into consideration for award of Internal marks.
- 5.5 The Engineering Drawing Practice Lab, wherever offered is to be treated as a theory subject. Evaluation method adopted for theory subjects shall be followed here as well.
- 5.6 There shall be mini-Project, in collaboration with an industry (wherever possible) of their specialization, to be taken up during the vacation(data collection, components etc) after III year II Semester examination and implementation/simulation shall be carried out in IV first semester during lab classes. Implementation or construction of mini project will be treated as laboratory. However, the mini project and its report shall be evaluated in IV year I Semester. The mini project shall be submitted in report form and should be presented before the committee, which shall be evaluated for 50 marks. The committee consists of an external Examiner, Head of the Department, the supervisor of mini project and a senior faculty member of the Department. There shall be 25 Internal marks for mini project which will be awarded based on the performance and involvement of the student during mini project period.
- 5.7 There shall be a seminar presentation in IV year II semester. For the seminar, the student shall collect the information on a specialized topic and prepare a technical report, showing his understanding over the topic, and submit to the Department, which shall be evaluated by the Departmental committee consisting of Head of the Department, seminar supervisor and a senior faculty member of the department. The seminar report shall be evaluated for 50 marks. There shall be no external examination for seminar.

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- 5.8 There shall be a comprehensive viva voce examination at the end of IV year II semester for 50 marks which shall be conducted by HOD, senior faculty and external Examiner from other institute.
- 5.9 The project topic should be approved by Internal Department Committee (IDC). Out of total 150 marks for the project work, 50 marks shall be for Internal Evaluation and 100 marks for the End Semester Examination. The evaluation of project work shall be conducted at the end of the IV year II semester. The project viva voce examination will be conducted by committee consists of an external Examiner from other institute, Head of the Department and the supervisor of the project. The Internal evaluation for 50 marks shall be on the basis of two seminars given by each student on the topic of the project. The Internal evaluation of the project work for 50 marks shall be conducted by committee consists of head of the Department or his nominee, senior faculty member and the supervisor of project.

INFORMATION TECHNOLOGY**Table4: Distribution of weightages for examination and evaluation:**

S.No	Nature of subject	Marks	Type of examination and mode of assessment		Scheme of Examination
1	Theory	70	End Examination (External evaluation)		End Examination in theory subjects will be for 70 marks.
		30	25	Internal examinations (Internal evaluation)	These 25 marks are awarded to the students based on the performance in three(yearly) or two(semester) Internal examinations with a weightage of 0.5 for best score, 0.25 for better score, 0.25 for other score (yearly) and 0.75 for better score and 0.25 for the other score(semester) respectively.
			05	Assignments (Internal evaluation)	Average of two assignments each of 05 marks
2	practical	50	End lab examination (External evaluation)		This End Examination in practical subjects will be for a maximum of 50 marks.
		25	20	Internal evaluation	Day-to-day performance in lab experiments and record
			05	Internal evaluation	Internal lab examination at the end of year/semester
3	Mini Project	50	End Examination (External evaluation)		This End Examination in miniproject will be for a maximum of 50 marks.
		25	Internal evaluation		Day-to-day performance in executing mini project.
4	Seminar	50	Internal evaluation		Based on the performance in two seminars during semester
5	Comprehensive Viva	50	External evaluation		This end viva voce examinations in all the subjects for 50 marks
6	Project work	100	External evaluation		This end viva voce in project work for 100 marks
		50	Internal evaluation		These 50 marks are awarded based on the performance of the student which includes attendance and regularity
7	Open electives/ Audit courses/ softskills	70	Internal evaluation		These 70 marks are awarded to the students based on the performance of two Internal examinations with a weightage of 0.75 for better score and 0.25 for the other score
		30	Internal evaluation		Based on the two assignments

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6.0 Attendance Requirements:

- 6.1 The student shall be eligible to appear for End Examinations of the semester/ year if he acquires a minimum of 75% of attendance in aggregate of all the subjects of that semester/year.
- 6.2 Condonation of shortage of attendance in aggregate up to 10% (65% and above and below 75%) in a semester / year may be granted by the College Academic Committee.
- 6.3 The student will not be promoted to the next semester unless he satisfies the attendance requirement of the present semester / year, as applicable. They may seek re-admission for that semester / year when offered next.
- 6.4 **Shortage of Attendance below 65% in aggregate shall in NO case be condoned.**
- 6.5 Students whose shortage of attendance is not condoned in any semester / year are not eligible to take their End Examination of that class and their registration shall stand cancelled.
- 6.6 The stipulated fee shall be payable towards Condonation of shortage of attendance.

7.0 Minimum Academic Requirements:

The following academic requirements have to be satisfied in addition to the attendance requirements mentioned in item no.6

- 7.1 The student shall be deemed to have satisfied the minimum academic requirements and earned the credits allotted to each theory or practical or design or drawing subject or project if he secures not less than 35% of marks in the End Examination and he has to score minimum of 40% marks from Internal and external exam marks put together to clear the subject.
- 7.2 The student shall be promoted from II to III year only if he fulfils the academic requirement of securing 40 out of 80 credits from one regular and one supplementary examinations of I year, and one regular examinations of II year I semester irrespective of whether the candidate takes the examination or not.
- 7.3 The student shall be promoted from third year to fourth year only if he fulfils the academic requirements of securing total 72 out of 144 credits from the following examinations, whether the candidate takes the examinations or not.
 - a) Two regular and two supplementary examinations of I year.
 - b) Two regular and one supplementary examinations of II year I semester.
 - c) One regular and one supplementary examinations of II year II semester.
 - d) One regular examination of III year I semester.
- 7.4 The student shall register and put up minimum attendance in all 240 credits and earn the 232 credits. Marks obtained in the best 220 credits (excluding the credits obtained in audit courses/soft skills and open electives) shall be considered for the calculation of percentage of marks.
- 7.5 Students who fail to earn 232 credits as indicated in the course structure including compulsory subjects as indicated in Table-1 within eight academic years from the year of their admission shall forfeit their seat in B.Tech course and their admission shall stand cancelled.

Table 5: Promotion rules

Promotion from	Total credits to register	Total credits to be earned for promotion
II year to III year	80	40
III year to IV year	144	72

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8.0 Course pattern:

- 8.1 The entire course of study is of four academic years. The first year shall be on yearly pattern and the second, third and fourth years shall be on semester pattern.
- 8.2 The student is eligible to appear for the End Examination in a subject, but absent at it or has failed in the End Examination may appear for that subject at the supplementary examination.

Table: 6 Course pattern

Year	Semester	No.of Subjects	No.of Audit subjects	Number of Labs	Total credits	
First year		O7 {ENG-4,EP-5,EC-5,M1-5, MM/EM-5,CDS-6,ED-6}	00	04	1X4=04 4X5=20 2X6=12 4X3=12	48
Second year	First	06	01	03	6X4=24 1X2=02 3x2=06	32
	Second	06	01	03	6X4=24 1X2=02 3x2=06	32
Third year	First	06	01	03	6X4=24 1X2=02 3x2=06	32
	Second	06	01	03	6X4=24 1X2=02 3x2=06	32
Fourth year	First	06	01	02 Mini project	6X4=24 1X2=02 3x2=06	32
	Second	03	01	Seminar Comprehensive Viva Project Viva	3x4 =12 1X2=02 1X2=02 1X4=04 1X12=12	32
GRAND TOTAL						240

9.0 Award of Class:

After the student has satisfied the requirements prescribed for the completion of the programme and is eligible for the award of B.Tech. Degree he shall be placed in one of the following four classes:

Table 7: Award of Division

Class Awarded	% of marks to be secured	From the aggregate marks secured for the best 220 Credits excluding audit courses/ open elective/soft skills credits.
First Class with Distinction	70% and above	
First Class	Below 70% but not less than 60%	
Second Class	Below 60% but not less than 50%	
Pass Class	Below 50% but not less than 40%	

(The marks in Internal evaluation and End Examination shall be shown separately in the marks memorandum)

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10.0 Supplementary Examinations:

Apart from the regular End Examinations the institute may also schedule and conduct supplementary examinations for all subjects for the benefit of students with backlogs. Such students writing supplementary examinations as supplementary candidates may have to write more than one examination per day.

11.0 Transcripts:

After successful completion of prerequisite credits for the award of degree a Transcript containing performance of all academic years will be issued as a final record. Duplicate transcripts will also be issued if required after the payment of requisite fee and also as per norms in vogue.

12.0 Rules of Discipline:

- 12.2 Any attempt by any student to influence the teachers, Examiners, faculty and staff of controller of Examination for undue favours in the exams, and bribing them either for marks or attendance will be treated as malpractice cases and the student can be debarred from the college.
- 12.3 When the student absents himself, he is treated as to have appeared and obtained zero marks in that subject(s) and grading is done accordingly.
- 12.4 When the performance of the student in any subject(s) is cancelled as a punishment for indiscipline, he is awarded zero marks in that subject(s).
- 12.4.1 When the student's answer book is confiscated for any kind of attempted or suspected malpractice the decision of the Examiner is final.

13.0 Minimum Instruction Days:

The minimum instruction days for each semester / I year shall be 95/180 clear instruction days excluding the days allotted for tests/examinations and preparation holidays declared if any.

14.0 Amendment of Regulations:

The college may, from time to time, revise, amend or change the regulations, scheme of examinations and syllabi. However the academic regulations of any student will be same throughout the course of study in which the student has been admitted.

15.0 Transfers

There shall be no branch transfers after the completion of admission process.

16.0 General:

- 16.2 The Academic Regulation should be read as a whole for the purpose of any interpretation.
- 16.3 In the case of any doubt or ambiguity in the interpretation of the above rules, the decision of the Academic Council is final.
- 16.4 The Institute may change or amend the academic regulations or syllabi at any time and the changes or amendments made shall be applicable to all the students with effect from the dates notified by the Institute.
- 16.5 Where the words "he", "him", "his", occur in the regulations, they include "she", "her", "hers".

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INFORMATION TECHNOLOGY**ACADEMIC REGULATIONS FOR B.TECH (LATERAL ENTRY SCHEME)**

(Effective for the students getting admitted into II year from the Academic Year 2011-2012 on wards)

- 1.0** The Students have to acquire 184 credits out of 192 from II to IV year of B.Tech. Program (Regular) for the award of the degree.
- 2.0** Students, who fail to fulfil the requirement for the award of the degree in 6 consecutive academic years from the year of admission, shall forfeit their seat.
- 3.0** The same attendance regulations are to be adopted as that of B.Tech. (Regular).
- 4.0 Promotion Rule:**

The student shall be promoted from third year to fourth year only if he fulfils the academic requirements of 48 out of 96 credits from the examinations.

- Two regular and one supplementary examinations of II year I semester.
- One regular and one supplementary examinations of II year II semester.
- One regular examination of III year I semester.

5.0 Award of Class:

After the student has satisfied the requirements prescribed for the completion of the program and is eligible for the award of B.Tech. Degree he shall be placed in one of the following four classes: The marks obtained in the best 172 credits will be considered for the calculation of percentage and award of class.

Table 1: Award of Division

Class Awarded	% of marks to be secured	From the aggregate marks secured for best 172 Credits. (i.e. II year to IV year) excluding audit/open electives/soft skills
First Class with Distinction	70% and above	
First Class	Below 70% but not less than 60%	
Second Class	Below 60% but not less than 50%	
Pass Class	Below 50% but not less than 40%	

(The marks in Internal evaluation and End Examination shall be shown separately in the marks memorandum)

- 6.0 All other regulations as applicable for B. Tech. Four-year degree course (Regular) will hold good for B.Tech. (Lateral Entry Scheme)**

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INFORMATION TECHNOLOGY**COURSE STRUCTURE**

(Common to Branches: ECE, EEE, EIE, CSE & IT)

I B.Tech

Code	Subject	Scheme of instruction periods/week		Credits	Scheme of Examination		
		Theory	Practical		Internal Marks	External Marks	Total Marks
Theory							
A0001101	English	3+1*	-	4	30	70	100
A0002101	Engineering Physics	3+1*	-	5	30	70	100
A0003101	Engineering Chemistry	3+1*	-	5	30	70	100
A0004101	Mathematics – I	3+1*	-	5	30	70	100
A0005101	Mathematical Methods	3+1*	-	5	30	70	100
A0501101	C Programming and Data Structures	3+1*	-	6	30	70	100
A0301101	Engineering Drawing	3+1*	-	6	30	70	100
Practical							
A0591101	C Programming and Data Structures Lab	-	3	3	25	50	75
A0391101	Engineering and IT Workshop	-	3	3	25	50	75
A0091101	Engineering Physics Lab and Engineering Chemistry Lab	-	3	3	25	50	75
A0092101	English Language Communication Skills Lab	-	3	3	25	50	75
Total		28	12	48	310	690	1000

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INFORMATION TECHNOLOGY**COURSE STRUCTURE****II B.TECH, I-SEMESTER**

S.No	Subject Code	Subject	Hours/week			Credits	Marks		
			Theory	Tutorial	Lab		Int.	Ext.	Total
1.	A1201103	Information Technology Fundamentals	3	1	0	4	30	70	100
2.	A0010103	Environmental Studies	3	1	0	4	30	70	100
3.	A1202103	Fundamentals of Object-Oriented Design	3	1	0	4	30	70	100
4.	A1203103	Computer Organization and Design	3	1	0	4	30	70	100
5.	A1204103	Mathematical Foundations of IT	3	1	0	4	30	70	100
6.	A1205103	Relational Database Design and Development	3	1	0	4	30	70	100
7.	A1291103	Fundamentals of Object Oriented Design Lab	0	0	3	2	25	50	75
8.	A1293103	Unix and Shell Programming Lab	0	0	3	2	25	50	75
9.	A1292103	Relational Database Systems Lab	0	0	3	2	25	50	75
10.	A0009103	Audit Course-1*: Corporate Management Skills	3	0	0	2	100	-	100
Contact periods/week			23	4	9	32			925
			Total : 36			32			

II B.TECH, II-SEMESTER

S.No	Subject Code	Subject	Hours/week			Credits	Marks		
			Theory	Tutorial	Lab		Int	Ext	Total
1	A0401103	Digital Logic Design	3	1	0	4	30	70	100
2	A1206104	Foundations of Software Engineering	3	1	0	4	30	70	100
3	A1207104	Analysis of Algorithms and Data Structures	3	1	0	4	30	70	100
4	A1208104	Modern Operating System	3	1	0	4	30	70	100
5	A1209104	Data Communications	3	1	0	4	30	70	100
6	A1210104	JAVA Programming	3	1	0	4	30	70	100
7	A1293104	Analysis of Algorithms and Data Structures Lab Using C++	0	0	3	2	25	50	75
8	A1294104	Modern Operating System Lab	0	0	3	2	25	50	75
9	A1295104	JAVA Programming Lab	0	0	3	2	25	50	75
10	A0007103	Audit course-2*: Aptitude, Arithmetic, Reasoning & Comprehension	3	0	0	2	100	-	100
Contact periods/week			21	6	9	32			925
			Total : 36			32			

* - Audit Course credits will not be considered for the award of Division. However, all these courses have to be cleared through Internal Evaluation by scoring a minimum of 40%.

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INFORMATION TECHNOLOGY**COURSE STRUCTURE****III B.TECH, I-SEMESTER**

S.No	Subject Code	Subject	Hours/week			Credits	Marks		
			Theory	Tutorial	Lab		Int	Ext	Total
1.	A0001103	Probability & Statistics	3	1	0	4	30	70	100
2.	A1210105	Computer Networking : Top-down approach	3	1	0	4	30	70	100
3.	A1211105	Web Application Development	3	1	0	4	30	70	100
4.	A1212105	Database Management Concepts	3	1	0	4	30	70	100
5.	A0514105	C# & .NET	3	1	0	4	30	70	100
6.		Elective – 1**	3	1	0	4	30	70	100
7.	A0093105	PROS Lab	0	0	3	2	25	50	75
8.	A1296105	Web Application Development Lab	0	0	3	2	25	50	75
9.	A0597105	C# & .NET Lab	0	0	3	2	25	50	75
10.	A1218105	Technology Certification : CCNA (Audit Course-3)*	3	0	0	2	100	-	100
Contact periods/week			21	6	9	32			925
			Total : 36			32			

* - Audit Course credits will not be considered for the award of Division. However, all these courses have to be cleared through Internal Evaluation by scoring a minimum of 40%.

Subject Code	Choices for Elective-1 (Group-1)	Subject
A1213105	G1.1	Artificial Intelligence
A1214105	G1.2	Computer Graphics: Principles & Practices
A1215105	G1.3	Software Architecture
A1216105	G1.4	E-Commerce
A1217105	G1.5	Theory of Computation

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INFORMATION TECHNOLOGY**COURSE STRUCTURE****III B.TECH, II-SEMESTER**

S.No	Subject Code	Subject	Hours/week			Credits	Marks		
			Theory	Tutorial	Lab		Int.	Ext.	Total
1	A0013105	Managerial Economics & Financial Accounting	3	1	0	4	30	70	100
2	A1219106	Embedded Computing	3	1	0	4	30	70	100
3	A1220106	System Programming	3	1	0	4	30	70	100
4	A0520106	Software Testing Methodologies and Tools [Common with CSE]	3	1	0	4	30	70	100
5		Elective –2**	3	1	0	4	30	70	100
6		Elective – 3**	3	1	0	4	30	70	100
7	A1297106	Embedded Computing Lab	0	0	3	2	25	50	75
8	A1298106	System Programming Lab	0	0	3	2	25	50	75
9	A0598106	Software Testing Tools Lab	0	0	3	2	25	50	75
10	A1226106	Man Management (Audit Course-4*)	3	0	0	2	100	-	100
Contact periods/week			21	6	9	32			925
			Total : 36			32			

** GROUP – 2: List of electives for Elective – 2 & Elective – 3

[Choose ANY TWO from the following]

Subject Code	Choices for Elective-2 & 3 (Group-2)	Subject
A1221106	G2.1	Biometrics
A1222106	G2.2	Data Warehousing and Data Mining concepts
A1223106	G2.3	Introduction to High Performance Computing
A0527107	G2.4	Multimedia and Application Development [Same as ELECTIVE I, IV/1, B.TECH(CSE)]
A1224106	G2.5	Network Management Systems
A1225106	G2.6	Human Computer Interaction

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INFORMATION TECHNOLOGY**COURSE STRUCTURE****IV B.TECH, I-SEMESTER**

S.No	Subject Code	Subject	Hours/week			Credits	Marks		
			Theory	Tutorial	Lab		Int	Ext	Total
1	A1226107	Middleware Technologies and Service Oriented Architecture	3	1	0	4	30	70	100
2	A1227107	Information Security	3	1	0	4	30	70	100
3	A1228107	Mobile Computing	3	1	0	4	30	70	100
4	A0525107	SAP-ABAP	3	1	0	4	30	70	100
5		Elective – 4**	3	1	0	4	30	70	100
6		Elective – 5**	3	1	0	4	30	70	100
7	A1299107	Information security & Mobile Computing Lab	0	0	3	2	25	50	75
8	A0581107	SAP – ABAP LAB	0	0	3	2	25	50	75
9	A1281107	Mini Project	0	0	3	2	25	50	75
10	A1233107	Free/Open Source Software (Audit Course-5*)	3	0	0	2	100	-	100
Contact periods/week			21	6	9	32			925
			Total : 36			32			

** GROUP – 3: List of electives for Elective – 4 & Elective – 5

[Choose ANY TWO from the following]

Subject Code	Choices for Elective-4 & 5 (Group-3)	Subject
A1229107	G3.1	Basics of image processing
A1230107	G3.2	Programming Massively Parallel Processors
A1231107	G3.3	Natural Language Processing
A1232107	G3.4	Cloud computing
A0526107	G3.5	Software Project Management

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INFORMATION TECHNOLOGY**COURSE STRUCTURE****IV B.TECH, II-SEMESTER**

S.No	Subject Code	Subject	Hours/week			Credits	Marks		
			Theory	Tutorial	Lab		Int.	Ext.	Total
1	A0012105	Management Science	3	1	0	4	30	70	100
2		Elective – 6**	3	1	0	4	30	70	100
3		Elective – 7**	3	1	0	4	30	70	100
4	A1282108	Seminar	0	0	0	2	50	-	50
5	A1283108	Comprehensive Viva-Voce	0	0	0	4	-	50	50
6	A1284108	Project	0	0	0	12	50	100	150
7	A1238108	Professional Ethics in Engineering (Audit Course-6*)	3	0	0	2	100	-	100
Contact periods/week			13	2	0	32			650
			Total : 15			32			

** GROUP – 4: List of electives for Elective-6 & Elective-7

[Choose ANY TWO from the following]

Subject Code	Choices for Elective-6 & 7 (Group-4)	Subject
A1233108	G4.1	Design Patterns: Concepts and Applications
A1234108	G4.2	Information Retrieval Systems
A1235108	G4.3	Pattern Recognition
A1236108	G4.4	Principles of Compiler Design
A1237108	G4.5	Soft Computing

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INFORMATION TECHNOLOGY**I B.TECH. (REGULAR, 2010-11)**

(Common to all Branches)

For Branches: E.C.E, E.E.E, E.I.E, C.S.E, I.T, M.E, C.E.

T	C
3+1*	4

(A0001101) ENGLISH**1. INTRODUCTION :**

The sweeping changes in the world have elevated English to the status of a tool of global communication and transformed it into e-English. The syllabus has been drafted to improve the competence of students in communication in general and language skills in particular. The books prescribed serve as students' handbooks.

The teacher should focus on the skills of reading, writing, listening and speaking while using the prescribed text and exercises. The classes should be interactive. The students should be encouraged to participate in the classroom proceedings and also to write short paragraphs and essays. The main aim is to encourage two way communications in place of the one-sided lecture.

The text for non-detailed study is meant for extensive reading by the students. They may be encouraged to read some select topics on their own, which could lead into a classroom discussion. In addition to the exercises from the texts done in the class, the teacher can bring variety by using authentic materials such as newspaper articles, advertisements etc.

2. OBJECTIVES:

- To improve the language proficiency of the students in English with an emphasis on LSRW skills.
- To equip the students to study academic subjects with greater facility through theoretical and practical components of the syllabus.
- To develop study skills as well as communication skills in formal and informal situations.

3. SYLLABUS:**Listening Skills:****Objectives**

- To enable students to develop their listening skills so that they may appreciate its role in the LSRW skills approach to language and improve their pronunciation.
- To equip students with necessary training in listening so that they can comprehend the speech of people of different backgrounds and dialects.

Students should be given practice in listening and identifying the sounds of English language and to mark stress, right intonation in connected speech.

- Listening for general content.
- Intensive listening.
- Listening to fill up information.
- Listening for specific information .

Speaking Skills:**Objectives**

- To make students aware of the role of ability to speak fluent English and its contribution to their success.
 - To enable students to express themselves fluently and appropriately in social and professional contexts.
 - Oral practice
 - Role play – Individual/Group activities
 - Describing objects/situations/people
 - Just A Minute (JAM) Sessions.
- (Using exercises from all units of the prescribed text)

Reading Skills:**Objectives**

- To develop an awareness in the students about the significance of silent reading and comprehension.
- To develop the ability to guess the meanings of words from context and grasp the overall message of the text, draw inferences etc.

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- Skimming the text
- Identifying the topic sentence
- Understanding discourse features
- Understanding the gist of an argument
- Inferring lexical and contextual meaning
- Recognizing coherence/sequencing of sentences

The students shall be trained in reading skills using the prescribed text for detailed study. They shall be examined in reading and answering questions using 'unseen' passages which may be taken from the non-detailed text or other authentic texts, such as magazines/newspaper articles.

Writing Skills:**Objectives**

1. To develop an awareness in the students the skill to write exact and formal writing.
2. To equip them with the components of different forms of writing.
 - Writing sentences
 - Paragraph writing
 - Narration / description
 - Formal and informal letter writing
 - Use of appropriate vocabulary
 - Coherence and cohesiveness
 - Note Making
 - Editing a passage

4. TEXTBOOKS PRESCRIBED:

In order to improve the proficiency of the student in the acquisition of the four skills mentioned above, the following texts and course content, divided into **Eight Units**, are prescribed:

For Detailed study: ENJOYING EVERYDAY ENGLISH, Sangam Books (India) Pvt Ltd Hyderabad, 2009

For Non-detailed study: INSPIRING LIVES, Maruti Publications, Guntur, 2009

UNIT -I

- a) Heaven's Gate from **ENJOYING EVERYDAY ENGLISH**.
- b) Mokshagundam Visvesaraya from **INSPIRING LIVES**

UNIT -II

- a) Sir C.V.Raman from **ENJOYING EVERYDAY ENGLISH**.
- b) Mother Teresa from **INSPIRING LIVES**.

UNIT -III

- a) The Connoisseur from **ENJOYING EVERYDAY ENGLISH**.
- b) Dr. Amartya Kumar Sen from **INSPIRING LIVES**.

UNIT -IV

- a) The Cuddalore Experience from **ENJOYING EVERYDAY ENGLISH**.
- b) Gertrude Elion from **INSPIRING LIVES**.

UNIT -V

- a) Bubbling Well Road from **ENJOYING EVERYDAY ENGLISH**.
- b) Vishwanathan Anand from **INSPIRING LIVES**.

UNIT-VI

- a) Odds against Us from **ENJOYING EVERYDAY ENGLISH**.
- b) Charlie Chaplin from **INSPIRING LIVES**.

UNIT – VII

- a) Exercises on Reading and Writing Skills, Reading Comprehension, Letter writing, Report writing

UNIT – VIII

Exercises on Remedial Grammar covering Common errors in English, Subject-Verb agreement, Use of Articles and Prepositions, Active/Passive Voice, Reported speech, Tenses Vocabulary development covering Synonyms & Antonyms, one-word substitutes, prefixes & suffixes, Idioms & phrases, words often confused.

Evaluation: The question paper shall contain two parts, Part A containing questions from Units I- VI and Part B containing questions from units VII & VIII. The student is required to answer five full questions choosing at least one from Part B.

INFORMATION TECHNOLOGY**REFERENCES:**

1. Technical Communication , Principle and Practice, Meenakshi Raman and Sangita Sharma, OUP, 2009
2. Essential Grammar in Use, (with CD) 3rd edn, Cambridge University Press, 2009.
3. Resumes and Interviews, M.Ashraf Rizvi, Tata - McGraw Hill, 2009.
4. Everyday Dialogues in English by Robert J. Dixon, Prentice-Hall of India Ltd., 2006.
5. Communication Skills for Technical Students, T.M.Farhathullah, Orient Blackswan, 2008.
6. Developing Communication Skills, 2nd edn. by Krishna Mohan & Meera Banerji , Macmillan, 2009.
7. English for Technical Communication, Vol. 1 & 2, by K. R. Lakshmi Narayanan, Sci tech. Publications.
8. Basic Communication Skills for Technology, Andrea J Ruthurford, Pearson Education, Asia.
9. Longman Dictionary of Contemporary English with DVD, Pearson Longman.

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INFORMATION TECHNOLOGY

I B.TECH. (REGULAR, 2010-11)

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(A0002101) ENGINEERING PHYSICS**UNIT I**

OPTICS: Interference - Interference in thin films by reflection - Newton's rings - Diffraction - Fraunhofer diffraction at a single slit - Fraunhofer diffraction at a double slit - Diffraction grating - Grating spectrum - polarization - Nicol prism - Theory of circular and elliptical polarized light - Quarter and half wave plates.

UNIT II

CRYSTAL STRUCTURES AND X-RAY DIFFRACTION: Introduction - Space lattice - Basis - Unit cell - Lattice parameter - Bravais lattices - Crystal systems - Structure Simple cubic - Body Centered Cubic - Face Centered Cubic crystals - Miller indices of planes and directions in crystals - Separation between successive (h k l) planes - X-ray diffraction by crystal planes - Bragg's law - Laue and Powder methods.

UNIT III

PRINCIPLES OF QUANTUM MECHANICS & ELECTRON THEORY: Waves and Particles - de-Broglie's hypothesis - Heisenberg's uncertainty principle - Schrodinger's one dimensional wave equation (Time Independent) - Particle in a one dimensional potential box - Energy levels - Fermi-Dirac distribution and effect of Temperature (qualitative treatment only) - Scattering - Source of electrical resistance - Kronig-Penney model (qualitative treatment only) - energy bands - metals, semi conductors & insulators.

UNIT IV

SEMICONDUCTORS: Intrinsic and extrinsic semiconductors - Law of mass action - Continuity equation - Drift & diffusion - Einstein's relation - Hall effect - Direct & indirect band gap semiconductors - p-n junction - Band diagram of p-n junction diode - Diode Equation - LED, LCD & Photo diode.

UNIT V

MAGNETIC PROPERTIES: Introduction - Origin of magnetic moment - Classification of magnetic materials - Dia, Para, Ferro, anti-Ferro and Ferri magnetism - Hysteresis - Soft and hard magnetic materials - Magnetic bubbles memory.

DIELECTRIC PROPERTIES: Introduction - Dielectric constant - Electronic, Ionic and Orientation polarizations (qualitative treatment only) - Local field - Clausius - Mossotti equation - Frequency dependence of polarisability (qualitative treatment only) - Ferro electricity - BaTiO_3 .

UNIT VI

SUPERCONDUCTIVITY: General properties - Meissner effect - Penetration depth - Type I and Type II superconductors - Flux quantization - Josephson effects - BCS theory - Applications of superconductors.

LASERS: Introduction - Characteristics of laser - Spontaneous and stimulated emission of radiation - Einstein's coefficients - Population inversion - Ruby Laser - Helium-Neon Laser - GaAs Laser - Applications of Lasers in Industry, Scientific and Medical fields.

UNIT VII

FIBER OPTICS: Principle of optical fiber - Acceptance angle and Acceptance cone - Numerical aperture - Types of Optical fibers and refractive index profiles - Optical fiber communication systems - Application of optical fibers.

UNIT VIII

NANOMATERIALS: Introduction - Basic principles of nano materials - Fabrication of nano materials - ball milling - plasma arching - Chemical vapour deposition method - sol-gel methods - properties of nano materials - carbon nano tubes - properties and applications of carbon nano tubes - Applications of nano materials.

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INFORMATION TECHNOLOGY**TEXT BOOKS:**

1. Engineering Physics by V. Rajendran & K.Thyagarajan, Tata McGraw-Hill Publishing Co. Ltd.
2. Engineering Physics by M.R.Srinivasan New Age Publications.
3. Engineering Physics by M.N.Avadhanulu, S.Chand Publications, New Delhi.

REFERENCES:

1. Physics Volume 2, by Halliday, Resnick and Krane; John Wiley India.
2. Solid State Physics by C.Kittel, Wiley India.
3. Engineering Physics by Mittal, I.K.International.
4. Introduction to Nanoscience & Nano Technology by K.K Chattopadhyaya A.N. Banarjee , Prentice – Hall of India Pvt. Ltd.

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INFORMATION TECHNOLOGY

I B.TECH. (REGULAR, 2010-11)

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(A0003101) ENGINEERING CHEMISTRY**UNIT I**

Water: Sources of Water, Types of impurities in Water, Hardness of Water - Temporary and Permanent hardness, Units, Estimation of hardness by EDTA Method, Analysis of Water - Dissolved Oxygen, Disadvantages of Hard Water, Problems on hardness of water, Methods of Treatment of Water for Domestic Purpose - Sterilisation: Chlorination, Ozonisation.

Water for Industrial purpose: Water for Steam Making, Boiler Troubles - Carry Over (Priming and Foaming), Boiler Corrosion, Scales and Sludges, Caustic Embrittlement, Water Treatment - Internal Treatment - Colloidal, Phosphate, Calgon, Carbonate, Sodium aluminates Conditioning of Water. External Treatment - Ion- Exchange Process; Demineralization of Brakish Water - Reverse Osmosis.

UNIT II

Science of Corrosion: Definition, Types of corrosion: Dry Corrosion, (Direct Chemical attack), Wet Corrosion, Theories of Corrosion and Mechanism, Electro Chemical Theory of Corrosion, Galvanic Series, Galvanic Corrosion, Concentration Cell Corrosion, Oxygen absorption type, Factors Influencing Corrosion, Control of Corrosion - Cathodic Protection - Sacrificial anode and Impressed Current, Uses of Inhibitors, Electro Plating and Electro less plating (copper and nickel).

UNIT III

Polymers: Polymerization Reactions - Basic concepts, Types of Polymerization - Addition and Condensation Polymerization, Plastics - Thermosetting and Thermoplastics, Composition, Properties and Engineering Uses of the Following: Teflon, Bakelite, Nylon, Rubber - Processing of Natural Rubber and Compounding, Elastomers - Buna S, Buna N, Polyurethane Rubber; Silicone Rubber, Conducting Polymers, Synthesis and applications of Polyacetylene and Poly aniline Liquid Crystals definition, properties, suitable examples and Engineering Applications.

UNIT IV

Chemistry of nano materials: Nano materials definition, properties and applications.

Explosives and Propellants: Explosives, Classification, precautions during storage, blasting fuses, important explosives, Rocket propellants, classification of propellants.

Lubricants : Principles and function of lubricants - Classification and properties of lubricants - Viscosity, flash and fire points, cloud and pour points, aniline point, Neutralization Number and Mechanical Strength.

UNIT V

Electro Chemistry: Conductance - Equivalent Conductance - Molecular Conductance, Conductometric Titrations - Applications of Conductivity Measurements.

Electrochemical Cells: Measurement of EMF, Standard electrode potential, concentration cells, batteries (Ni-Cd cell), Lithium batteries, Fuel cell: hydrogen oxygen fuel cell and methanol fuel cell

Insulators – Definition, Properties and Characteristics of Insulating Materials, Engineering Applications.

UNIT VI:

Phase rule: Definition, Terms involved in Phase Rule and Phase rule equation. Phase diagrams - one component system (water system), two component system (lead- silver system) Eutectics, heat treatment based on iron-carbon phase diagram, hardening, annealing.

UNIT VII:

Fuels and Combustion: Definition and Classification of fuels, Solid, liquid & gaseous fuels, Characteristics of a good fuel, Metallurgical Coke - Characteristics & Manufacture (Otto-Halfmann),

Petroleum - Refining - Synthetic Petrol, Calorific Value & its determination (Bomb Calorimeter - Junker's Gas Calorimeter). Combustion: Flue gas analysis by Orsat's apparatus.

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UNIT VIII:**Building Materials:**

Cement: composition of Portland cement, analysis, setting & hardening of cement (reactions).

Refractories: Definition, Classification With Examples; Criteria of a Good Refractory Material; Causes for the failure of a Refractory Material.

TEXT BOOKS

1. Chemistry for Engineers Prof. K.N.Jayaveera, Dr.G.V.Subba Reddy and Dr.C.Ramachandraiah, McGraw Hill Higher Education Hyd., 2009.
2. A text book of Engineering Chemistry by S.S. Dara, S.Chand & Co, New Delhi (2008).
3. Text book of Engineering Chemistry by Jain & Jain, Dhanpat Rai Publishing Company, 15th edition New Delhi (2008).

REFERENCE

1. Engineering Chemistry Dr. K. B. Chandrasekhar, Dr. U.N. Dash, Dr. Sujatha Mishra, Scitech Publications (India) Pvt. Limited, Hyderabad. 2009.
2. Fuel Cells principles and applications by B.Viswanath, M.Aulice Scibioh - Universities press.
3. Chemistry of Engineering Materials by C.V. Agarwal, Tara Publication, Varanasi.2008.
4. Physical Chemistry - Glasston & Lewis.
5. Engineering Chemistry (Vol.1&2) by J C Kuriacose and J. Rajaram, Tata McGraw-Hill Co, New Delhi (2004).
6. Applied Chemistry: A Text Book for chemistry for Engineers & Technologists, G.D. Gesser, Springer, 2000

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INFORMATION TECHNOLOGY

I B.TECH. (REGULAR, 2010-11)

(Common to all Branches)

For Branches: E.C.E, E.E.E, E.I.E, C.S.E, I.T, M.E, C.E.

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3+1*	5

(A0004101) MATHEMATICS – I**UNIT I**

Differential equations of first order and first degree - Exact, linear and Bernoulli equations. Applications to Newton's law of cooling, law of natural growth and decay, orthogonal trajectories.

UNIT II

Non-homogeneous linear differential equations of second and higher order with constant coefficients with RHS term of the type e^{ax} , $\sin ax$, $\cos ax$, polynomials in x , $e^{ax} V(x)$, $xV(x)$, method of variation of parameters.

UNIT III

Rolle's Theorem - Lagrange's Mean Value Theorem - (excluding proof). Simple examples of Taylor's and Maclaurin's Series - Functions of several variables - Jacobian - Maxima and Minima of functions of two variables, Lagrangian method of Multipliers with three variables only.

UNIT IV

Raidus of Curvature - Curve tracing - Cartesian, polar and parametric curves. Applications of integration to lengths, volume and surface area of solids of revolution in Cartesian and polar coordinates

UNIT V

Multiple integral: Double and triple integrals - Change of Variables - Change of order of integration.

UNIT VI

Laplace transform of standard functions -Inverse transform - First shifting Theorem, Transforms of derivatives and integrals - Unit step function - Second shifting theorem - Dirac's delta function - Convolution theorem - Laplace transform of Periodic function.

UNIT VII

Differentiation and integration of Laplace transform - Application of Laplace transforms to ordinary differential equations of first and second order.

UNIT VIII

Vector Calculus: Gradient – Divergence - Curl and Their properties; Vector integration - Line integral - Potential function - Area, Surface and volume integrals, Vector integral theorems: Green's theorem - Stoke's and Gauss's Divergence Theorem (excluding their proof), Verification of Green's - Stoke's and Gauss's Theorems.

TEXT BOOKS

1. A Text Book of Engineering Mathematics, Vol – 1, T.K.V. Iyengar, B. Krishna Gandhi and Others S. Chand & Company.
2. A Text Book of Engineering Mathematics, C. Sankaraiah, V.G.S. Book Links.
3. A Text Book of Engineering Mathematics-1, E. Rukmangadachari, E. Keshava Reddy, Pearson Education.

REFERENCES

1. A Text Book of Engineering Mathematics, B.V. Ramana, Tata Mc Graw Hill.
2. A Text Book of Engineering Mathematics, Thomson Book Collection.
3. A Text Book of Advanced Engineering Mathematics – A Computer Approach, N.Bail, M.Goyal & C.Watkins.
4. Engineering Mathematics, Sarveswara Rao Koneru, Universities Press.

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I B.TECH. (REGULAR, 2010-11)

(Common to Branches: E.C.E, E.E.E, E.I.E, C.S.E, I.T)

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3+1*	5

(A0302101) MATHEMATICAL METHODS

UNIT I

Matrices: Elementary row transformations – Rank – Echelon form, normal form – Solution of Linear System of Homogenous and Non Homogeneous equations – Direct Methods – Gauss Elimination, Gauss Jordan methods.

Eigen Values, Eigen vectors – Properties. Cayley – Hamilton Theorem – Inverse and powers of a matrix by Cayley–Hamilton theorem – Diagonalization of matrix. Calculation of powers of matrix.

UNIT II

Real matrices – Symmetric, Skew – Symmetric, orthogonal matrices Linear Transformation – Orthogonal Transformation. Complex matrices: Hermitian, Skew-Hermitian and Unitary matrices – Eigen values and Eigen vectors and their properties. Quadratic forms – Reduction of quadratic form to canonical form and their nature.

UNIT III

Solution of Algebraic and Transcendental Equations: Introduction – The Bisection Method – The Method of False Position – The Iteration Method – Newton-Raphson Method.

Interpolation: Introduction – Finite differences – Forward Differences – backward Differences –Newton's forward and backward difference formulae for interpolation – Lagrange's Interpolation formula.

UNIT IV

Curve fitting: Fitting a straight line – Second degree curve – Exponential curve-Power curve by method of least squares. Numerical Differentiation and Integration – Trapezoidal rule – Simpson's 1/3 Rule – Simpson's 3/8 Rule.

UNIT V

Numerical solution of Ordinary Differential equations: Solution by Taylor's series-Picard's Method of successive Approximations-Euler's Method-Runge-Kutta Methods – Milne's Predictor-Corrector Method.

UNIT VI

Fourier Series: Determination of Fourier coefficients – Fourier series of Even and odd functions – Fourier series in an arbitrary interval – Even and odd periodic continuation – Half-range Fourier sine and cosine expansions. Fourier integral theorem (statement only) – Fourier sine and cosine integrals, Fourier transform – Fourier sine and cosine transforms – Properties – Inverse transforms – Finite Fourier transforms.

UNIT VII

Formation of partial differential equations by elimination of arbitrary constants and arbitrary functions – Method of separation of variables – Solutions of one dimensional wave equation, heat equation and two-dimensional Laplace equation under initial and boundary conditions.

UNIT – VIII

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

TEXT BOOKS:

1. Mathematical Methods, T.K.V. Iyengar, B. Krishna Gandhi and Others, S. Chand & Company.
2. Mathematical Methods, C. Sankaraiah, V.G.S. Book Links.
3. Mathematical Methods, G. Shanker Rao, E. Keshava Reddy, I. K. International Publishing House Pvt. Ltd.

REFERENCES:

1. Numerical Methods for Scientific and Engineering Computation , M.K. Jain, S.R.K. Iyengar & R.K. Jain, New Age international Publishers.
2. Mathematical Methods – Pal – Oxford.
3. Introduction to Numerical Analysis – S.S. Sastry Printice Hall of India.
4. Mathematical Methods, S.K.V.S. Sri Ramachary, M. Bhujanga Rao, P.B. Bhaskar Rao & P.S. Subramanyam, BS Publications.

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I B.TECH. (REGULAR, 2010-11)

(Common to all Branches)

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(A0501101) C PROGRAMMING AND DATA STRUCTURES**UNIT I**

Overview of Computers and Programming - Electronic Computers then and Now, Computer Hardware, Computer Software, Algorithm, Flowcharts, Software Development Method, Applying the Software Development Method.

UNIT II

Introduction to C Language - C Language Elements, Variable Declarations and Data Types, Executable Statements, General Form of a C Program, Expressions, Precedence and Associativity, Expression Evaluation, Operators and Expressions, Type Conversions, Decision Statements - If and Switch Statements, Loop Control Statements - while, for, do-while Statements, Nested for Loops, Other Related Statements -break, continue, goto.

UNIT III

Functions - Library Functions, Top-Down Design and Structure Charts, Functions with and without Arguments, Communications Among Functions, Scope, Storage Classes - Auto, Register, Static, Extern, Scope rules, Type Qualifiers, Recursion - Recursive Functions, Preprocessor Commands.

Arrays - Declaring and Referencing Arrays, Array Subscripts, Using for Loops for Sequential Access, Using Array Elements as Function Arguments, Arrays Arguments, Multidimensional Arrays.

UNIT IV

Pointers - Introduction, Features of Pointers, Pointer Declaration, Arithmetic Operations With Pointers, Pointers and Arrays, Pointers and Two-Dimensional Arrays, Array of Pointers, Pointers to Pointers, Void Pointers, Memory Allocation Functions, Programming Applications, Pointer to Functions, Command- Line Arguments.

Strings - String Basics, String Library Functions, Longer Strings, String Comparison, Arrays of Pointers, Character operations, String-To-Number and Number-To- String Conversions, Pointers and Strings.

UNIT V

Structure and Union – Introduction, Features of Structures. Declaration and Initialization of Structures, Structure within Structure, Array of Structures, Pointer to Structure, Structure and Functions, typedef, Bit Fields, Enumerated Data Type, Union, Union of Structures.

UNIT VI

Files - Introduction, Streams and File Types, Steps for File Operations, File I/O Structures, Read and Write, Other File function, Searching Errors in Reading/Writing of Files, Low Level Disk I/O, Command Line Arguments, Application of Command Line Arguments, File Status functions (error handling).

UNIT VII

Data Structures - Overview of Data Structure, Representation of a Stack, Stack Related Terms, Operation on a Stack, Implementation of a Stack, Representation of Arithmetic Expressions, Infix, Prefix, and Postfix Notations, Evaluation of Postfix Expression, Conversion of Expression from Infix to Postfix, Recursion, Queues - Various Positions of Queue, Representation of Queue, Insertion, Deletion, Searching Operations.

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

UNIT VIII

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

TEXT BOOKS :

1. Programming in C and Data Structures, J.R.Hanly, Ashok N. Kamthane and A. Ananda Rao, Pearson Education
2. C Programming & Data Structures, B.A.Forouzan and R.F. Gilberg, Third Edition, Cengage Learning.

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REFERENCES :

1. Programming in C – Stephen G. Kochan, III Edition, Pearson Eductaion.
2. C Programming with problem solving, J.A. Jones & K. Harrow, Dreamtech Press.
3. C and Data Structures, a snapshot oriented treatise with live engineering examples, Dr.N.B.Venkateswarlu, Dr. E.V.Prasad, S. Chand.
4. C and Data Structures, E.Balaguruswamy, Tata Mc Graw Hill.
5. Data Structures using C – A.M.Tanenbaum, Y.Langsam, and M.J. Augenstein, Pearson Education / PHI, Eighth Edition.

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INFORMATION TECHNOLOGY

I B.TECH. (REGULAR, 2010-11)

(Common to all Branches)

For Branches: E.C.E, E.E.E, E.I.E, C.S.E, I.T, M.E, C.E.

T	C
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(A0301101) ENGINEERING DRAWING**UNIT – I**

INTRODUCTION TO ENGINEERING DRAWING: Principles of Engineering Graphics and their Significance – Drawing Instruments and their Use – Conventions in Drawing – Lettering – BIS Conventions.

Curves used in Engineering Practice:

- Conic Sections including the Rectangular Hyperbola – General method only.
- Cycloid, Epicycloids and Hypocycloid
- Involutes.
- Helices

UNIT – II

PROJECTION OF POINTS AND LINES: Principles of Orthographic Projection – Conventions – First and Third Angle Projections. Projections of Points, Lines inclined to one or both planes, Problems on projections, Finding True lengths & traces only.

UNIT – III

PROJECTIONS OF PLANES: Projections of regular Plane surfaces, Projection of lines and planes using auxiliary planes.

UNIT – IV

PROJECTIONS OF SOLIDS: Projections of Regular Solids inclined to one or both planes – Auxiliary Views.

UNIT – V

SECTIONS & DEVELOPMENTS OF SOLIDS: Section Planes and Sectional views of Right Regular Solids– Prism, Cylinder, Pyramid and Cone – True shapes of sections.

Development of Surfaces of Right Regular Solids – Prisms, Cylinder, Pyramid, Cone and their Sectional parts.

UNIT – VI

ISOMETRIC & ORTHOGRAPHIC PROJECTIONS: Principles of Isometric Projection – Isometric Scale – Isometric Views– Conventions – Isometric Views of Lines, Plane Figures, Simple and Compound Solids - Isometric Projection of objects having non- isometric lines. Isometric Projection of Spherical Parts.

Conversion of Isometric Views to Orthographic Views - Conventions.

UNIT – VII

INTERPENETRATION OF RIGHT REGULAR SOLIDS: Intersection of Cylinder Vs Cylinder, Cylinder Vs Prism, Cylinder Vs Cone, Square Prism Vs Square Prism.

UNIT – VIII

PERSPECTIVE PROJECTIONS: Perspective View: Plane Figures and Simple Solids, Vanishing Point Methods (General Method only).

TEXT BOOKS:

- Engineering Drawing, N.D. Bhat / Charotar
- Engineering Drawing, Johle /Tata McGraw-Hill
- Engineering Drawing, Shah and Rana, 2/e Pearson education

REFERENCES:

- Engineering Drawing and Graphics, Venugopal/ New age
- Engineering Drawing, B.V.R. Gupta, J.K. Publishers
- Engineering Drawing, K.L. Narayana, P. Khanniah, Scitech Pub
- Engineering Drawing, Venkata Reddy, B.S.Publishers.

(A0591101) C PROGRAMMING AND DATA STRUCTURES LAB**Objectives:**

- ♣ To make the student learn a programming language.
- ♣ To teach the student to write programs in C to solve the problems.
- ♣ To introduce the student to simple linear data structures such as lists, stacks, queues.

Recommended Systems/Software Requirements:

- ♣ Intel based desktop PC with ANSI C Compiler and Supporting Editors

Exercise 1

- a) Write a C program to find the sum of individual digits of a positive integer.
- b) A Fibonacci sequence is defined as follows: the first and second terms in the sequence are 0 and 1. Subsequent terms are found by adding the preceding two terms in the sequence. Write a C program to generate the first n terms of the sequence.
- c) Write a C program to generate all the prime numbers between 1 and n, where n is a value supplied by the user.

Exercise 2

- a) Write a C program to calculate the following Sum:

$$\text{Sum} = 1 - x^2/2! + x^4/4! - x^6/6! + x^8/8! - x^{10}/10!$$
- b) Write a C program to find the roots of a quadratic equation.

Exercise 3

Write C programs that use both recursive and non-recursive functions

- i) Find the factorial of a given integer.
- ii) To find the GCD (greatest common divisor) of two given integers.
- iii) To solve Towers of Hanoi problem.

Exercise 4

- a) The total distance travelled by vehicle in 't' seconds is given by distance $S = ut + 1/2at^2$ where 'u' and 'a' are the initial velocity (m/sec.) and acceleration (m/sec²) respectively. Write C program to find the distance travelled at regular intervals of time given the values of 'u' and 'a'. The program should provide the flexibility to the user to select his own time intervals and repeat the calculations for different values of 'u' and 'a'.
- b) Write a C program, which takes two integer operands and one operator from the user, performs the operation and then prints the result. (Consider the operators +, -, *, /, % and use Switch Statement)

Exercise 5

- a) Write a C program to find both the largest and smallest number in a list of integers.
- b) Write a C program that uses functions to perform the following:
 - i) Addition of Two Matrices
 - ii) Multiplication of Two Matrices

Exercise 6

- a) Write a C program that uses functions to perform the following operations:
 - i) To insert a sub-string in to a given main string from a given position.
 - ii) To delete n Characters from a given position in a given string.
- b) Write a C program to determine if the given string is a palindrome or not

Exercise 7

- a) Write a C program that displays the position or index in the string S where the string T begins, or -1 if S doesn't contain T.
- b) Write a C program to count the lines, words and characters in a given text.

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Exercise 8

- a) Write a C program to generate Pascal's triangle.
- b) Write a C program to construct a pyramid of numbers.

Exercise 9

Write a C program to read in two numbers, x and n, and then compute the sum of the geometric progression:

$$1+x+x^2+x^3+\dots+x^n$$

For example: if n is 3 and x is 5, then the program computes 1+5+25+125.

Print x, n, the sum

Perform error checking. For example, the formula does not make sense for negative exponents – if n is less than 0. Have your program print an error message if $n < 0$, then go back and read in the next pair of numbers of without computing the sum. Find if any values of x are also illegal? If so, test for them too.

Exercise 10

- 1) 2's complement of a number is obtained by scanning it from right to left and complementing all the bits after the first appearance of a 1. Thus 2's complement of 11100 is 00100. Write a C program to find the 2's complement of a binary number.
- 2) Write a C program to convert a Roman numeral to its decimal equivalent.

Exercise 11

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

- i) Reading a complex number
 - ii) Writing a complex number
 - iii) Addition of two complex numbers
 - iv) Multiplication of two complex numbers
- (Note: represent complex number using a structure.)

Exercise 12

- a) Write a C program which copies one file to another.
 - b) Write a C program to reverse the first n characters in a file.
- (Note: The file name and n are specified on the command line.)

Exercise 13

- a) Write a C programme to display the contents of a file.
- b) Write a C programme to merge two files into a third file (i.e., the contents of the first file followed by those of the second are put in the third file)

Exercise 14

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

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

Exercise 15

Write C programs that implement stack (its operations) using

- i) Arrays
- ii) Pointers

Exercise 16

Write C programs that implement Queue (its operations) using

- i) Arrays
- ii) Pointers

Exercise 17

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

- i) Converting infix expression into postfix expression
- ii) Evaluating the postfix expression

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Exercise 18

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

- i) Bubble sort
- ii) Selection sort

Exercise 19

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

- i) Linear search
- ii) Binary search

Exercise 20

Write C program that implements the Quick sort method to sort a given list of integers in ascending order.

Exercise 21

Write C program that implement the Merge sort method to sort a given list of integers in ascending order.

Exercise 22

Write C programs to implement the Lagrange interpolation and Newton - Gregory forward interpolation.

Exercise 23

Write C programs to implement the linear regression and polynomial regression algorithms.

Exercise 24

(A0391101) ENGINEERING AND IT WORKSHOP**ENGINEERING WORKSHOP**

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.

1. TRADES FOR EXERCISES:

- 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.
- Fitting shop– Two joints (exercises) from: square joint, V joint, half round joint or dove tail joint out of 100 x 50 x 5 mm M.S. stock.
- Sheet metal shop– Two jobs (exercises) from: Tray, cylinder, hopper or funnel from out of 22 or 20 gauge G.I. sheet.
- 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.
- Foundry– Preparation of two moulds (exercises): for a single pattern and a double pattern.
- Welding – Preparation of two welds (exercises): single V butt joint, lap joint, double V butt joint or T fillet joint.

2. TRADES FOR DEMONSTRATION:

- Plumbing
- Machine Shop
- Metal Cutting

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

REFERENCE BOOKS:

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

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IT WORKSHOP

Objectives:

The IT Workshop for engineers is a training lab course. The modules include training on PC Hardware, Internet & World Wide Web and Productivity tools including Word, Excel, Power Point and Publisher.

PC Hardware introduces the students to a personal computer and its basic peripherals, the process of assembling a personal computer, installation of system software like MS Windows, Linux and the required device drivers. In addition hardware and software level troubleshooting process, tips and tricks would be covered. **The students should work on a working PC (PIV or higher) to disassemble and assemble back to working condition and install Windows and Linux on the same PC. Students are suggested to work similar tasks in the Laptop scenario wherever possible.**

Internet & World Wide Web module introduces the different ways of hooking the PC on to the internet from home and workplace for usage of the internet. Usage of web browsers, email, newsgroups and discussion forums would be covered. In addition, awareness of cyber hygiene, i.e., protecting the personal computer from getting infected with the viruses, worms and other cyber attacks would be introduced.

Productivity tools module would enable the students in crafting professional word documents, excel spread sheets, power point presentations and personal web sites using the Microsoft suite of office tools and LaTeX. **(It is recommended to use Microsoft office 2007 in place of MS Office 2003)**

PC Hardware

Exercise 1 - Task 1: Identify the peripherals of a computer, components in a CPU and its functions. Draw the block diagram of the CPU along with the configuration of each peripheral and submit to your instructor.

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

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

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

Exercise 5 - Task 5: Hardware Troubleshooting: Students have to be given a PC which does not boot due to improper assembly or defective peripherals. They should identify the problem and fix it to get the computer back to working condition. The work done should be verified by the instructor and followed up with a Viva

Exercise 6 - Task 6: Software Troubleshooting: Students have to be given a malfunctioning CPU due to system software problems. They should identify the problem and fix it to get the computer back to working condition. The work done should be verified by the instructor and followed up with a Viva.

OFFICE TOOLS**LaTeX and Word**

Exercise 7 - Word Orientation: The mentor needs to give an overview of LaTeX and Microsoft (MS) office 2007/ equivalent (FOSS) tool word: Importance of LaTeX and MS office 2007/ equivalent (FOSS) tool Word as word Processors, Details of the four tasks and features that would be covered in each, Using LaTeX and word – Accessing, overview of toolbars, saving files, Using help and resources, rulers, format painter in word.

Task 1: Using LaTeX and Word to create project certificate. Features to be covered:-Formatting Fonts in word, Drop Cap in word, Applying Text effects, Using Character Spacing, Borders and Colors, Inserting Header and Footer, Using Date and Time option in both LaTeX and Word.

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EXCEL

Exercise 8 - Excel Orientation: The mentor needs to tell the importance of MS office 2007/ equivalent (FOSS) tool Excel as a Spreadsheet tool, give the details of the four tasks and features that would be covered in each. Using Excel – Accessing, overview of toolbars, saving excel files, Using help and resources.

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

LaTeX and MS/equivalent (FOSS) tool Power Point

Exercise 9 - Task1: Students will be working on basic power point utilities and tools which help them create basic power point presentation. Topic covered during this Exercise includes :- PPT Orientation, Slide Layouts, Inserting Text, Word Art, Formatting Text, Bullets and Numbering, Auto Shapes, Lines and Arrows in both LaTeX and Powerpoint. Students will be given model power point presentation which needs to be replicated (exactly how it's asked).

Exercise 10 - Task 2 : Second Exercise helps students in making their presentations interactive. Topic covered during this Exercise includes : Hyperlinks, Inserting –Images, Clip Art, Audio, Video, Objects, Tables and Charts

Internet & World Wide Web 2 Exercises

Exercise 11 - Task 1: Orientation & Connectivity Boot Camp: Students should get connected to their Local Area Network and access the Internet. In the process they configure the TCP/IP setting. Finally students should demonstrate, to the instructor, how to access the websites and email. If there is no internet connectivity preparations need to be made by the instructors to simulate the WWW on the LAN.

Web Browsers, Surfing the Web: Students customize their web browsers with the LAN proxy settings, bookmarks, search toolbars and pop up blockers.

Exercise 12 - Task 2: Search Engines & Netiquette: Students should know what search engines are and how to use the search engines. A few topics would be given to the students for which they need to search on Google. This should be demonstrated by the student to the satisfaction of instructors.

Cyber Hygiene: Students would be exposed to the various threats on the internet and would be asked to configure their computer to be safe on the internet. They need to first install an anti virus software, configure their personal firewall and windows update on their computer.

REFERENCES:

- 1) Introduction to Information Technology, ITL Education Solutions limited, Pearson Education.
- 2) LaTeX Companion – Leslie Lamport, PHI/Pearson.
- 3) Introduction to Computers, Peter Norton, 6/e Mc Graw Hill
- 4) Upgrading and Repairing, PC's 18th e, Scott Muller QUE, Pearson Education
- 5) Comdex Information Technology course tool kit, Vikas Gupta, WILEY Dreamtech
- 6) IT Essentials PC Hardware and Software Companion Guide, Third Edition by David Anfinson and
- 7) Ken Quamme. – CISCO Press, Pearson Education.

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INFORMATION TECHNOLOGY

I B.TECH. (REGULAR, 2010-11)

(Common to all Branches)

For Branches: E.C.E, E.E.E, E.I.E, C.S.E, I.T, M.E, C.E.

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(A0091101) ENGINEERING PHYSICS & ENGINEERING CHEMISTRY LAB***ENGINEERING PHYSICS LAB***Any TEN of the following experiments are to be performed during the Academic year.

S.No	Name of the Experiment
1.	Determination of wavelength of given source – spectrometer – normal incidence method
2.	Dispersive power of the prism – Spectrometer
3.	Determination of wavelength of a laser source - Diffraction Grating
4.	Determination of particle size by using a laser source
5.	Determination of thickness of a thin wire using parallel fringes
6.	Newton's Rings
7.	Magnetic field along the axis of a current carrying coil – Stewart and Gee's method
8.	Numerical aperture of an optical fiber
9.	Hall Effect
10.	B – H Curve
11.	Energy gap of a material of p-n junction
12.	Determination of rigidity modulus of a wire material – Torsional pendulum
13.	Determination of dielectric constant
14.	Verification of laws of stretched string – Sonometer
15.	Melde's experiment – Transverse & Longitudinal modes

Equipment required:

Spectrometer, Grating, Prism, Mercury vapour lamp, Sodium vapour lamp, Travelling Microscope, Wedge arrangement, Newton rings setup, Stewart-Gee's apparatus, He-Ne laser source, Optical fiber, Hall effect kit, B-H loop kit, Energy gap kit (four probe method), Torsional pendulum, Dielectric constant kit, Sonometer, Melde's apparatus

INFORMATION TECHNOLOGY
ENGINEERING CHEMISTRY LAB

S.No	Name of the Experiment
1)	Preparation of Standard Potassium Dichromate and Estimation of Ferrous Iron
2)	Preparation of Standard Potassium Dichromate and Estimation of Copper, by Iodometry
3)	Preparation of Standard EDTA solution and Estimation of Hardness of Water
4)	Preparation of Standard EDTA and Estimation of Copper
5)	Determination of Manganese in Steel and Iron in Cement
6)	Determination of strength of the given Hydrochloric acid against standard sodium hydroxide solution by Conductometric titration
7)	Determination of viscosity of the oils through Redwood viscometer
8)	Determination of calorific value of fuel using Bomb calorimeter
9)	Estimation of dissolved oxygen
10)	Determination of Eutectic Temperature of binary system (Urea – Benzoic Acid)

BOOKS:

1. Chemistry-lab manual by Dr K.N.Jayaveera and K.B. Chandra Sekhar, S.M.Enterprizes Ltd.
2. Vogel's Book of Quantitative Inorganic Analysis, ELBS Edition.

Equipment Required:

- ♣ Glass ware: Pipettes, Burettes, Volumetric Flasks, Beakers, Standard flasks, Measuring jars, Boiling Test tubes, reagent bottles, (Borosil)
- ♣ Analytical balance (kero) (15 Nos)
- ♣ Calorimeter
- ♣ Bomb Calorimeter
- ♣ Redwood viscometer No.1& No.2
- ♣ Conductometer/ Conductivity bridge
- ♣ Wash bottles, test tube stands, burette stands
- ♣ Gas cylinders with Bunsen burners
- ♣ Chemicals: Hydrochloric acid, sodiumhydroxide, EDTA, EBT indicator, fast sulfon black-f, urea, benzoic acid, methanol, Mohr's salt, copper sulphate, magnesium sulphate, ammonia, ammonium sulphate, calcium sulphate etc.,

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INFORMATION TECHNOLOGY

I B.TECH. (REGULAR, 2010-11)

(Common to all Branches)

For Branches: E.C.E, E.E.E, E.I.E, C.S.E, I.T, M.E, C.E.

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(A0092101) ENGLISH LANGUAGE COMMUNICATION SKILLS LAB

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

Objectives:

1. To train students to use language effectively in everyday conversations, to participate in group discussions, to help them face interviews, and sharpen public speaking skills
2. To expose the students to a varied blend of self-instructional, learner-friendly modes of language learning
3. To enable them to learn better pronunciation through stress on word accent, intonation, and rhythm
4. To initiate them into greater use of the computer in resume preparation, report- writing, format-making etc.
5. To help the students cultivate the habit of reading passages from the computer monitor, thus providing them with the required ability to face computer-based competitive exams such GRE, TOEFL, GMAT etc.

SYLLABUS:

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

- ♣ Introduction to the Sounds of English - Vowels, Diphthongs & Consonants.
- ♣ Introduction to Stress and Intonation.
- ♣ Situational Dialogues (giving directions etc.)
- ♣ Speaking on the mobiles and telephone conversation.
- ♣ Role Play.
- ♣ Oral Presentations- Prepared and Extempore.
- ♣ 'Just A Minute' Sessions (JAM).
- ♣ Describing Objects / Situations / People.
- ♣ Information Transfer.
- ♣ Debate

Minimum Requirement:

The **English Language Lab** shall have two parts:

- i) **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.
- ii) **The Communication Skills Lab** with movable chairs and audio-visual aids with a P.A System, a T. V., a digital stereo –audio & video system and camcorder etc.

System Requirement (Hardware component):

Computer network with Lan with minimum 60 multimedia systems with the following specifications:

- ♣ P – IV Processor
- ♣ Speed – 2.8 GHZ
- ♣ RAM – 512 MB Minimum
- ♣ Hard Disk – 80 GB
- ♣ Headphones of High quality

PRESCRIBED SOFTWARE: GLOBARENA**Suggested Software:**

- ♣ Cambridge Advanced Learners' English Dictionary with CD.
- ♣ The Rosetta Stone English Library
- ♣ Clarity Pronunciation Power – Part I
- ♣ Mastering English in Vocabulary, Grammar, Spellings, Composition
- ♣ Dorling Kindersley series of Grammar, Punctuation, Composition etc.

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- ♣ Language in Use, Foundation Books Pvt Ltd with CD
- ♣ Learning to Speak English - 4 CDs
- ♣ Microsoft Encarta with CD
- ♣ Murphy's English Grammar, Cambridge with CD
- ♣ English in Mind, Herbert Puchta and Jeff Stranks with Meredith Levy, Cambridge

Books Suggested for English Language Lab Library (to be located within the lab in addition to the CDs of the text book which are loaded on the systems):

1. English Pronouncing Dictionary Daniel Jones Current Edition with CD.
2. Spoken English- R. K. Bansal and J. B. Harrison, Orient Longman 2006 Edn.
3. Speaking English Effectively by Krishna Mohan & NP Singh (Macmillan)
4. A Practical Course in English Pronunciation, (with two Audio cassettes) by J. Sethi, Kamlesh Sadanand & D.V. Jindal, Prentice-Hall of India Pvt. Ltd., New Delhi.
5. Body Language , Your Success Mantra , Dr Shalini Verma, S.Chand & Co, 2008
6. English Dictionary for Advanced Learners, (with CD) International edn. Macmillan 2009
7. A Handbook for English language Laboratories, E.Sureshkumar, P.Sreehari, Foundation Books, 2009
8. DELTA's key to the Next Generation TOEFL Test, 6 audio CDS, New Age International Publishers, 2007

DISTRIBUTION AND WEIGHTAGE OF MARKS

English Language Laboratory Practical Paper:

- ♣ The practical examinations for the English Language Laboratory shall be conducted as per the University norms prescribed for the core engineering practical sessions.
- ♣ For the Language lab sessions, there shall be a continuous evaluation during the year for 25 sessional marks and 50 year-end Examination marks. Of the 25 marks, 15 marks shall be awarded for day-to-day work and 10 marks to be awarded by conducting Internal Lab Test(s). The year- end Examination shall be conducted by the teacher concerned with the help of another member of the staff of the same department of the same institution.

(A1201103) INFORMATION TECHNOLOGY FUNDAMENTALS

Description: Introduces students to the academic discipline of IT as well as the general meaning of IT.

UNIT-1: Pervasive Themes in IT-1

Topics: User centeredness and advocacy; Information Assurance and Security; IT systems model; Management of complexity (abstraction, modelling, best practices, patterns, standards, and use of appropriate tools, including versioning and group collaboration tools);

UNIT -2: Pervasive Themes in IT-2

Information and communication technologies; Human-Computer Interaction; Information Management; Networking; Platform Technologies.

UNIT -3: Pervasive Themes in IT-3

Programming; Web Systems and Technologies; Adaptability; Professionalism (life-long learning, professional development, ethics, responsibility); Interpersonal skills; Data versus information

UNIT -4: History of Information Technology

Topics: History of computing technology; Social history of computing impacts; Development of user interaction; History of the Internet.

UNIT -5: IT and its related and Informing Disciplines

Topics: Definition of IT; Computer Science; Software Engineering; Information Systems; Cognitive Science; Computer Engineering; Mathematics and Statistics; Others such as Natural Sciences, Linguistics, Sociology, Psychology, etc.

UNIT - 6 : Application Domains

Topics: Bio-informatics & medical applications, Business applications, Law enforcement, Political processes, E-commerce, Manufacturing, Education, Entertainment, Agriculture, Software development, .Others

The details of each of these items are available on ACM site.

(A0010103) ENVIRONMENTAL STUDIES**UNIT I**

Multidisciplinary nature of Environmental Studies: Definition, Scope and Importance – Need for Public Awareness.

UNIT II

Natural Resources : Renewable and non-renewable resources – Natural resources and associated problems – Forest resources – Use and over – exploitation, deforestation, case studies – Timber extraction – Mining, dams and other effects on forest and tribal people – Water resources – Use and over utilization of surface and ground water – Floods, drought, conflicts over water, dams – benefits and problems - Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies. - Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies. – Energy resources: Growing energy needs, renewable and non-renewable energy sources use of alternate energy sources. Case studies. Land resources: Land as a resource, land degradation, man induced landslides, soil erosion and desertification. Role of an individual in conservation of natural resources. Equitable use of resources for sustainable lifestyles.

UNIT III

Ecosystems : Concept of an ecosystem. - Structure and function of an ecosystem. - Producers, consumers and decomposers. - Energy flow in the ecosystem - Ecological succession. - Food chains, food webs and ecological pyramids. - Introduction, types, characteristic features, structure and function of the following ecosystem:

- Forest ecosystem
- Grassland ecosystem
- Desert ecosystem
- Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)

UNIT IV

Biodiversity and its conservation : Introduction - Definition: genetic, species and ecosystem diversity. - Biogeographical classification of India - Value of biodiversity: consumptive use, productive use, social, ethical, aesthetic and option values - . Biodiversity at global, National and local levels. - . India as a megadiversity nation - Hot-spots of biodiversity - Threats to biodiversity: habitat loss, poaching of wildlife, man/wildlife conflicts. - Endangered and endemic species of India - Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity.

UNIT V

Environmental Pollution : Definition, Cause, effects and control measures of

- Air pollution
- Water pollution
- Soil pollution
- Marine pollution
- Noise pollution
- Thermal pollution
- Nuclear hazards

Solid waste Management : Causes, effects and control measures of urban and industrial wastes. – Role of an individual in prevention of pollution. - Pollution case studies. - Disaster management: floods, earthquake, cyclone and landslides.

UNIT VI

Social Issues and the Environment : From Unsustainable to Sustainable development -Urban problems related to energy -Water conservation, rain water harvesting, watershed management -Resettlement and rehabilitation of people; its problems and concerns. Case Studies -Environmental ethics: Issues and possible solutions. - Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. Case Studies. -Wasteland reclamation. -Consumerism and waste products. –Environment Protection Act. -Air (Prevention and Control of Pollution) Act. -Water (Prevention and control of Pollution) Act -Wildlife Protection Act -Forest Conservation Act -Issues involved in enforcement of environmental Legislation. -Public awareness.

TEXT BOOK:

- Textbook of Environmental Studies for Undergraduate Courses by Erach Bharucha for University Grants Commission.
- Environmental Studies by R. Rajagopalan, Oxford University Press.

REFERENCE:

- Textbook of Environmental Sciences and Technology by M. Anji Reddy, BS Publication.

(A1202103) FUNDAMENTALS OF OBJECT ORIENTED DESIGN**UNIT-1:**

What is Object oriented approach Overview of prerequisite if any or introduction, Encapsulation, Information Hiding, State Retention, Object Identity, Messages, Classes, Inheritance, Polymorphism, Generosity. Part-I The UML

UNIT – 2:

Class, Attributes, Operations, Class Diagrams.

UNIT-3:

object-interaction diagram: collaboration, sequence diagrams; definitions of asynchronous messages and concurrent execution; state, architecture and interface diagrams. Part – II Principles of OOD

UNIT-4:

Encapsulation and connascence; Domains, Encumbrance, Cohesion.

UNIT – 5:

State-space and behavior; Type conformance, Perils of inheritance and polymorphism.

UNIT – 6:

Designing a software component.

Book:

1. Fundamentals of Object-Oriented Design in UML, Meilir Page-Jones, 6th impression 2009, Pearson Education.

Reference Books:

1. The Unified Modeling Language User Guide, Grady Booch, James Rumbaugh, Ivar Jacobson, Pearson Education.
2. UML 2 Toolkit, Hans-Erik Eriksson, Magnus Penker, Brian Lyons, David Fado, WILEY-Dreamtech India Pvt. Ltd.
3. Modeling Software Systems Using UML2, Pascal Roques, WILEY-Dreamtech India Pvt. Ltd.
4. Object Oriented Analysis & Design, Atul Kahate, The McGraw-Hill Companies.
5. Practical Object-Oriented Design with UML, Mark Priestley, TATA McGrawHill
6. Applying UML and Patterns: An introduction to Object – Oriented Analysis and Design and Unified Process, Craig Larman, Pearson Education.

(A1203103) COMPUTER ORGANIZATION AND DESIGN**Unit I. Computer Abstractions and Technology**

Introduction to the course, what is below your program?, (the software below your program), what is under the covers of your computer, the performance of a computer, the power wall, the switch from uniprocessors to multiprocessors, AMD Opteron X4.

Unit II. Instructions: Language of the Computer

Operations and operands of the computer hardware, signed and unsigned numbers, representing instructions in the computer, logical operations, instructions for decision making, support for procedures in computer hardware, communicating with people, ARM 32-bit addressing modes, parallelism and instruction synchronization, translating and starting a program, a program as illustration, arrays versus pointers.

Student Seminars: compiling C; interpreting Java; MIPS instructions; x86 instructions.

Unit III. Arithmetic for Computers

Integer arithmetic: addition, subtraction, multiplication and division; Floating point, its representation and arithmetic operations. Parallelism and computer arithmetic; floating point in x86.

Unit IV. The Processor

Logic design conventions; Building datapath; Pipelining; Pipelined datapath and control; Data and control hazards; Exceptions; parallelism and advanced instruction level parallelism; AMD Opteron X4 pipeline.

Student seminars: Introduction to digital design.

Unit V. Memory Hierarchy

Basics of caches, measuring and improving cache performance; virtual memory; a common framework for memory hierarchies; virtual machines; finite-state machine to control a simple cache; parallelism and memory hierarchies, cache coherence.

Student seminars: Implementing cache controllers; AMD Opteron X4 (Barcelona) and Intel Nehalem memory hierarchies;

Unit IV. Storage and I/O

Dependability, reliability and availability; Disk storage; Flash storage; connecting processors, memory, and I/O devices; Interfacing I/O devices to the processor, memory and operating system; I/O performance measures; designing and I/O system; parallelism and I/O; Sun Fire x4150 server.

Text Book:

1. Computer Organization and Design: The Hardware/Software Interface by Patterson and Hennessy, 4th edn. Morgan Kaufmann Pub. Indian edition, Elsevier.

Reference Books:

1. Computer Systems: A Programmer's Perspective. By Randal E. Bryant and David R. Hallaron, Prentice Hall, 2003
2. Structured computer Organization by Andrew Tanenbaum, 4th edn. Pearson Education.
3. Computer Architecture and Organization, John P Hayes, McGraw Hill, edn
4. Computer Architecture and Organization, William Stallings,
5. Computer System Architecture, Mories Mano, Pearson Education India

(A1204103) MATHEMATICAL FOUNDATIONS OF IT**UNIT-I**

Mathematical Logic : Statements and notations, Connectives, Well formed formulas, Truth Tables, tautology, equivalence implication, Normal forms.

UNIT-II

Predicates : Predicative logic, Free & Bound variables, Rules of inference, Consistency, proof of contradiction, Automatic Theorem Proving.

UNIT-III

Set Theory : Properties of binary Relations, equivalence, compatibility and partial ordering relations, Hasse diagram. Functions: Inverse Function Comports of functions, recursive Functions, Lattice and its Properties, Pigeon hole principles and its application.

UNIT-IV

Algebraic structures : Algebraic systems Examples and general properties, Semi groups and monads, groups sub groups' homomorphism, Isomorphism.

UNIT-V

Recurrence Relation: Generating Functions, Function of Sequences Calculating Coefficient of generating function, Recurrence relations, Solving recurrence relation by substitution and Generating funds. Characteristics roots solution of In homogeneous Recurrence Relation.

UNIT-VI

Graph Theory and Applications, Basic Concepts- Representation of Graph, DFS, BFS, Spanning Trees, planar Graphs Isomorphism and Sub graphs, Multi graphs and Euler circuits, Hamiltonian graphs, Chromatic Numbers

TEXT BOOKS :

1. Discrete and Combinational Mathematics- An Applied Introduction-5th Edition – Ralph. P.Grimaldi. Pearson Education.
2. Discrete Mathematical Structures with applications to computer science Trembly J.P. & Manohar .P, TMH.
3. Discrete Mathematics and its Applications, Kenneth H. Rosen, Fifth Edition.TMH.

REFERENCES :

1. Discrete Mathematics with Applications, Thomas Koshy, Elsevier.
2. Discrete Mathematical Structures, Bernand Kolman, Roberty C. Busby, Sharn Cutter Ross, Pearson Education/PHI.
3. Discrete Mathematical structures Theory and application-Malik & Sen.
4. Discrete Mathematics for Computer science, Garry Haggard and others, Thomson.
5. Discrete Mathematics for Computer Scientists & Mathematicians, J.L. Mott, A. Kandel, T.P. Baker Prentice Hall.
6. Logic and Discrete Mathematics, Grass Man & Trembley, Person Education.

(A1205103) RELATIONAL DATA BASE – DESIGN AND DEVELOPMENT**UNIT I**

Introduction to Database Systems (DBS): What are Data base Systems(DBS) and Database Management Systems (DBMS); DBMS Applications, purpose, advantages; DBS VS file System; View of Data; DB languages; Data Abstraction –Instances and Schemas – data Models – the ER Model – Relational Model; overview of DB design, storage and querying, Transaction management; DB structure, DB users and administrators; Classification of DBMS.

UNIT II

Relational Databases & Query Languages: Introduction to the Relational Model; Structure of RDBS, Relational algebra operations, null values, Modifications of database. Other Query Languages: Tuple relational Calculus – Domain relational calculus – QBE.[to be done after unit III]

UNIT III

SQL: Background, data definition, basic structure of SQL queries, set operations, aggregate functions, nested queries, complex queries, views, database modifications, joined relations.

Advanced SQL: SQL data types and schemas; integrity constraints; authorization, embedded and dynamic SQL: functions and procedural constructs; recursive queries, advanced SQL features.

UNIT IV

Database Design & ER model: Overview of design process, ER model, constraints, ER diagrams, ER design issues; weak entities; Extended ER (EER) features, reduction to relation schemas, other aspects of DB design, conceptual Object Modeling using UML class diagrams,

UNIT V

Relational Database Design: Features of good relational design, Problems Caused by redundancy; Problem related to decomposition; reasoning about FDs, FIRST, SECOND, THIRD Normal forms, BCN; lossless join decomposition, dependency preserving; overview of other types of dependencies and normal forms (No theory)

Unit VI

Application development: Database application development: JDBC, SQLJ, stored procedures; internet concepts, internet tools, web interfaces to data, web fundamentals, servlets and JSP; HTML and XML documents, 3-tier application architecture, the presentation layer, the middle tier, Internet bookshop as case study, { here we provide only an overview. The detaled programming aspects are discussed in Web Tech course.}

TEXT BOOKS :

1. Data base System Concepts, Silberschatz, Korth, McGraw hill, V edition.
2. Data base Management Systems, Raghuramakrishnan, Johannes Gehrke, TATA McGrawHill 3rd Edition

REFERENCES :

1. Fundamentals of Database Systems, Elmasri Navrate Pearson Education
2. Data base Systems design, Implementation, and Management, Peter Rob & Carlos Coronel 7th Edition.
3. Introduction to Database Systems, C.J.Date Pearson Education

INFORMATION TECHNOLOGY**II B.Tech I-Sem (IT)**

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(A1291103) FUNDAMENTALS OF OBJECT ORIENTED DESIGN LAB**Objectives:**

- 1) To familiarize students with Rational Rose and how to work with it
- 2) To train them to draw different UML diagrams using Rational Rose.
- 3) To train students to design and develop projects using UML.

Week #	Tasks
Week 1	Introduction
Week 2	Familiarizing with Rational Rose
Week 3	Familiarizing with Rational Rose
Week 4	Introduction to UML and use case diagrams
Week 5	Class Diagram
Week 6	Flow of events and activity diagram
Week 7	Interaction diagrams: sequence and collaboration diagrams
Week 8	State Transition Diagram, Component and deployment diagrams
Week 9	First Internal exam
	DESIGN & DEVELOPMENT
Week 10	Project-1
Week 11	Project-2
Week 12	Project-3
Week 13	Project-4
Week 14	Project viva & evaluation

<u>Project-1</u> <ol style="list-style-type: none"> 1) Library Management System 2) Online Help Desk 3) E-Post Office 4) Patient Billing Software 5) Retail Shop 	<u>Project-2</u> <ol style="list-style-type: none"> 1) Virtual Classrooms 2) Construction of House 3) E-Ticketing System 4) Online Education System 5) Credit Card System
<u>Project-3</u> <ol style="list-style-type: none"> 1) Railway Reservation System 2) E-Municipality 3) Online Application 4) Two-Party Phone Call 5) ATM 	<u>Project-4</u> <ol style="list-style-type: none"> 1) Hospital Management System 2) Online Counseling System 3) Online Attendance System 4) E-Voting System 5) Elevator Operations

(A1293103) UNIX AND SHELL PROGRAMMING LAB**Week 1****Session-1**

- Log into the system
- Use vi editor to create a file called *myfile.txt* which contains some text.
- Correct typing errors during creation.
- Save the file
- Logout of the system

Session-2

- Log into the system
- Open the file created in session 1
- Add some text
- Change some text
- Delete some text
- Save the Changes
- Logout of the system

Week 2

- Log into the system
- Use the **cat** command to create a file containing the following data. Call it *mytable* use tabs to separate the fields.

1425	Ravi	15.65
4320	Ramu	26.27
6830	Sita	36.15
1450	Raju	21.86
- Use the cat command to display the file, *mytable*.
- Use the vi command to correct any errors in the file, *mytable*.
- Use the sort command to sort the file *mytable* according to the first field. Call the sorted file *my table* (same name)
- Print the file *mytable*
- Use the cut and paste commands to swap fields 2 and 3 of *mytable*. Call it *my table* (same name)
- Print the new file, *mytable*; i) Logout of the system.

Week 3

- Login to the system
 - Use the appropriate command to determine your login shell
 - Use the */etc/passwd* file to verify the result of step b.
 - Use the who command and redirect the result to a file called *myfile1*. Use the more command to see the contents of *myfile1*.
 - Use the date and who commands in sequence (in one line) such that the output of date will display on the screen and the output of who will be redirected to a file called *myfile2*. Use the more command to check the contents of *myfile2*.
- Write a sed command that deletes the first character in each line in a file.
 - Write a sed command that deletes the character before the last character in each line in a file.
 - Write a sed command that swaps the first and second words in each line in a file.

Week 4

- Pipe your */etc/passwd* file to awk, and print out the home directory of each user.
- Develop an interactive grep script that asks for a word and a file name and then tells how many lines contain that word.
- Repeat
- Part using awk

Week 5

- Write a shell script that takes a command –line argument and reports on whether it is directory, a file, or something else.
- Write a shell script that accepts one or more file name as arguments and converts all of them to uppercase, provided they exist in the current directory.
- Write a shell script that determines the period for which a specified user is working on the system.

INFORMATION TECHNOLOGY**Week 6**

- a) Write a shell script that accepts a file name starting and ending line numbers as arguments and displays all the lines between the given line numbers.
- b) Write a shell script that deletes all lines containing a specified word in one or more files supplied as arguments to it.

Week 7

- a) Write a shell script that computes the gross salary of an employee according to the following rules:
 - i) If basic salary is < 1500 then HRA =10% of the basic and DA =90% of the basic.
 - ii) If basic salary is >=1500 then HRA =Rs500 and DA=98% of the basic
 The basic salary is entered interactively through the key board.
- b) Write a shell script that accepts two integers as its arguments and computes the value of first number raised to the power of the second number.
- c) Write a shell program to generate multiplication table

Week 8

- a) Write an interactive file-handling shell program. Let it offer the user the choice of copying, removing, renaming, or linking files. Once the user has made a choice, have the program ask the user for the necessary information, such as the file name, new name and so on.
- b) Write shell script that takes a login name as command – line argument and reports when that person logs in, if he is logged in find out on which terminal he is working.
- c) Write a shell script which receives two file names as arguments. It should check whether the two file contents are same or not. If they are same then second file should be deleted.

Week 9**Session 1**

- a) Write a shell script that displays a list of all the files in the current directory to which the user has read, write and execute permissions.
- b) Develop an interactive shell script that ask for a word and a file name and then tells how many times that word occurred in the file.
- c) Write a shell script to perform the following string operations:
 - i. To extract a sub-string from a given string.
 - ii. To find the length of a given string.
- d) Write a shell script to find the files which have read, write and execute permissions in the current directory.

Session 2:

- a) Write a shell program to perform the following operations insertion, deletion, searching and sorting on arrays.
- b) Write a shell program to reverse the rows and columns of a matrix.

Week 10

Write a C program that takes one or more file or directory names as command line input and reports the following information on the file:

- i. File type
- ii. Number of links
- iii. Time of last access (Note : Use stat/fstat system calls)

Week 11

Write C programs that simulate the following unix commands:

mv, cp, ls, (Use system calls)

TEXT BOOKS

- 1) Introduction to UNIX & SHELL programming, M.G. Venkatesh Murthy, Pearson Education.
- 2) Unix concepts and applications, Fourth Edition, Sumitabha Das, TMH.
- 3) Unix for programmers and users, 3rd edition, Gaham Glass & K. Ables, pearson education.
- 4) Unix and shell Programming –A text book, B.A. Forouzan & R.F. Giberg, Thomson.
- 5) Beginning shell scripting, E. Foster – Johnson & other, Wile Y- India.

(A1292103) RELATIONAL DATABASE SYSTEMS LAB**Objectives:**

- To teach the students database design and querying and PL/SQL.

Recommended Systems/Software Requirements:

- Intel based desktop PC
- Mysql /Oracle latest version Recommended

- Creation, altering and dropping of tables and inserting rows into a table (use constraints while creating tables). Examples using SELECT command.
- Queries (along with sub Queries) using ANY, ALL, IN, EXISTS, NOTEXISTS, UNION, INTERSET, Constraints.
- Queries using Aggregate functions (COUNT, SUM, AVG, MAX and MIN), GROUP BY, HAVING and Creation and dropping of Views.
- Queries using Conversion functions (to_char, to_number and to_date), string functions (Concatenation, lpad, rpad, ltrim, rtrim, lower, upper, initcap, length, substr and instr), date functions (Sysdate, next_day, add_months, last_day, months_between, least, greatest, trunc, round, to_char, to_date)
- Creation of simple PL/SQL program which includes declaration section, executable section and exception –Handling exceptions (Ex. Student marks can be selected from the table and printed for those who secured first class and an exception can be raised if no records were found)
 - Insert data into student table and use COMMIT, ROLLBACK and SAVEPOINT in PL/SQL block.
- Develop a program that includes the features NESTED IF, CASE and CASE expression. The program can be extended using the NULLIF and COALESCE functions.
- Program development using WHILE LOOPS, numeric FOR LOOPS, nested loops using ERROR Handling, BUILT –IN Exceptions, USE defined Exceptions, RAISE- APPLICATION ERROR.
- Programs development using creation of procedures, passing parameters IN and OUT of PROCEDURES.
- Program development using creation of stored functions, invoke functions in SQL Statements and write complex functions.
- Program development using creation of package specification, package bodies, private objects, package variables and cursors and calling stored packages.
- Develop programs using features parameters in a CURSOR, FOR UPDATE CURSOR, WHERE CURRENT of clause and CURSOR variables.
- Develop Programs using BEFORE and AFTER Triggers, Row and Statement Triggers and INSTEAD OF Triggers

Application Development: Design and develop any two of the following application areas . Clearly mention the scope of the system. Use standard tools for expressing the design of the systems.

- Library Information System
- Logistics Management System
- Students' Information System
- Ticket Reservation System
- Hotel Management System
- Hospital Management System
- Inventory Control system
- Retail Shop Management
- Employee Information System
- Payroll System
- Time table development system
- Any other Similar System

TEXT BOOKS :

- ORACLE PL/SQL by example. Benjamin Rosenzweig, Elena Silvestrova, Pearson Edu. 3rd Edition
- ORACLE DATA BASE LOG PL/SQL Programming SCOTT URMAN, Tata Mc-Graw Hill.
- SQL & PL/SQL for Oracle 10g, Black Book, Dr.P.S. Deshpande.
- Mysql reference manual.

UNIT-I

Concept of Communication – Significance, Scope and functions of Business Communication – Process and dimensions of communication – Essentials of good communication – Channels of communication – Formal, informal communication – Upward, Downward, Horizontal communication – Grapevine Phenomenon.

UNIT-II

Types of communication: Verbal – Oral Communication: Advantages and limitations of oral communication, written communication – Characteristics, significance, advantages & Limitations of written communication.

UNIT-III

Nonverbal Communication: Sign language – Body language – Kinesics – Proxemics – Time language and Haptics: Touch language.

UNIT-IV

Interpersonal communication – Interpersonal communication – Communication models: Exchange theory – Johari window – Transactional analysis, Communication styles.

UNIT-V

Managing Motivation to Influence Interpersonal communication – Inter-personal perception – Role of emotion in inter-personal communication.

UNIT-VI

Barriers to communication: Types of barriers – Technological – Socio-Psychological barriers – Overcoming barriers. Listening – Types of listening – Tips for effective listening.

References:

1. Business Communication, Meenakshi Raman, Oxford University Press.
2. Business Communication, Raymond V. Lesikar, Neeraja Pandit et al., TMH
3. English for Business Communication, Dr. T.M. Farhatulla, Prism books Pvt. Ltd.
4. Business Communications, Hudson, 5/e, Jaico Publications
5. Business communication for managers, Penrose, Rasberry, Myers, Cengage
6. The Skills of Communication, Bills Scot, Gower publishing company Limited, London.
7. Effective Communication, Harvard Business School, Harvard Business Review No.1214.
8. Essentials of Business Communication, Rajendra Pal, JS. Korlahhi, S. Chand

(A0009103) DIGITAL LOGIC DESIGN**UNIT-I**

BINARY SYSTEMS: Digital Systems, Binary Numbers, Number base conversions, Octal and Hexadecimal Numbers, complements, Signed binary numbers, Binary codes, Binary Storage and Registers, Binary logic.

UNIT-II

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, Digital logic gates, integrated circuits.

UNIT-III

GATE – LEVEL MINIMIZATION : 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, Hardware Description language (HDL).

UNIT - IV

COMBINATIONAL LOGIC : Combinational Circuits, Analysis procedure Design procedure, Binary Adder-Subtractor, Decimal Adder, Binary Multiplier, Magnitude Comparator, Decoders, Encoders, Multiplexers, HDL for combinational circuits.

UNIT - V

SYNCHRONOUS SEQUENTIAL LOGIC : Sequential circuits, latches, Flip-Flops Analysis of clocked sequential circuits, HDL for sequential circuits, State Reduction and Assignment, Design Procedure.

ASYNCHRONOUS SEQUENTIAL LOGIC : Introduction, Analysis Procedure, Circuits with Latches, Design Procedure, Reduction of state and Flow Tables, Race-Free state Assignment Hazards, Design Example.

UNIT - VI

Registers, shift Registers, Ripple counters synchronous counters, other counters, HDL for Registers and counters, Introduction, Random-Access Memory, Memory Decoding, Error Detection and correction Read-only memory, Programmable logic Array programmable Array logic, Sequential Programmable Devices.

TEXT BOOKS:

- 1) DIGITAL DESIGN – Third Edition, M.Morris Mano, Pearson Education/PHI.
- 2) FUNDAMENTALS OF LOGIC DESIGN, Roth, 5th Edition, Thomson.

REFERENCES:

- 1) Switching and Finite Automata Theory by Zvi. Kohavi, Tata McGraw Hill.
- 2) Switching and Logic Design, C.V.S. Rao, Pearson Education
- 3) Digital Principles and Design – Donald D.Givone, Tata McGraw Hill, Edition.
- 4) Fundamentals of Digital Logic & Micro Computer Design , 5TH Edition, M. Rafiquzzaman John Wiley.

(A0401103) FOUNDATIONS OF SOFTWARE ENGINEERING**UNIT – I:**

The Problem Domain, The Software Engineering Challenges, The Software Engineering Approach, Software Process, Desired Characteristics of Software Process
(Chapter 1 and Part of Chapter 2)

UNIT – II:

Software Development Process Models, Other Software Processes. Software Requirements, Problem Analysis, Requirements Specification, Validation, Metrics
(Remaining part of Chapter 2 and part of Chapter 3)

UNIT – III:

Process Planning, Effort Estimation, Risk Management, Software Configuration Management Plan, Project Scheduling and Staffing, Project Monitoring Plan
(Chapter 5)

UNIT – IV:

Function-Oriented Design: Design Principles, Module-Level Concepts, Design Notation and Specification

Object-Oriented Design: OOAnalysis and OODesign, OOConcepts, Design Concepts

Detailed Design: Detailed Design and PDL

(Parts of Chapter 6, Chapter 7 and Chapter 8)

UNIT – V:

Coding: Programming Principles and Guidelines, Coding Process, Refactoring, Verification, Metrics
(Chapter 9)

UNIT – VI:

Testing: Testing Fundamentals, Black-Box Testing, White-box Testing, Testing Process, Defect Analysis and Prevention, Metrics—Reliability Estimation
(Chapter 10)

Text Book:

1. Pakaj Jalote, An Integrated Approach To Software Engineering, 3rd Edition, Narosa Publishing House. ISBN: 978-81-7319-702-4.

References:

1. Roger S. Pressman, Software Engineering: A Practitioner's Approach, 6th edition, Mc-Graw Hill, ISBN-10: 007301933X.
2. Ian, Sommerville, Software Engineering, 7 edition, Addison Wesley, ISBN-10: 0321210263.

(A1206104) ANALYSIS OF ALGORITHMS AND DATA STRUCTURES**UNIT I**

Algorithms: Algorithm specification, Performance analysis: Space complexity, Time complexity, Asymptotic Notations- O-notation, Omega notation and Theta notations

Review of Basic Data Structures: Stacks, Array representation of stacks, Stack operations, Applications of stacks; Queues and Queue operations, Deques, Priority queues { to be introduced as JAVA implementation }

UNIT II

Linked Lists: Linked lists, Representation of linked lists in memory, Traversing a Linked list, Searching a Linked list, Memory allocation and garbage collection, Insertion into a linked list, Deletion from a linked list, Header linked list, Two-way lists

UNIT III

Trees: Trees, Binary Trees, Representing binary trees in memory, traversing binary trees, traversal algorithms using stacks, Binary search trees, search, insert, delete operations in BST, Balanced search trees: AVL trees, B⁺ trees and 2-3 trees

Graphs: Representation of graphs: Adjacency matrix and Path matrix, Depth First Search, Breadth First Search

UNIT IV

Sorting and Searching Techniques: Insertion sort, Selection sort, Merging, Merge sort, Radix sort, Heap sort, linear search and binary search.

UNIT V

Algorithm Design Methods-1: Divide and Conquer Methods- General method, Application to binary search, merge sort, quick sort. Greedy method- General method (Greedy), application to Minimum cost spanning trees (Prims and Kruskals), Job sequencing with deadlines.

UNIT VI

Algorithm Design Methods-2. Dynamic programming: General method, Optimal binary search trees, 0/1 knapsack problem, the travelling sales person problem. Backtracking, Branch-and- bound methods.

NP-completeness: An overview.

TEXT BOOKS :

- 1) Fundamentals of Computer algorithms , Ellis Horowitz, Sartaj Sahni, and Sanguhevar Rajasekharan, Galgotia Publications.
- 2) Theory and problems of data structures by Seymour Lipschutz, Third Edition, Tata McGraw-Hill Publishing

REFERENCES:

- 1) Data Structure Using Java , Yedidiah Langsam, Moshe Augenstein, Aaron M. Tanenbaum, Pearson Education, 2004.
- 2) Data Structures and Algorithms in JAVA , Michael T. Goodrich, Roberto Tomassia, Wiley Student Edition, Second edition.
- 3) Data Structures with JAVA, John R. Hubbard, Anita Huray, PHJ edition, 2004

(A1207104) MODERN OPERATING SYSTEM**UNIT-1.**

Introduction: What is OS, OS types; OS- concepts, system calls, structure.

UNIT -2.

Processes and Threads: Processes, threads, Interprocess communication, scheduling.

UNIT -3

Deadlocks: Deadlock Modelling, Detection, Avoidance, Banker's Algorithm, Two Phase Locking, Non-Resource deadlocks, Recovery.

UNIT -4.

Memory Management: Address space, virtual memory, Page replacement algorithm, Design issues for paging. Stack Algorithms, Predicting Page Fault Rates, Segmentation, and Segmentation with paging

UNIT 5.

File Systems and I/O: Files, Directories, File system implementation. Examples. Principles I/O hardware & software, I/O software layers.

UNIT 6.

Case Studies: Linux, Windows

Text Book:

- 1) Modern Operating Systems, Andrew S. Tanenbaum, Pearson education, 3rd edn.
- 2) Operating systems- A Concept based Approach-D.M. Dhamdhare, 2nd Edition, TMH

REFERENCES:

- 1) Operating Systems' – Internal and Design Principles, Stallings, Fifth Edition–2005, Pearson education/PHI
- 2) Operating System A Design Approach-Crowley, TMH.
- 3) Operating System Concepts- Abraham Silberchatz, Peter B. Galvin, Greg Gagne 7th Edition, John Wiley.

INFORMATION TECHNOLOGY**II B.Tech II-Sem (IT)**

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(A1208104) DATA COMMUNICATIONS**UNIT – I:**

Data communications: Components, Data representations, Data flow, Networks, The Internet, Protocols and Standards. OSI and TCP / IP layers, Addressing.

UNIT – II: Physical Layer:

Data and Signal Fundamentals, Analog and Digital Signals, Transmission Impairments, Data Rate Limits, Performance.

Data Transmission: Digital Encoding Techniques, Scrambling Techniques, Pulse Code Modulation (PCM), Modulation, Transmission Modes (Parallel, Serial).

UNIT – III

Multiplexing: FDM, WDM, Time Division Multiplexing

Transmission Media and Switching: Guided and Unguided Media, Circuit-Switched, Datagram, and Virtual Circuit Networks, Switch Structure

UNIT – IV

Telephone and Cable Networks: Dial-Up Modems, xDSL, Cable Networks (TV and Data)

UNIT – V

Error Detection and Correction, Hamming Distance, CRC, CheckSum, Framing, Flow and Error Control, Data Link Protocols, HDLC, PPP

UNIT – VI

Ethernet and LAN Connecting Devices

Multiple Access: CSMA / CA, CSMA / CD, Controlled Access, Channelization.

TEXT BOOKS:

1. Frozen, Data Communications and Networking, McGraw Hill, 4th Edition, 2007.
2. A.Tanenbaum, Computer Networks, Prentice Hall, 4th Edition, 2003.

(A1210104) JAVA PROGRAMMING

This course covers the fundamentals of programming in the Java programming language.

UNIT-1

Introduction. Introduction to Java: About Java, Platform Independence, Java Virtual Machine, Java as OOP, Java Features, Java Applications. Getting Started with Java: Java Architecture, Compiling and Running an Application, Java Development Kit, Introduction to Java 6. Language Basics describes the traditional features of the basic elements of the language including, Keywords, Comments, Data Types, Variable, Identifiers, Operators, Control Flow, Stings, Arrays, I/O.

UNIT-2

Classes and Objects

Classes: Declaring Classes, Member Variables, Defining Methods, Constructors for Classes, Passing Information to a Method or a Constructor,

Objects: Creating Objects Using Objects, Returning a Value from a Method, this Keyword, Access to Members of a Class, Instance and Class Members, Initializing Fields, Method Overloading, Nested Classes, Inner Class, Enum Types, Annotations.

UNIT- 3

Interfaces, Inheritance, Numbers and Strings

Interfaces: Definition, implementation of an Interface, Using an Interface as a Type, Rewriting Interfaces.

Inheritance: Overriding and Hiding Methods, Polymorphism, Hiding Fields, Keyword super, Object as a Superclass, Writing Final Classes and Methods, Abstract Methods and Classes. Numbers: Numbers, Numbers Classes, Formatting Numeric Print Output, Beyond Basic Arithmetic.

Strings : Characters, Strings, Converting between Numbers and Strings, Manipulating Characters in a String, Comparing Strings and Portions of Strings, The StringBuilder Class

UNIT – 4

Generics and Packages Generics: Introduction, Types, Generic Methods and Constructors, Type Inference, Packages: Creating a Package, Naming a Package, Using Package Members, Managing Source and Class Files.

UNIT-5

Essential Classes: Exceptions, Basic I/O, Concurrency.

Exceptions: What Is an Exception? The Catch or Specify Requirement, Catching and Handling Exceptions, Specifying the Exceptions, Thrown by a Method, How to Throw Exceptions? Using assertions, Debugging techniques.

Basic I/O: I/O Streams, File I/O.

Concurrency: Processes and Threads, Thread Objects and operations with them, Synchronization, Liveness, Deadlock, Starvation and Livelock, Guarded Blocks, Immutable Objects, High Level Concurrency Objects.

UNIT-6

GUI and Deployment Graphical User Interfaces with Swing: What is Swing? Swing Features, Swing Components (Look and Feel), Pluggable Look and Feel, Data Transfer, Internationalization and Localization, Accessibility, Integrating with the Desktop, System Tray Icon Support Applets: Definition of an Applet Subclass, Methods for Milestones, Life Cycle of an Applet, Applet's Execution Environment, Developing an Applet, Deploying an Applet, Deploying With the Applet Tag, Doing More With Applets.

Reference Books:

1. Core Java 2 volume 1-Fundamentals. By Cay S. Horstmann, and Gary Cornell. 2011, Pearson Education.
2. Java- How to Program, Deitel & Deitel, Pearson Education, 6 edn.
3. The complete Reference , Java J2SE, 5th edn, TMH 2005 or later
4. Java for for programmers, Paul J. Deitel, 2009, Pearson Education.
5. Programming with Java, T. V. Suresh Kumar, 2011, Pearson Education
6. Introduction to data structures with Java, David Cousins 2011.

Web sites:

1. <http://www.oracle.com/technetwork/java/javase/overview/index.html>
2. <http://www.javabeginner.com/>

The Following Programs to be implemented in JAVA**Objective:**

- To introduce JAVA as OOPL and apply to some simple programming exercise on data structures taught in algorithms & data structures course.
- 1) To implement the following programs using an array.
 - a) Stack b) Queue
 - 2) To implement the following programs using a singly linked list.
 - a) Stack b) Queue
 - 3) To implement the following programs using “deque” (double ended queue) using an array.
 - 4) To implement the following operations:
 - a) Insert an element into a binary search tree.
 - b) Delete an element from a binary search tree.
 - c) Search for a key element in a binary search tree.
 - 5) Use non-recursive functions to traverse the given binary tree in
 - a) Preorder. b) Inorder. c) Postorder
 - 6) To implement BFS and DFS for a given graph.
 - 7) To implementing the following sorting methods:
 - a) Merge sort b) Heap sort
 - 8) To perform the following operations
 - a) Insertion into an AVL-tree , b) Deletion from an AVL-tree
 - 9) To perform the following operations
 - 1) Insertion into an B+-tree , b) Deletion from an B+-tree
 - 10) To implement Kruskal’s algorithm for generating MST.
 - 11) To implement Prim’s algorithm to generate a MST

TEXT BOOKS:

- 1) Data Structures Algorithms and Applications in Java, SATAJSAHNI University Press 2nd edition

MODERN OPERATING SYSTEMS LAB (A1294104)**List of Experiments**

- 1) Case study on disk management
- 2) FCFS CPU scheduling algorithm (with given arrival time & service time) for n number of processes.
- 3) Shortest Job First scheduling
- 4) Priority scheduling algorithm
- 5) Round robin scheduling algorithm
- 6) Inter Process Communication using pipes
- 7) First fit algorithm
- 8) Best fit algorithm
- 9) Worst fit algorithm
- 10) Simulate bankers algorithm for dead lock avoidance
- 11) Simulate bankers algorithm for dead lock prevention
- 12) Simulate the MVT and MFT
- 13) FIFO page replacement
- 14) LRU page replacement
- 15) Optimal page replacement
- 16) Simulate paging technique of memory management.

JAVA PROGRAMMING LAB (A1295104)

1. Write a Java program that prints all real solutions to the quadratic equation $ax^2+bx+c = 0$. Read in a, b, c and use the quadratic formula. If the discriminant b^2-4ac is negative, display a message stating that there are no real solutions.
2. The Fibonacci sequence is defined by the following rule. The first 2 values in the sequence are 1, 1. Every subsequent value is the sum of the 2 values preceding it. Write a Java program that uses both recursive and non-recursive functions to print the nth value of the Fibonacci sequence.
3. Write a Java program that prompts the user for an integer and then prints out all the prime numbers up to that Integer.
4. Write a Java program to multiply two given matrices
5. Write a Java program that reads a line of integers and then displays each integer and the sum of all integers. (use StringTokenizer class)
6. Write a Java program that checks whether a given string is a palindrome or not. Ex: MADAM is a palindrome.
7. Write a Java program for sorting a given list of names in ascending order.
8. Write a Java program that reads on file name from the user, then displays information about whether the file exists, whether the file is readable, whether the file is writable, the type of file and the length of the file in bytes.
9. Write a Java program that reads a file and displays the file on the screen, with a line number before each line.
10. Write a Java program that displays the number of characters, lines and words in a text file.
11. Implements a Stack ADT
12. Converts Infix expression to Postfix expression
13. Write an Applet that displays a simple message.
14. Develop an applet that receives an integer in one text field, and computes its factorial value and returns it in another text field, when the button named "compute" is clicked.
15. Write a Java program that works as a simple calculator. Use a grid layout to arrange buttons for the digits and for the + - x / % operations. Add a text field to display the result.
16. Write a Java program for handling mouse events.
17. Write a Java program that creates three threads. First thread displays "Goof Morning" every one second the second thread displays "Hello" every two seconds and the the third thread displays "Welcome" every three seconds
18. Write a Java program that correctly implements Producer-Consumer problem using the concept of Inter Thread Communication.
19. Write a Java program that implements a simple client/server application. The client sends data to a server. The server receives the data, uses it to produce a result and then sends the result back to the client. The client displays the result on the console. For ex: The data sent from the client is the radius of a circle and the result produced by the server is the area of the circle.
20. To simulate a traffic light. The program lets the user select one pf the three lights: red, yellow or green. When a radio button is selected, the light is turned on and only one light can be on at a time no light is on when program starts.
21. Write a Java program that allows user to draw lines, rectangles and ovals.
22. Write a java program to create an abstract class named shape that contains an empty method named number of sides (). Provide three classes named trapezoid, triangle and Hexagon such that each one of the classes extends the class shape. Each one of the class contains only the method number of sides () that shows the number of sides in the given geometrical figures.
23. Create a table named Table.txt is stored in a text file. The first line in the file is the header, and the remaining lines corresponding to rows in the table. Write a java program to display a table using JTable component
24. Program to print JAVA IS SIMPLE in different styles and fonts
25. Write a java program to implement the APPLET PACKAGES, draw event handlers programs.
26. Write a java program to implement the APPLET PACKAGES, draw Lines, Rectangles, Rounded Rectangles, filled Polygons programs.

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3 2

(A0007103) APTITUDE, ARITHMETIC, REASONING & COMPREHENSION (Audit Course)**UNIT I:**

Numbers, Number Systems Simple Equations, Ratio, Proportion, Variation Quadratic Equations, Progressions Percentages.

UNIT II:

Profit, Loss, Partnerships Averages, Mixtures & Allegations, Simple Interest, Compound Interest ,Time and Work-Pipes, indices, surds, inequalities ,Cisterns Time and Distance Geometry and Menstruation.

UNIT III:

Permutations & Combinations and Probability Data Interpretation & Data Sufficiency.

UNIT IV:

Number & Letter Series, Analogies, Coding Decoding, Odd Man Out Blood Relations.

UNIT V:

Direction Sense, Symbols and Notations Deductions & Connectives Clocks, Calendars Analytical

UNIT VI:

Reasoning (Distribution+ Binary Logic + Puzzles) Cubes, Venn Diagrams Analytical Puzzles (Linear + Circular +Selections + Sequencing + Routes & Networks + Comparisons) and Non Verbal Reasoning

REFERENCES:

- 1) R.S.Agarwal “ Quantitative Techniques” S.Chand Series
- 2) Shankuntala Devi “ Techniques of Reasoning” S.Chand Series

(A0001103) PROBABILITY AND STATISTICS**OBJECTIVES:**

- At the end of the course, the students would acquire skills in handling situations involving more than one random variable and functions of random variables. Be introduced to the notion of sampling distributions and have acquired knowledge of statistical techniques useful in making rational decision in management problems. Be exposed to statistical methods designed to contribute to the process of making scientific judgments in the face of uncertainty and variation.
- With the present development of the computer technology, it is necessary to develop efficient algorithms for solving problems in science, engineering and technology. This course aims at giving exposure to Probability Theory, Theory of Sampling, Statistical Quality Control, Difference Equation, Z-transform and Simulation. The topics have been designed to use the mathematical tools and techniques for solving problems in engineering and for the development of logical thinking and analytical skills.

OUTCOMES:

By the end of module students will be expected to demonstrate knowledge of

- Probability, Conditional Probability, Baye's theorem and its applications
- Random variables, Discrete random variables, Continuous random variables
- Binomial Distribution, Poisson Distribution, Normal Distribution
- Population & Samples, Sampling Distribution of means
- Point Estimation, interval Estimation, Bayesian Estimation
- Tests of Hypothesis, Z – Distribution, Student t – test, F – test, Chi square test
- Queuing theory, Basic Queuing process, Transient & Steady states, Pure birth & Death process

UNIT – I

Probability: Sample Space and events – Probability – The axioms of Probability – Some Elementary theorems – Conditional Probability – Baye's theorem.

UNIT – II

Random Variables: Discrete and continuous - Distribution – Distribution functions – Properties – Discrete Random variables – Probability mass function – Continuous Random variables – Probability density function.

UNIT – III

Binomial, Poisson and Normal distributions – Related properties – Fitting distributions.

UNIT – IV

Sampling distribution : Population and samples – Sampling distribution of mean (known and unknown)

Estimation: Point estimation – Interval estimation – Bayesian estimation.

UNIT – V

Test of Hypothesis – Means – Proportions – Hypothesis concerning one and two means – One tail, two tail tests – Type I and Type II errors.

UNIT – VI

Tests of significance – Student's t –test, F – test, χ^2 test – Good ness of fit – Contingency test.

TEXT BOOKS:

- Probability and Statistics by T.K.V. Iyengar, B. Krishna Gandhi and others, S.Chand and company.
- A Text book of Probability and Statistics by Dr. Shahnaz Bathul.
- Engineering Mathematics by B.V. Ramana, Tata McGraw Hill .

REFERENCES:

- Fundamental Mathematical Statistics by S.C. Guptha and V.K. Kapoor – S. Chand Co
- A text book of Engineering Mathematics by N.P. Bali, Iyengar – Lakshmi Publications (Pvt Ltd)
- Engineering Mathematics – III A by Dr.M.K. Venkat araman – The National Publishing co.

INFORMATION TECHNOLOGY

B.Tech III – I Sem

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(A1210105) COMPUTER NETWORKING: TOP-DOWN APPROACH**Unit I: Introduction**

Network edge, Network core, ISPs and Internet Backbones, Protocol Layers and service models, OSI, TCP/IP reference models. Application Layer: Principles, Web and HTTP, FTP, SMTP, DNS.

Unit II: Transport Layer:

Services, Multiplexing and demultiplexing, principles of reliable data transfer, connection oriented transport, TCP, Connectionless support, UDP, Principles of Congestion control, TCP congestion control.

Unit III: Network Layer and Routing :

Service models, virtual circuit and datagram service networks, routing principles, routing algorithms, Internet protocol, routing in internet, IPV6, Multicast routing.

Unit IV: Wireless and Mobile Networks:

Wireless links, characteristics, CDMA, IEEE 802.11 wireless LANs, Cellular Internet Access, Mobility Management Principles, Mobile IP, Managing mobility in cellular networks.

Unit V: Multimedia Networking Applications:

Streaming Stored Audio and Video, Protocols for Real-Time Interactive Applications, Scheduling and Policing Mechanisms, Integrated and Differentiated Services, RSVP.

Unit VI: Network Security:

Principles of Cryptography, Authentication Protocols, Integrity, Key distribution and certification, Attacks and Countermeasures, Secure email, SSL, TLS, IPsec

Text Book

1. Computer Networks: A Top-Down Approach Featuring the Internet, by Jim Kurose, Keith Ross, 3rd Ed, Pearson Education 2004.

References

1. Data And Computer Communications, by William Stallings, VII th edn , Pearson Education , 2005.
2. Computer Networks, by Andrew S. Tanenbaum, IV Ed, Pearson Education 2003

(A1211105) WEB APPLICATION DEVELOPMENT**Unit I: HTML – JAVA SCRIPT**

HTML: Basic tags, List, Tables, images, forms, Frames; Cascading Style sheets.

Java Script: Introduction to Java Scripts, Objects in Java Script, Dynamic HTML with Java Script.

Unit II: XML

Introduction to XML, well-formed XML documents, components of XML document, Document type definition, XML Schemas, Document Object model, XML namespaces, XSL, Using XML Processors: DOM and SAX.

Unit III: Web Servers and Servlets

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

Unit IV: Introduction to JSP

The Problem with Servlet. The Anatomy of a JSP Page, JSP Processing. JSP Application Design with MVC Setting Up and JSP Environment: Installing the Java Software Development Kit, Tomcat Server & Testing Tomcat.

Unit V: JSP Application Development

Generating Dynamic Content, Using Scripting Elements Implicit JSP Objects, Conditional Processing – Displaying Values Using an Expression to Set an Attribute, Declaring Variables and Methods Error Handling and Debugging Sharing Data Between JSP pages, Requests, and Users Passing Control and Data between Pages – Sharing Session and Application Data

Unit VI: Database Access

Components of JDBC, JDBC Architecture, working with JDBC Statement objects, Result set, result set metadata, accessing a Database from a JSP Page.

Text Books:

1. Web Programming, building internet applications, Chris Bates 2nd edition, WILEY Dreamtech
2. The complete Reference Java 2 Fifth Edition by Patrick Naughton and Herbert Schildt. TMH edition.
3. Java Server Pages –Hans Bergsten, SPD O' Reilly.

Reference Books:

1. Internet and World Wide Web – How to program by Dietel and Nieto PHI/Pearson Education Asia.
2. An Introduction to web Design and Programming –Wang-Thomson.
3. Programming world wide web-Sebesta, Pearson.
4. Java Server Pages, Pekowsky, Pearson.

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B.Tech III – I Sem

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(A1212105) DATABASE MANAGEMENT CONCEPTS**Unit: I**

Overview of Storage, Indexing and Query Evaluation.
Evaluating Relational Operators, Relational Query Optimizer,

Unit: II

Physical database tuning, Security and Authorization

Unit: III

Transaction Management: Techniques and protocols used in Transactions processing, Concurrency Control, Recovery and deadlock management for centralized DBSs.

Unit: IV

Database System Architecture: Object-Data systems, Parallel Databases, Distributed Databases, Client-Server architecture

Unit: V

Data Warehousing and OLAP, Data Mining and Decision support systems.

Unit: VI**Emerging Technologies**

Overview of: Information Retrieval and XML data management, Internet databases, Mobile databases, Multimedia databases, GIS.

TEXT BOOKS :

- 1) Data base Management Systems, Raghuramakrishnan, Johannes Gehrke, TATA McGrawHill 3rd Edition.
- 2) Fundamentals of Database Systems, Elmasri, Navathe Pearson Education.

Reference Books :

- 1) Data base System Concepts, Silberschatz, Korth, McGraw hill, V edition.
- 2) Data base Systems design, Implementation, and Management, Peter Rob & Carlos Coronel 7th Edition.
- 3) Introduction to Database Systems, C.J.Date Pearson Education.

(A0514105) C# AND .NET**[Common with CSE]****Unit I : Introduction to C#**

Introducing C#, Understanding .NET, Overview of C#, Literals, Variables, Data Types, Operators, Expressions, Branching, Looping, Methods, Arrays, Strings, Structures, Enumerations.

Unit II : Object Oriented Aspects of C#

Classes, Objects, Inheritance, Polymorphism, Interfaces, Operator Overloading, Delegates, Events, Errors and Exceptions.

Unit III : Application Development On .NET

Building Windows Applications, Accessing Data with ADO.NET.

Unit IV: ASP.NET

Web applications and web servers, HTML form Development, Client side Scripting, GET and POST, ASP.NET application, ASP.NET namespaces, creating sample C# web Applications, architecture, Debugging and Tracing of ASP.NET

Unit V: Web Development

Introduction to web Form controls. Building Web Services- web service namespaces, building simple web Service, WSDL, web service wire protocols, WSDL into C#.

Unit VI: The CLR and the .NET Framework

Assemblies, Versioning, Attributes, Reflection, Viewing MetaData, Type Discovery, Reflecting on a Type, Marshaling, Remoting, Understanding Server Object Types, Specifying a Server with an Interface, Building a Server, Building the Client, Using Single Call, Threads.

Text Books:

- 1) Programming in C#, E. Balagurusamy, Tata McGraw-Hill, 2004.
- 2) J. Liberty, "Programming C#", 2nd ed., O'Reilly, 2002.

References Books:

- 1) Andrew Trolesen C# and the .NET Platform, Dreamtech Press, Second Edition.
- 2) Bradley L Jones, 'Sams Teach Yourself the C# Language in 21 Days', Sams, 1st edition, 2001
- 3) Andy Harris, 'Microsoft C# Programming for the Absolute Beginner', PTR publications, 2002.
- 4) Herbert Schildt, "The Complete Reference: C#", Tata McGraw-Hill, 2004.
- 5) Robinson et al, "Professional C#", 2nd ed., Wrox Press, 2002.
- 6) Andrew Troelsen, "C# and the .NET Platform", A! Press, 2003.
- 7) S. Thamarai Selvi, R. Murugesan, "A Textbook on C#", Pearson Education, 2003.

(A0093105) PROFESSIONAL COMMUNICATION AND SOFT SKILLS LAB**Introduction.**

The Professional Communication and Soft Skills Lab has been introduced at the III B. Tech level to navigate the students towards the appropriate career orientation. At this stage it is imperative for the student to prepare for the ever growing competition in the job market. In this scenario, the student needs to improve his/her Communication and soft skills in an effective manner to cope up the global trends.

Objective.

Keeping in mind the previous exposure of the student to English, this lab focuses on improving the student's proficiency in English at all levels. The lab intends to train students to use language effectively, to participate in group discussions, to help them face interviews, and sharpen public speaking skills and enhance the confidence of the student by exposing him/her to various situations and contexts which he/she would face in his/her career.

Syllabus:

The following modules are prescribed for the Professional Communication and Soft Skills Lab.

Week –I Professional Spirit

- Motivation & Self Esteem - Questionnaire on self analysis
- Activity- G.D on Personal goals and career objectives
- Case Study – Profile of a successful person

Week –II Concept of Communication -I

- Principles – barriers - Strategies -Analysis through video clipping
- Activity- Elevator pitch (Tell me about yourself)
- Reading Comprehension- 1
- Case study : news reviews

Week –III Concept of Communication -II

- Non verbal communication – kinesics – paralinguistic elements - Analysis through video clipping
- Activity- Elevator pitch (Tell me about yourself)
- Vocabulary: idioms & phrases

Week –IV Concept of Communication -III

- Listening Skills – ROAR Technique – Chinese Pictograph
- Activity- Debate with analysis on Nonverbal cues, Gestures & postures
- Reading Comprehension-2
- Case study : TV Interviews/ Movie

Week –V Professional Communication -I

- Group Discussion- Modalities, Process and evaluation
- Activity- Group Discussion
- Vocabulary – Foreign –Derived words

Week –VI Professional Communication -II

- Writing Skills –Letters, Emails & Resume Writing
- Activity- Letter writing and Resume Writing practice
- Reading Comprehension-3
- Analysis of Sample Letters / Memos/ Resume s

Week –VII Job Skills I

- HR Interview Strategies, Questions with analysis - Analysis through video clippings(Typical HR interviews)
- Vocabulary: Technical Jargon
- Activity- Group Discussion / Debate

Week –VIII Job Skills II

- Telephone Interview Strategies - On line interview Tips -Activity- Mock Interview
- Reading Comprehension-4

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Week –IX Job Skills III

- Technical Presentation skills
- Activity- Group Discussion Practice

Week –X Soft skills I

- Reading Skills – SQR3 technique – Bloom's Taxonomy
- Technical Presentation Practice - PPTs

Week –XI Soft skills II

- Job Etiquettes
- Communication Project Reviews
- Activity- Group Discussion Practice

Week –XII Soft skills III

- Team communication
- Mock CAT/ GRE Test
- Activity -Mock Interview

Minimum Requirements:

The English Language Lab shall have two parts:

The Computer aided Language lab for 60 students with 60 systems, one master console. LAN facility and English Language Skills Lab with movable Chairs and audio aids with a P.A system, a TV, A digital stereo-audio and video system, Camcorder etc.

Prescribed software: Department in-built data, K-Van Solutions and Globarena Ltd.

Books Prescribed:

1. Cornerstone: Developing Soft Skills by Robert M. Sherfield, Rhonda J. Montgomery and Patricia G. Moody, published by Pearson Education.
2. Resume's and Interviews by M.Ashraf Rizvi, Tata Mc Graw- Hill, 2008

Books suggested for Reference:

1. The ACE of Soft Skills by Gopal Ramesh and Mahadevan REamesh, Pearson Education,
2. How to Do Well in GDs and Interviews by Dorling Kindersley (India) Pvt. Ltd., Licencees of Pearson Education in South Asia.
3. Technical Writing by Sharon J.Gerson and Steven M.Gerson , published by Pearson Education
4. Professional Presentations by Malcolm Goodale , published by Cambridge University Press.

(A1296105) WEB APPLICATION DEVELOPMENT LAB**Programs to implement:**

- 1) Develop static pages (using only HTML) of an online Book store. The pages should resemble: www.amazon.com. The website should consist of the following pages. Home page, Registration and user Login, User profile page, Books catalog, Shopping cart, Payment By credit card, order confirmation.
- 2) Validate the registration, user login, user profile and payment by credit card pages using JavaScript.
- 3) Create and save an XML document at the server, which contains 10 users information. Write a program which takes User Id as input and returns the user details by taking the user information from the XML document.
- 4) Install TOMCAT web server. Convert the static web pages of assignments 2 into dynamic web pages using servlets and cookies. Hint: User's information (user id, password, credit card number) would be stored in web. Xml. Each user should have a separate shopping cart.
- 5) Bean Assignments
 - a. Create a JavaBeans which gives the exchange value of INR (Indian Rupees) into equivalent American/Canadian/Australian Dollar value.
 - b. Create a simple Bean with a label which is the count of number of clicks. Then create a Bean info class such that only the count properly is visible in the property Window.
 - c. Create two Beans – a) Keypad b) Display pad. After that integrate the two Beans to make it work as a calculator.
 - d. Create two Beans Traffic Light(implemented as a label with only three background colors-red, green, yellow) and Automobile(Implemented as a Text Box which states its state/movement). The state of the Automobile should depend on the following Light Transition table.
- 6) Redo the previous task using JSP by converting the static web pages of assignment 2 into dynamic web pages. Create a database with user information and books information. The books catalogue should be dynamically loaded from the database. Follow the MVC architecture while doing the website.
- 7) Implement a sample program using JSP Struts Framework.
- 8) Using JavaScript sort given array in ascending and descending order.

(A0597105) C# AND .NET LAB**LAB-1**

1. Write a program to demonstrate how unary operators are used.
2. Write a program in C# to demonstrate how binary operators work

LAB-2

3. Write a program in C# to find out the range of number from 1-10 or 11-20 or 21-30 or less than 1
4. Write a program in C# to find out the number entered between 1 -3

LAB-3

5. Write a program in C# to override a method which calculates pay of an employees to take bonus into account.
6. Write a program in C# to ask a user to enter a choice to add, delete, modify or view address using methods for each functionality.

LAB-4

7. Write a program in C# to show that when a struct is passed to a method, a copy of the struct is passed, but when a class instance is passed, a reference is passed.
8. Write a Program to implement an Interface

LAB-5

9. Write a program in C# to perform conversions between enums and their base types
10. Write a program to string manipulations

LAB-6

11. Write a program in C# to create a base class shape and derived classes i.e., Rectangle, Circle, and Triangle. Invoke the method from base class shape using polymorphism

LAB-7

12. Write a program in C# to open a file to write and read and handle the exception.

LAB-8

13. Create a Basic Web Page in Visual Web Developer

LAB-9

14. Creating a Basic Web Page in Visual Web Developer and add a button control on it.

LAB-10

15. Create User profile Application which allow user to select the Material Status and Hobbies.
16. Implement the calculator with the help of the Command argument and command name properties of the button control

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INFORMATION TECHNOLOGY**ELECTIVE -1: [Group 1]**

[Each student must choose ONE of the following courses]

B.Tech III – I Sem

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G1.1 ARTIFICIAL INTELLIGENCE (A1213105)**Unit I : Overview Of Artificial Intelligence**

What is AI? The Importance of AI, Early work in AI, AI and related Fields

Knowledge - General Concepts:

Introduction, Definition and Importance of Knowledge, Knowledge-based systems, Representation of Knowledge, Knowledge Organization, Knowledge Manipulation, Acquisition of Knowledge

Unit II : Formalized Symbolic Logics

Introduction, Syntax and Semantics for Propositional Logic, Syntax and Semantic for FOPL, Properties of WFFs, Conversion to Clausal Form, Inference Rules, The Resolution Principle, Non-deductive Inference Methods, Representation Using Rules:

Dealing With Inconsistencies and Uncertainties:

Introduction, Truth Maintenance systems, Default Reasoning and the closed world Assumption, Predicate Completion and Circumscription, Modal and Temporal Logics, Fuzzy Logic and Natural Language Computations

Unit III : Probabilistic Reasoning

Introduction, Bayesian Probabilistic Inference.

Structured Knowledge:

Graphs, Frames, and Related Structures. Introduction, associative networks, frame structures, conceptual dependencies and scripts

Unit IV : Search And Control Strategies

Introduction, Preliminary Concepts, Examples of Search Problems, Informed Search, Searching And-Or Graphs.

Matching Techniques:

Introduction, Structures used in Matching, Measures for Matching, Matching Like Patterns, Partial Matching, Fuzzy Matching Algorithms, The RETE Matching Algorithm,

Unit V : Natural Language Processing

Introduction, Overview of Linguistics, Grammars and Languages, Basic Parsing Techniques, Semantic Analysis and Representation Structure, Natural Language Generation, Natural Language Systems

Pattern Recognition:

Introduction, the Recognition and Classification Process, Learning Classification Patterns, Recognizing and Understanding Speech

Unit VI : Expert Systems Architectures

Introduction, Rule-Based Systems Architectures, Nonproduction Systems Architectures, Dealing with Uncertainty, Knowledge Acquisition and Validation, Knowledge System Building Tools

General Concepts In Knowledge Acquisition:

Introduction, Types of Learning, Knowledge Acquisition Is Difficult, General Learning Model, Performance Measure.

Machine Learning:

Introduction, Perceptions, Checker Playing Example, Learning Automata, Genetic Algorithms, Intelligent Editors

Text Books:

Introduction to Artificial Intelligence and Expert Systems- DAN W. PATTERNSON, PHI

References Books:

1. Artificial Intelligence, Elaine Rich and Kevin Knight-Tata McGraw-Hill, Third Edition.
2. Artificial Intelligence, Patrick Henry Winston, Pearson Education-Third Edition
3. "Artificial Intelligence: A modern approach" Russel, Peter Norvig , Third Edition

G1.2 COMPUTER GRAPHICS - PRINCIPLES & PRACTICE (A1214105)**Unit I**

Introduction: Picture Analysis, Interactive Graphics, Representative Uses of Computer Graphics, Classification of Applications, Refresh Cathode Ray tubes, Raster scan displays, Color CRT Monitors, Direct view storage tube, Flat-panel displays, Raster scan systems, Random scan systems, Graphics work monitors and work stations

Unit II

Line drawing algorithms, Frame buffer, Circle-generating algorithms, Ellipse-generating algorithms, Pixel addressing and geometry, scan-line polygon fill algorithm, Inside-outside tests, Boundary fill algorithm

Unit III

Two Dimensional Geometric transformations: Basic transformations, Composite transformations, other transformations

Two-Dimensional Viewing: The viewing pipe line, window-viewport coordinate transformations, Line clipping, Polygon clipping

Unit IV

Three-Dimensional Object Representations – Three-Dimensional Geometric and Modeling Transformations, Three-Dimensional Viewing

Unit V

Three dimensional object representations: Polygon surfaces, curved lines and surfaces, Spline representations, Bezier curves & surfaces

Unit VI

Illumination models and surface rendering methods: Light sources, Basic illumination models, Displaying light intensities, Halftone approximation

Color models and color applications: RGB, YIQ, CMY, and HSV Color models, conversion between HSV and RGB Models

Textbooks:

Computer Graphics – C Version, Donald Hearn, Pauline Baker, second edition, 2009, Pearson Education.

Computer Graphics Principles & Practice, Foley, Van Dam, Feiner, Hughes, Second edition, 2003, Pearson, Education

References Books:

1. “Computer Graphics Second edition”, Zhigang xiang, Roy Plastock, Schaum’s outlines, Tata Mc Graw hill edition.
2. “Procedural elements for Computer Graphics”, David F Rogers, Tata Mc Graw hill, 2nd edition.
3. “Principles of Interactive Computer Graphics”, Neuman and Sproul, TMH.
4. “Principles of Computer Graphics”, Shalini, Govil-Pai, Springer.
5. “Computer Graphics”, Steven Harrington, TMH
6. Computer Graphics, F.S.Hill, S.M.Kelley, PHI.
7. Computer Graphics, P.Shirley, Steve Marschner & Others, Cengage Learning.
8. Computer Graphics & Animation, M.C.Trivedi, Jaico Publishing House.

G1.3 SOFTWARE ARCHITECTURE (A1215105)**Unit I : Envisioning Architecture**

What is software Architecture-What is Software Architecture , Other Points of View, Architectural Patterns, Reference Models, and Reference Architectures, Importance of Software Architecture , Architectural Structures and views.

Envisioning Architecture:

Architecture Business Cycle- Architectures influences, Software Processes and the Architecture Business Cycle, Making of “Good” Architecture.

Unit II : Designing the Architecture with Styles

Designing the Architecture: Architecture in the Life Cycle, Designing the Architecture, Formatting the Team Structure, Creating a Skeletal System.

Architecture Styles: Architectural Styles, Pipes and Filters, Data Abstraction and Object-Oriented Organization, Event-Based, Implicit Invocation, Layered Systems, Repositories, Interpreters.

Unit III : Creating An Architecture-I

Creating an Architecture: Understanding Quality Attributes – Functionality and Architecture, Architecture and Quality Attributes, System Quality Attributes, Quality Attribute. Scenarios in Practice, Other System Quality Attributes, Business Qualities, Architecture Qualities.

Achieving Qualities: Introducing Tactics, Availability Tactics, Modifiability Tactics, Performance Tactics, Security Tactics, Testability Tactics, Usability Tactics.

Unit IV : Creating An Architecture-II

Documenting Software Architectures: Use of Architectural Documentation, Views, Choosing the Relevant Views, Documenting a view, Documentation across Views.

Reconstructing Software Architecture: Introduction, Information Extraction, Database Construction, View Fusion, and Reconstruction.

Unit V : Analyzing Architectures-I

The ATAM: Participants in the ATAM, Outputs of The ATAM, Phases Of the ATAM.

The CBAM: Decision-Making Context, The Basis for the CBAM, Implementing the CBAM.

Unit VI : Analyzing Architectures-II

The World Wide Web: A Case study in Interoperability- Relationship to the Architecture Business Cycle, Requirements and Qualities, Architecture Solution, Achieving Quality Goals.

J2EE/EJB: A Case study of an Industry-Standard Computing Infrastructure- Relationship to the Architecture Business Cycle, Requirements and Qualities, Architecture Solution, System Deployment Decisions.

The Luther Architecture: A case Study in Mobile Application Using J2EE- Relationship to the Architecture Business Cycle, Requirements and Qualities, Architecture Solution, How Luther Achieved its Quality Goals.

Text Books:

1. Software Architectures in Practice by Len Bass, Paul Clements, Rick Kazman Pearson Publication, 2nd Edition. 1st, 2nd –Unit 1st Part ,3,4,5,6 Units Complete.
2. Software Architecture By Mary Shaw and David Garlan, PHI Publication – 2nd Unit 2nd Part.

References Books:

1. **Software Design: From Programming to Architecture**, Eric Braude, Wiley, 2004.
2. N. Domains of Concern in Software Architectures and Architecture Description Languages. Medvidovic and D. S. Rosenblum. *USENIX*.
3. www.cs.cofc.edu.
4. www4.desales.edu.

RAJEEV GANDHI MEMORIAL COLLEGE OF ENGG & TECHNOLOGY, NANDYAL

AUTONOMOUS

INFORMATION TECHNOLOGY

B.Tech III – I Sem

L+T	P	C
3+1	0	4

G1.4 E-COMMERCE (A1216105)

[Same as ELECTIVE-IV, IV/2, B.Tech (CSE)]

Unit I

Electronic Commerce-Frame work, anatomy of E-Commerce applications, E-Commerce Consumer applications, E-Commerce organization applications, Consumer Oriented Electronic commerce - Mercantile Process models.

Unit II

Electronic payment systems - Digital Token-Based, Smart Cards, Credit Cards, Risks in Electronic Payment systems.

Unit III

Inter Organizational Commerce - EDI, EDI Implementation, Value added networks.
Intra Organizational Commerce - work Flow, Supply chain Management.

Unit IV

Corporate Digital Library - Document Library, digital Document types, corporate Data Warehouses.
Advertising and Marketing - Information based marketing, Advertising on Internet, on-line marketing process, market research.

Unit V

Consumer Search and Resource Discovery - Information search and Retrieval, Commerce Catalogues, Information Filtering.

Unit VI

Multimedia - key multimedia concepts, Digital Video and electronic Commerce, Desktop video processing's, Desktop video conferencing.

Text Book :

1. Frontiers of electronic commerce – Kalakata, Whinston, Pearson.

References Books:

1. E-Commerce fundamentals and applications Hendry Chan, Raymond Lee, Tharam Dillon, Ellizabeth Chang, John Wiley.
2. E-Commerce, S.Jaiswal, Galgotia.
3. E-Commerce, Efrain Turbon, Jae Lee, David King, H.Michael Chang.
4. Electronic Commerce, Gary P. Schneider, Thomson.
5. E-Commerce – Business, Technology, Society; Kenneth C. Taudon, Carol Guyerico Traver.

G1.5 THEORY OF COMPUTATION (A1217105)**Unit I : Introduction**

Automata, computability, and complexity

Automata and Languages: Finite automata, Non-determinism, Regular expressions, Regular expressions, non-regular languages

Unit II : Context-free languages

Context free grammars, Pushdown automata, Non-context free languages

Unit III : The Church-Turing thesis

Turing machines, Variants of Turing machines

Decidability: Decidable languages, The halting problem

Unit IV : Reducibility

Undecidable problems from language theory, A simple undecidable problem, mapping reducibility

Unit V : Time complexity

Measuring complexity, The class P, The class NP, NP-completeness, NP-complete problems

Unit VI : Space Complexity: Sacth's theorem, The class PSPACE, PSPACE-completeness, The classes L and NL, NL-completeness, NL equals coNL

Textbooks

1. Introduction to the theory of computation, Michal Sipser, Thomson Brooks/cole, International student edition

References Books:

2. Introduction to automata theory, languages, and computation, Jhon E.Hopcroft, Jefferey D.Ullman
3. Introduction to formal languages, and automata", Peter Linz, Third Edition
4. "The theory of computation"-Bernard M.Moret, Pearson Education

(A1218105) TECHNOLOGY CERTIFICATION: CCNA (Audit Course)**Unit – 1:**

Network Working Method, Configure, verify and troubleshoot a switch with VLANs and inter-switch communications

Unit – 2:

Implement an IP addressing scheme and IP Services to meet network requirements in a medium-size Enterprise branch office network

Unit – 3:

Configure, verify, and troubleshoot basic router operation and routing on Cisco devices

Unit – 4:

Identify security threats to a network and describe general methods to mitigate those threats

Unit – 5:

Implement, verify, and troubleshoot NAT and ACLs in a medium-size Enterprise branch office network

Unit – 6:

Explain and select the appropriate administrative tasks required for a WLAN
Implement and verify WAN links

Book:

1. CCNA Study Guide v2.52, Aaron Balchunas, 2012.

(A0013105) MANAGERIAL ECONOMICS & FINANCIAL ACCOUNTING

[Common with CSE]

Unit I : Introduction to Managerial Economics

Definition, Nature and Scope of Managerial Economics–Demand Analysis: Demand Determinants, Law of Demand and its exceptions.

Unit II : Elasticity of Demand:

Definition, Types, Measurement and Significance of Elasticity of Demand. Demand Forecasting, Factors governing demand forecasting, methods of demand forecasting (survey methods, statistical methods, expert opinion method, test marketing, controlled experiments, judgmental approach to demand forecasting)

Unit III : Business & New Economic Environment:

Characteristic features of Business, Features and evaluation of Sole Proprietorship, Partnership, Joint Stock Company, Public Enterprises and their types, Changing Business Environment in Post-liberalization scenario.

Unit IV Capital and Capital Budgeting:

Capital and its significance, Types of Capital, Estimation of Fixed and Working capital requirements, Methods and sources of raising finance.

Nature and scope of capital budgeting, features of capital budgeting proposals, Methods of Capital Budgeting: Payback Method, Accounting Rate of Return (ARR) and Net Present Value Method (simple problems)

Unit V : Introduction to Financial Accounting:

Double-Entry Book Keeping, Journal, Ledger, Trial Balance- Final Accounts (Trading Account, Profit and Loss Account and Balance Sheet with simple adjustments).

Unit VI : Financial Analysis through ratios:

Computation, Analysis and Interpretation of Liquidity Ratios (Current Ratio and quick ratio), Activity Ratios (Inventory turnover ratio and Debtor Turnover ratio), Capital structure Ratios (Debt- Equity ratio, Interest Coverage ratio), and Profitability ratios (Gross Profit Ratio, Net Profit ratio, Operating Ratio, P/E Ratio and EPS).

Text Books:

1. Aryasri: Managerial Economics and Financial Analysis, 2/e, TMH, 2005.
2. Varshney & Maheswari: Managerial Economics, Sultan Chand, 2003.

References Books:

1. Financial Accounting for Management, Ambrish Gupta, Pearson Education, New Delhi.
2. Managerial Economics, H. Craig Peterson & W. Cris Lewis, PHI, 4/e.
3. Managerial Economics, Suma Damodaran, Oxford University Press.
4. Managerial Economics & Financial Analysis, S. A. Siddiqui & A. S. Siddiqui, New age International Space Publications.
5. Managerial Economics In a Global Economy, Domnick Salvatore, 4/e, Thomson.
6. Financial Accounting—A Managerial Perspective, Narayanaswamy, PHI.
7. Managerial Economics & Financial Analysis, Raghunatha Reddy & Narasimhachary, Scitech.
8. Analysis, Problems and Cases, Truet and Truet: Managerial Economics, Wiley.

Codes/Tables: Present Value Tables need to be permitted into the examinations Hall.

(A1219106) EMBEDDED COMPUTING**Unit I : Embedded Computing.**

Introduction, Complex systems and microprocessors, The Embedded system design process, Formalisms for System design

Instruction sets: Introduction, Preliminaries, ARM processor, SHARC Processor

Unit II : CPU

Introduction, Programming Input and Output, I/O Devices, Component Interfacing, Designing with Microprocessors, Development and Debugging

Program Design and Analysis: Analysis of Optimization of Execution Time, Analysis and Optimization of Energy and Power, Analysis and Optimization of Program Size, Program Validation and Testing

Unit III : Processes and Android Operating System

Introduction, Multiple Tasks and Multiple Processes, Context Switching, Scheduling Policies, Inter Process Communication Mechanisms.

Unit IV : Networks

Introduction, Distributed Embedded Architectures, Networks for Embedded Systems, Network-Based Design, Internet-Enabled Systems.

Unit V : System Design Techniques.

Introduction, Design Methodologies, Requirement Analysis, Specifications, System Analysis and Architecture Design, Basic Compilation Techniques, Quality Assurance.

Unit VI: Design Examples

Model Train Controller, Data Compressor, Alarm Clock, Software Modem, Telephone Answering Machine, Elevator Controller, Ink Jet Printer

Text Book:

Computers as Components - Principles of Embedded Computing System Design, by Wayne Wolf, 2/E, Morgan Kaufmann Publishers, 2008.

References Books:

1. Embedded Realtime Systems Programming, Sriram V. iyer, Pankaj Gupta, Tata McGraw-Hill Pub. Co. Ltd, 2004. [Chaps 2, 3.2, 4-7]
2. Embedded Systems, Raj Kamal, -Hill Pub. Co. Ltd, 11th print 2007. [Chaps 1-5, Appendix G]
3. An Embedded Software Primer, David E. Simon, Pearson Education, 2007. [Chps 5-10]
4. Programming for Embedded Systems, Dream Software Team, WILEY dreamtech India Ltd. 2005. [has lots of excellent case studies]
5. Embedding system building blocks, Labrosse, via CMP publishers.

(A1220106) SYSTEM PROGRAMMING**Unit I : Introduction**

What is system programming, differences between system programming and application programming, system programs-assembler-compiler-interpreter-operating system, the simplified instruction computer(SIC), Machine architecture - Data and instruction formats - addressing modes - instruction sets - I/O and programming

Unit II : Assemblers

Basic assembler functions, machine-dependent assembler features, machine independent assembler features, one-pass assemblers, multi-pass assemblers, learning of MASM assembler and SPARC assembler

Unit III : Loaders and linkers:

Basic loader functions, machine-dependent loader features, machine-independent loader features, linkage editors, dynamic linking, bootstrap loaders

Unit IV : Macro Processors:

Macro definition and expansion, macro processor algorithms and data structures, Concatenation of macro parameters, generation of unique labels, conditional macro expansion, keyword macro parameters, recursive macro expansion, general purpose macro processors, macro processing within language translators

Unit V : Compilers:

Basic compiler functions, machine-dependent compiler functions, machine-independent compiler functions, compiler design options

Unit VI : Implementation Examples:

Compilers: Java compiler and environment, The YACC compiler

Loaders and Linkers: MS-DOS linker, SunOS linker

Assemblers: TASM

Text Books:

1. System software : An Introduction to systems programming, Third edition, Leland Beck, Pearson Education

Reference Books:

1. Alfred V. Aho, Monica S. Lam, Ravi Sethi, Jeffrey D. Ullman, Compilers: Principles, Techniques, & Tools, 2nd edition Addison-Wesley
2. Systems Programming – John J. Donovan, Tata McGraw Hill.
3. David Galles, Modern Compiler Design, Addison Wesley
4. Operating Systems and Systems Programming – D.M. Damdhere, Tata McGraw Hill

(A0520106) SOFTWARE TESTING METHODOLOGIES AND TOOLS

[Common with B.Tech III/2 (CSE)]

Unit : I Testing Methodology, Verification & Validation

Testing Methodology: Introduction to software Testing, Evolution of Software Testing, Goals of Software Testing, Software Testing definitions, Model for Software Testing, Software testing as a Process

Software Testing methodology and Terminology: Software Testing Terminology, Software Testing Life Cycle

Verification & Validation: Verification and Validation Activities, Verification and its requirements, Verification of High and Low level Design, Validation

Unit : II Testing Techniques

Testing Techniques: Dynamic Testing both Black-Box and White-Box Testing techniques, Static Testing, validation Activities: Unit Validation Testing, Integration Testing, Function Testing, System Testing , Acceptance Testing

Regression Testing: Regression Testing Techniques, Regression Testability, Objectives of Regression Testing, When Regression Testing is done, Regression Testing Types.

Unit : III Managing the Testing Process:

Test Management: Test Organization, Structure of Testing Group, Test Planning, Detailed Test Design and Test Specification

Software Metrics: Need of Software Measurement, Definition of Software Metrics, and Classification of software Metrics, Entities to be Measured, and Size Metrics

Testing Metrics for Monitoring and Controlling the Testing Process: Measurement Objectives for Testing, Attributes and Corresponding Metrics in Software Testing, Attributes, Architecture Design Metric Used for Testing, Information Flow Metrics Used for Testing ,Function Point Metrics for Testing, Test Point Analysis (TPA)

Unit : IV Quality Management

Software Quality Management: Software Quality, Quality Cost, Benefits of Investment On Quality, Quality Control and Quality Assurance, Quality Management, Quality Factor, QM and Project Management, Methods of Quality Management, Software Quality Metrics, SQA Model

Testing Process Maturity Models: Need for Test Process Maturity, Measurement and Improvement Of a Test Process, Test Process Maturity Models

Unit V : Test Automation

Automation and Testing Tools: Need for Automation, Categorization of Testing Tools, Selection of Testing Tools, Cost Incurred in Testing Tools, Guidelines for Automated Testing , Overview of Some Commercial Testing Tools

Testing Object Oriented Software: OOT Basics, Object-Oriented Testing

Unit VI : Testing The Web-based Systems

Web-based System, Web Technology Evolution, Challenges in Testing for Web-based Software, Testing of Web-based Systems

A Case Study: Income Tax Calculator

Text Book:

1. Software Testing Principles and Practices , NARESH CHUHAN, OXFORD HIGHER EDUCATION, oxford university press 2010 first edition

References Books:

1. Software Testing Tools Dr KVKK Prasad, Dreamtech
2. Software Testing Techniques-Boris Beizer, Dreamtech, Second Edition
3. R. Pressman, "Software Engineering", 6/e, Tata McGraw-Hill
4. The Craft of Software Testing – Brain Marick, Pearson Education

EMBEDDED COMPUTING LAB (A1297106)**Unit I :****ARM Programming**

Introduction about ARM Processor.

Learning with ARM Processor.

Design Examples solving using ARM Processor.

Unit II :**Android**

Introduction about Android.

Learning with Android.

Design Examples solving using Android.

Unit III :

List Of Design Examples:

- 1) Model Train Controller
- 2) Data compressor
- 3) Alarm Clock
- 4) Software Modem
- 5) Telephone Answering Machine
- 6) Elevator Controller
- 7) Ink Jet Printer
- 8) TelephonePBX
- 9) Personal Digital Assistants
- 10) Set-Top Boxes

SYSTEM PROGRAMMING LAB (A1298106)

1. To generate machine op-code table, symbol table, and pseudo op-code table using the first pass assembler
2. To generate the machine op-code table using two-pass assembler
3. Sample assembly language program with illustration of symbol, literal, and base tables
4. Implement an absolute loader
5. Implement a re-locatable loader
6. Implement pass-one of a direct linking loader
7. Implement pass-two of a direct linking loader
8. To design a lexical analyzer
9. Practice of LEX/YACC programming
10. Programming on MACRO definition and expansion
11. Implement a macro processor
12. Context Free Grammar acceptance program
13. To implement a token recognition program
14. To implement a program that simulates the operation of operator precedence parsing
15. To implement a program that simulates recursive descent parsing
16. To implement a program for macro invocation
17. To implement a program for recursive macro processor
18. To implement a program for non-recursive macro processor
19. To develop a modular design for a two-pass assembler with an integrated macro processor
20. To implement a program for machine-dependent code optimization
21. To implement a program for eliminating of common sub-expressions and removal of loop invariants in code optimization
22. To implement a program for reduction in strength of operations in code optimization
23. To understand Java compiler and its environment by sample programs

INFORMATION TECHNOLOGY

B.Tech III – II Sem

T +L	P	C
0+0	3	2

SOFTWARE TESTING TOOLS LAB (A0598106)

1. Write programs in 'C' Language to demonstrate the working of the following constructs:
i) do...while ii) while....do iii) if...else iv) switch v) for
2. "A program written in 'C' language for Matrix Multiplication fails" Introspect the causes for its failure and write down the possible reasons for its failure.
3. Take any system (e.g. ATM system) and study its system specifications and report the various bugs.
4. Write the test cases for any known application (e.g. Banking application)
5. Create a test plan document for any application (e.g. Library Management System)
6. Study of any testing tool (e.g. Win runner)
7. Study of any web testing tool (e.g. Selenium)
8. Study of any bug tracking tool (e.g. Bugzilla, bugbit)
9. Study of any test management tool (e.g. Test Director)
10. Study of any open source-testing tool (e.g. Test Link)
11. Take a mini project (e.g. University admission, Placement Portal) and execute it. During the Life cycle of the mini project create the various testing documents* and final test report document.

*Note: To create the various testing related documents refer to the text "Effective Software Testing Methodologies by William E. Perry"

INFORMATION TECHNOLOGY**Elective-2 & 3 : [Group-2]****A student must choose ANY TWO from the following list:**

B.Tech III – II Sem

L+T	P	C
3+1	0	4

G2.1 BIOMETRICS (A1221106)**Unit I**

Introduction – Benefits of biometric security – Verification and identification – Basic working of biometric matching – Accuracy – False match rate – False non-match rate – Failure to enroll rate – Derived metrics – Layered biometric solutions.

Finger scan– Features – Components – Operation (Steps) – Competing finger Scan technologies – Strength and weakness. Types of algorithms used for interpretation.

Unit II

Facial Scan- Features – Components – Operation (Steps) – Competing facial Scan technologies – Strength and weakness.

Iris Scan - Features – Components – Operation (Steps) – Competing iris Scan technologies – Strength and weakness.

Unit III

Voice Scan - Features – Components – Operation (Steps) – Competing voice Scan (facial) technologies – Strength and weakness.

Unit IV

Other physiological biometrics, Hand scan, Retina scan, AFIS (Automatic Finger Print Identification Systems) , Behavioral Biometrics, Signature scan- keystroke scan.

Unit V

Biometrics Application – Biometric Solution Matrix – Bio privacy – Comparison of privacy factor in different biometrics technologies – Designing privacy sympathetic biometric systems. Biometric standards – (BioAPI , BAPI) – Biometric middleware

Unit VI

Biometrics for Network Security. Statistical measures of Biometrics. Biometric Transactions.

Text Books :

1. Biometrics – Identity Verification in a Networked World – Samir Nanavati, Michael Thieme, Raj Nanavati, WILEY- Dream Tech.
2. Biometrics for Network Security- Paul Reid, Pearson Education.

Reference Book:

1. Biometrics- The Ultimate Reference- John D. Woodward, Jr. Wiley Dreamtech.

G2.2 DATA WAREHOUSING AND DATA MINING CONCEPTS (A1222106)**Unit I : Introduction**

Fundamentals of data mining, Data Mining Functionalities, Classification of Data Mining systems, Data Warehouse and OLAP Technology for Data Mining Data Warehouse, Multidimensional Data Model, Data Warehouse Architecture, Data Warehouse Implementation

Unit II : Data Preprocessing

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

Data Mining Primitives, Languages, and System Architectures: Data Mining Primitives, Data Mining Query Languages

UNIT III : Concepts Description

Characterization and Comparison: Data Generalization and Summarization-Based Characterization, Analytical Characterization: Analysis of Attribute Relevance, Mining Class Comparisons: Discriminating between Different Classes, Mining Descriptive Statistical Measures in Large Databases

UNIT IV : Mining Association Rules in Large Databases

Association Rule Mining, Mining Single-Dimensional Boolean Association Rules from Transactional Databases, Mining Multilevel Association Rules from Transaction Databases, Mining Multidimensional Association Rules from Relational Databases and Data Warehouses

UNIT V : Classification and Prediction Issues Regarding Classification and Prediction, Classification by Decision Tree Induction, Bayesian Classification, Classification by Back propagation, Classification Based on Concepts from Association Rule Mining, Other Classification Methods, Prediction, Classifier Accuracy

UNIT VI : Cluster Analysis Introduction

Types of Data in Cluster Analysis, A Categorization of Major Clustering Methods, Partitioning Methods, Density-Based Methods, Grid-Based Methods, Model-Based Clustering Methods, Outlier Analysis

Mining Complex Types of Data: Mining Spatial Databases, Mining Multimedia Databases, Mining Time-Series and Sequence Data, Mining Text Databases, Mining the World Wide Web

Text Book:

1. Data Mining – Concepts and Techniques - JIAWEI HAN & MICHELINE KAMBER Harcourt India

Reference Books:

1. Data Mining Techniques – ARUN K PUJARI, University Press
2. Data Warehousing, Data Mining & OLAP- Alex Bizon, Stephen J.Smith, McGraw-Hill Edition
3. Data Mining Introductory and advanced topics –MARGARET H DUNHAM, PEARSON
4. Data Warehousing Fundamentals – PAULRAJ PONNAIAH WILEY
5. Data Warehousing in the Real World – SAM ANAHORY & DENNIS MURRAY

G2.3 INTRODUCTION TO HIGH PERFORMANCE COMPUTING (A1223106)**Unit I : Introduction**

Modern processors:

Stored –program computer architecture; General-purpose cache – based microprocessor architecture; Memory hierarchies; Multicore and Multithreaded processors; Vector processors.

Basic optimization techniques for serial code:

Simple measures-Elimination of common sub expressions, avoiding branches, using SIMD instruction sets; The role of compilers; C++ Optimizations

Unit II : Optimization

Data access optimization:

Balance analysis- Bandwidth-based performance modelling, the STREAM benchmarks; storage order - case studies; Algorithm classification and access optimizations.

Unit III : Parallel computers & Parallelization.

Parallel computers:

Taxonomy; shared – memory computers; Distributed- memory computers; Hierarchical systems; Networks.

Basics of parallelization:

Why parallelize? Parallelism; Parallel scalability.

Unit IV : Open MP

Shared- memory parallel programming with Open MP:

Introduction to Open MP; Open MP Case Study: – parallel Jacobi algorithm.

Efficient open MP Programming: Profiling open MP programs; Performance pitfalls;

Case study: Parallel sparse matrix-vector multiply

Unit V : ccNUMA architectures

Locality optimizations on cc NUMA architectures

Locality of access on cc NUMA; cc NUMA optimization of sparse MVM(Case study); Placement pitfalls; cc NUMA issues with C++.

Unit VI : Distributed-memory parallel Programming with MPI

Message passing; Introduction to MPI; MPI Parallelization of a Jacobi solver.

Efficient MPI Programming:

MPI Performance tools; Communication Parameters; Synchronization, serialization, contention; Reducing communication overhead; Internodes point-to-point communication. Basic MPI/Open MP programming models.

Text Books:

1. Introduction to high performance computing for scientists and engineers, Georg Hager and Gerhard Wellein, CRC Press (Special Indian Edition) 2012.

G 2.4 MULTIMEDIA AND APPLICATION DEVELOPMENT (A0527107)

[Same as ELECTIVE I, IV/1, B.TECH(CSE)]

Unit I : Fundamental concepts in Text and Image

Multimedia and hypermedia, world wide web, overview of multimedia software tools. Graphics and image data representation graphics/image data types, file formats, Color Models in images.

Unit II : Fundamental concepts in video and digital audio

Types of video signals, analog video, digitization of sound, quantization and transmission of audio.

Unit III : Action Script I

ActionScript Features, Object-Oriented ActionScript, Datatypes and Type Checking, Action Script Classes: Defining classes, Constructor functions, Properties, Methods, Constructors, Completing Box Class.

Unit IV : Action Script II

Inheritance, Interfaces, Packages, Exceptions.

Unit V : Application Development

An OOP Application Frame work, Using Components with ActionScript 2.0.

UNIT VI : Fundamentals of Multimedia data compression

Lossless compression algorithm: introduction,Basics of Information Theory, Run-Length Coding, Variable Length Coding, Dictionary Based Coding, Arithmetic Coding, Lossless Image Compression

Lossy compression algorithm: Introduction, Distortion Measures, The rate distortion Theory, Quantization.

Text Books:

1. Fundamentals of Multimedia by Ze-Nian Li and Mark S. Drew PHI/Pearson Education.
2. Essentials ActionScript 2.0, Colin Moock, SPD O,REILLY.

References Books:

1. Digital Multimedia, Nigel chapman and jenny chapman, Wiley-Dreamtech
2. Macromedia Flash MX Professional 2004 Unleashed, Pearson.
3. Multimedia and communications Technology, Steve Heath, Elsevier (Focal Press).
4. Multimedia Applications, Steinmetz, Nahrstedt, Springer.
5. Multimedia Basics by Weixel Thomson
6. Multimedia Technology and Applications, David Hilman , Galgotia

G2.5 NETWORK MANAGEMENT SYSTEMS (A1224106)**Unit I : Network Management**

Goals, Organization and Functions, Network and System Management, Network Management System Platform, Analogy of Telephone Network Management, Communications protocols and Standards, Challenges of Information Technology Managers

Unit II : SNMPV1 Network Management

Managed network: The History of SNMP Management, The SNMP Model, The Organization Model, The Information Model, The SNMP Communication Model, Functional model

Unit III : SNMPV2

Major Changes in SNMPv2, SNMPv2 System Architecture, The SNMPv2 Management Information Base, **RMON:** What is Remote Monitoring? RMON SMI and MIB, RMON1, RMON2, ATM Remote Monitoring

Unit IV : Telecommunications Management Network

Why TMN? Operations Systems, TMN Conceptual Model, TMN Standards, TMN Architecture, TMN Management Service Architecture, An Integrated View of TMN

Unit V : Network Management Tools and Systems

Network Management Tools, Network Statistics Measurement Systems, Network Management systems, Commercial Network management Systems, System Management, Enterprise Management Solutions.

Unit VI : Web-Based Management

NMS with Web Interface and Web-Based Management, Web Interface to SNMP Management, Embedded Web-Based Management, WBEM: Windows Management Instrumentation, Java management Extensions, Management of a Storage Area Network

Text Book:

1. Network Management, Principle and Practice, Mani Subramanian, Pearson Education..

References Books:

1. Network Management, Moris, Pearson Education.
2. Principles of Network System Administration, Mark Burges, Wiley Deamtech.
3. Distributed Network Management, Paul, Wiley .

G2.6 HUMAN COMPUTER INTERACTION (A1225106)**OBJECTIVES:**

- To expose students to the central concepts of Human-Computer Interaction.
- Establish target users, functional requirements, and interface requirements for a given computer application
- Describe and explain user interface design principles, and apply them to designing an interface.
- Develop quick-and-dirty interface designs using rapid prototyping methods.
- Evaluate user interface designs through usability inspection and user models
- Develop user studies and analyze study data to gain information about users, tasks, and interface designs.
- Choose appropriate HCI methods for specified goals and justify the choice

UNIT - I

Introduction: Importance of user Interface – definition, Importance of good design. Benefits of good design. A brief history of Screen design.

UNIT – II

The graphical user interface – popularity of graphics, the concept of direct manipulation, graphical system, Characteristics, Web user – Interface popularity, characteristics- Principles of user interface.

UNIT - III

Design process – Understanding Human interaction with computers, Importance of human characteristics in design, Human consideration in Design, Human interaction speeds.

UNIT - IV

Screen Designing: Human Considerations in Screen Design – Interface Design Goals, Screen Meaning and purpose, organizing screen elements clearly and Meaningfully, Ordering of screen data and content – Screen navigation and flow – Visually pleasing composition – Amount of information – Focus and Emphasis – Presenting information simply and meaningfully – statistical graphics – Technological consideration in interface design.

UNIT - V

Windows: Select the Proper Kinds of Windows: Window Characteristics, Components of a Window, Window Presentation Styles, Types of Windows, Window Management, Window Operations. Select the Proper Device-Based Controls: Characteristics of Device-Based Controls, Selecting the Proper Device Based Controls.

UNIT - VI

Components: Choose the Proper Screen-Based Controls – Operable Controls, Text Entry, Selection Controls, Combination Entry/selection controls, Other Operable Controls, Custom Controls, and Presentation Controls. Write Clear Text and Messages – Words, Sentences, Messages and Text, Text for Web Pages. Icons, Multimedia, Color-What Is It? Color Uses, possible problems with colors, choosing colors.

TEXT BOOKS:

1. The essential guide to user interface design, Wilbert O Galitz, Wiley India.

REFERENCES:

1. Human – Computer Interaction. ALAN DIX, JANET FINCAY, GRE GORYD, ABOWD, RUSSELL BEALG, PEARSON.
2. Interaction Design PRECE, ROGERS, SHARPS. Wiley Dreamtech,
3. User Interface Design, Soren Lauesen , Pearson Education.

INFORMATION TECHNOLOGY

B.Tech III – II

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(A1233107) MAN MANAGEMENT (Audit Course)**Unit-1. The Ideal:**

Ideal profile of a Manager, Leader. Manager & Self-management.

Unit-2: Management The Indian Way.

Ancient Indian management; Indian ethos and values; Spirituality: Life's undercurrent; Selflessness for success; The life breaths of business.

Unit-3 Human Business.

Personality development; Effect of culture on management; Work culture and Indian culture; Business is between human being; management is awareness and limits.

Unit-4 Business and quality

Quality in Indian perspective; Total quality management; Marketing's Indian perspective; Climbing the corporate ladder; Values and statistics.

Unit-5 Business and Society

Integrated rural development management; The socially conscious business; perspectives in national and rural development.

Unit-6 The Human aspect

Human system; Human relations.

Text Book:

1. Man Management: Divine Pearls on Management. A compilation from Bhagavan Sri Sathya Sai Baba discourses on management. Compiled by Management students of SSSIHL.

MIDDLEWARE TECHNOLOGIES AND SERVICE ORIENTED ARCHITECTURE (A1226107)

Unit I : Introduction to Middleware

What is Middleware? Types of Middleware, Client Server computing, Benefits and pitfalls of client server programming. Multi-tiered architecture, distributed computing models, RPC Middleware, java RMI.

Unit II : Web Service Technologies

Introduction. Where does WS fit into Middleware? WS Standards - XML/XSLT, SOAP, WSDL, REST, BPML, Frameworks & Utilities - Axis, etc.

Unit III : Enterprise Architecture Integration (EAI)

What is Integration? Intro to EAI - definition of concepts involved - EDI, B2B Integration, Legacy integration, EAI Infrastructure, ESB, EAI Solution utilities - TIBCO

UNIT IV : EJB Architecture & Applications

Overview of EJB Architecture, View of EJB Conversation, Building and deploying EJBs, Role in EJB.

EJB Session beans, EJB Entity beans, Lifecycle of beans, EJB Clients, Steps in developing an application with EJB, EJB deployment.

Unit V : Service Oriented Architecture-1

Review of basic tiered architecture-EA and the basic points of benefit of SOA including better integration, business agility, asset re-use, increase ROI.

Web Services and SOA - XML over the Http protocol. Representational State Transfer(REST). Main java implementations of web services JAX-WS 2, Axis2, Spring-WS, and XFire/CXF 2.0.

Unit VI : Service Oriented Architecture-2

Data and Services –review of JDO(Java Data Objects) as an alternative to JDBC along with sample code and examples. Service Data Objects(SDO). Apache Tuscany DSO. Service Component Architecture(SCA) with a Tuscany SCA java example. Benefits of MOM and ESB. OpenESB

Text Books:

1. Middleware and Enterprise Integration techniques, by Sudha Sadasivam G. and Radha Shankarmani, 2009, WIND.
2. Programming With Middleware Technologies, S Anitha and M Gomathi, Ane Books Pvt. Ltd (2011).
3. Service Oriented Architecture with Java” by Binildas CA, Malhar Barai, and Vincenzo.

References:

1. Distributed Computing, Principles and applications, M.L.Liu, Pearson
2. Client/Server Computing-D.T.Dewire,TMH.
3. Programming C#, JesseLiberty,SPD-O'Reilly.

INFORMATION SECURITY (A1227107)**UNIT I: Attacks, Services and Mechanisms**

Security Attacks (Interruption, Interception, Modification and Fabrication), Security Services (Confidentiality, Authentication, Integrity, Non-repudiation, access Control and Availability) and Mechanisms, A model for Internetwork security, Internet Standards and RFCs, *Buffer overflow & format string vulnerabilities, *TCP session hijacking, *ARP attacks, *route table modification, *UDP hijacking, and *Man-in-the-middle attacks. [Note: * means –can give as assignment to the students]

UNIT II: Symmetric Encryption

Conventional Encryption Principles, Conventional encryption algorithms, cipher block modes of operation, location of encryption devices, key distribution Approaches of Message Authentication, Secure Hash Functions and HMAC.

UNIT III: Public -Key-Encryption

Public key cryptography principles, public key cryptography algorithms, digital signatures, digital Certificates, Certificate Authority and key management.

UNIT IV: Network Security

Kerberos, X.509 Directory Authentication Service, Pretty Good Privacy (PGP) and S/MIME

UNIT V: IP and Web Security

IP Security Architecture, Authentication Header, Encapsulating Security Payload, Combining Security Associations and Key Management, Secure Socket Layer (SSL) and Transport Layer Security (TLS), Secure Electronic Transaction (SET).

UNIT VI: System Security

Intrusion detection, Password management, Viruses and related Threats, Firewall Design Principles and Trusted Systems.

Text Books:

1. William Stallings, "Cryptography and Network Security, fourth edition, Prentice Hall, New Delhi, 2006
2. Bruce Schneier, "Applied Cryptography", second edition, John Wiley & Sons, New York, 1996.

References:

1. Network Security Essentials (Applications and Standards) by William Stallings Pearson Education.
2. Network Security: The complete reference, Robert Bragg, Mark Rhodes, TMH.
3. Introduction to Cryptography, Buchmann, Springer.
4. Principles of Information Security, Whitman, Thomson.

MOBILE COMPUTING (A1228107)**Unit I: Introduction to Mobile Communication and Computing**

Novel applications – Limitations - Architecture

GSM : Mobile services, System architecture, Radio Interface, Protocols, Localization and calling, Handover, Security, New data Services

Unit II: (Wireless) Medium Access Control

Motivation for a specialized MAC (Hidden and exposed terminals, Near and far terminals), SDMA, FDMA, TDMA, CDMA.

Unit III: Mobile Network Layer

Mobile IP (Goals, assumptions, entities and terminology, IP packet delivery, agent advertisement and discovery, tunneling and encapsulation), Dynamic Host Configuration Protocol (DHCP), Properties and Applications of a MANETs - Routing – DSDV – DSR

Unit IV: Mobile Transport and Application Layer

Traditional TCP - Indirect TCP - Snooping TCP - Mobile TCP – Fast retransmit/Fast recovery - Transmission/time-out freezing - Selective retransmission – Transaction Oriented TCP – Wireless Application Protocol

Unit V: Database Issues

Hoarding techniques - caching invalidation mechanisms - client server computing with adaptation - power-aware and context-aware computing - transactional models - query processing – recovery - Quality of service issues.

Unit VI: Data Dissemination

Communications asymmetry - classification of new data delivery mechanisms - push-based mechanisms - pull-based mechanisms - hybrid mechanisms - selective tuning (indexing) techniques.

Text Books :

1. Jochen Schiller, "Mobile Communications", *Addison-Wesley*. (Chapters 4,7,9,10,11), second edition, 2004.
2. Stojmenovic and Cacute, "Handbook of Wireless Networks and Mobile Computing", *Wiley*, 2002.

References:

1. Reza Behravanfar, "Mobile Computing Principles: Designing and Developing Mobile Applications with UML and XML", ISBN: 0521817331, Cambridge University Press, October 2004.
2. Adelstein, Frank, Gupta, Sandeep KS, Richard III, Golden, Schwiebert, Loren, "Fundamentals of Mobile and Pervasive Computing", ISBN: 0071412379, McGraw-Hill Professional, 2005.
3. Hansmann, Merk, Nicklous, Stober, "Principles of Mobile Computing", *Springer*, second edition, 2003.
4. Martyn Mallick, "Mobile and Wireless Design Essentials", *Wiley DreamTech*, 2003.

SAP ABAP (A0525107)**Unit I: About ERP & SAP**

What is ERP?, Why we need ERP?, Advantages of ERP, Major ERP Packages, What is SAP?, History & Features of SAP, SAP R/2 Architecture (Limitations of R/2 Architecture), SAP R/3 Architecture (Types of work processes), SAP R/3 Application Modules, SAP Landscape, What is ABAP?, Logon to SAP Environment, Transaction Codes, Multitasking Commands, Comments, Errors, ABAP/4 Editor (SE38), Steps for Creating a Program, Elements in R/3 Screen, Output Statements, Operators in ABAP, Data, Parameter & Constant Statements, Data Types & Classification, Data Objects & Classification, Text Elements, String Operations, Control Statements, Field strings

Unit II: ABAP Dictionary

Data Dictionary Functions, Data Dictionary Objects: Data Base Tables, Structures, Views, Data Elements, Type Groups, Domains, Search helps, Lock objects. Primary Key and Foreign Key, Table Maintenance Generator, Packages: Creating a package, Difference between local objects & packages, Transferring local objects to packages, Variants: Variants Introduction, Creating variants in ABAP Editor & Data Dictionary, Message Classes: Message Class Introduction, Message types, Calling message class in Report & Dialog programs.

Unit III: Selection Screens

Selection screen Introduction, Parameter Statement, Select-options Statement, Selection-screen Statement, Screen table and its fields, Dynamic screen modification by using Modify Id key, Open SQL Statements: Select, Insert, Modify, Update, Delete, Internal Tables: Internal Tables Introduction, Declaring Internal Table, Populating Internal Table, Processing Internal Table, Initializing Internal Tables, Inner Joins And For All Entries, Control Break Statements. Debugging Techniques: Debugging Techniques Introduction, Break-points (Static & Dynamic), Watch points, Dynamically changing internal tables contents in Debugging Editor, Options to step through the program in Debugging Editor. Modularization Techniques: Modularization Techniques Introduction, Includes, Subroutines, Passing Parameters to Subroutines, Passing Tables to Subroutines, Function Groups & Function Modules.

Unit IV: Batch Data Communication

Batch Data Communication, SAP Scripts, Smart Forms, ALV Reports

Unit V

Runtime Analysis & SQL Tracing, Cross Applications, RFC, ALE, IDocs, EDI, BAPIs

Unit VI

Workflow, User Exits, BAPIs, OOPS Concept, Miscellaneous Topics

Text Books:

1. The complete Guide to developing in the SAP R/3 Environment (Introduction to ABAP/4 Programming for SAP) Revised and Expanded Edition .Prima Tech.
2. "Introduction to ABAP/4 programming for SAP" by Gareth M.de.Bruyn & Robert Lyfareff; Publisher: Prima Tech.

INFORMATION SECURITY & MOBILE COMPUTING LAB (A1299107)

1. Write a program to encrypt and decrypt a given text using Ceaser Cipher algorithm
2. Write a program to implement the transposition using Rail fence technique
3. Write a program to implement mono alphabetic cipher
4. Write a program to implement a play fair cipher
5. Write a program to implement a symmetric encryption algorithm: SDES
6. Write a program to implement asymmetric encryption algorithm : RSA
7. To implement Code Division Multiple Access(CDMA)
8. To check orthogonal of two codes & Generation of Walsh codes
9. To create MIDlet suite with two MIDlets
10. Write WML program for
 - a. To accept username and password
 - b. To print the data in table
 - c. To insert a WBMP(image file) in WML file
 - d. To use option & select tags with variable
11. Write WML program for
 - a. Example of OnPick Event
 - b. Example of How to use anchor tag
 - c. Example of hyperlink
 - d. To accept information from user(Input tag)
12. Write WML program for
 - a. Multiple cards in a single WML file(DECK)
 - b. OPTGROUP tag
 - c. To design a simple WML card
 - d. <p> tag in WML
 - e. <do type> tag

SAP ABAP LAB (A0581107)

1. a) How to define types and data objects.
b) A Few Simple Examples.
c) Working with database tables and internal tables.
d) Designing a report
2. The Syntax of ABAP/4 Programs
 - a. Three approaches to define data objects
 - b. Types, data, constants
 - c. Character types
 - d. Numbers
 - e. Date and time
 - f. Hexadecimal (or binary) data
 - g. Records and internal tables
 - h. Complex Non-Elementary Types and Data Objects & Using system fields
3. Working with tables from the Dictionary
 - Copying fields
 - Simple examples of field conversion
 - Converting character fields
 - Converting number fields
 - Converting date fields
 - Copying structured objects
 - Arithmetic Expressions and Mathematical Functions , String Operations
4. Special conversions
 - Using the Basic Layout Formats
 - Customizing pages
 - Skipping lines
 - Setting the layout position of fields
 - Using symbols and icons
 - Using colors
 - Type-Specific Output Options
 - Multi-Language Support
5. External flow of control (events)
 - Internal flow of control (if, case, do, while)
 - Simple form (local subroutine of a program)
 - Local data in a form
 - Using static variables
 - Using interface parameters of a form
 - Classifying parameters
 - Using table parameters
 - Type check for form parameters
 - Form parameters without type reference
 - Form parameters with generic types
 - Calling a function
 - Recursive calls

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6. A simple query
 - Using an alternative work area
 - Using internal tables as snapshots of database tables
 - Using where clauses
 - Reading single entries
 - Selecting single fields
 - Getting statistical information
 - Ordering query results
 - Using Select-Options
 - Using a dynamic table name
 - Obtaining data with nested select loops
 - Using Internal Tables for Selection Criteria
7. A simple internal table
 - Internal tables with header lines
 - Filling an internal table from a database table
 - Appending single lines
 - Appending multiple lines
 - Inserting lines at a specified position
 - Inserting lines at a specified position
8. Inserting single entries in a database table
 - Inserting multiple lines in a database table
 - Updating single entries in a database table
 - Updating multiple entries in a database table
 - Modifying single entries in a database table
 - Modifying multiple entries in a database table
 - Deleting single entries from a database table
 - Deleting multiple entries from a database table
 - Exporting to the ABAP/4 Memory
 - Importing from the ABAP/4 Memory
9. Using select statements
 - Using a Logical Database
 - Using the events start-of-selection and end-of-selection
 - Working with get events
 - Parameters on the selection screen
 - Working with Select-Options
 - Selection screen events
10. Double-clicking
 - Clicking on a hotspot area
 - Pop-up Screens
 - Working with the hide command
 - Tabular lists
 - Sample report with selection criteria
 - Running a report
 - Displaying the selection screen

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11. Sample dialog program (flight reservation)
12. Dynamic sort command
 - Dynamic sort command with several sort criteria
 - Dynamic read table command
 - Dynamic subtotals
 - Dynamic Open SQL Commands: table name
 - Dynamic Open SQL Commands: table name
 - External perform (caller)
 - External perform (called form)
 - Dynamic external perform (call back form)
 - Dynamic external perform
 - Working with Field Symbols
 - Using Field Symbols for variable parts of fields
 - Using Field Symbols for components of a structure
 - Working with temporary programs
13. Syntax errors in temporary programs
 - A real life example for using a temporary program
 - Generating a persistent program
 - Transferring data to a file
 - Reading data from a file
 - Transferring data to a file (presentation server)
 - Reading data from a file (presentation server)
14. Sample program for OLE Automation

MINI PROJECT (A1281107)

There shall be mini-Project, in collaboration with an industry (wherever possible) of their specialization, to be taken up during the vacation(data collection, components etc) after III year II Semester examination and implementation/simulation shall be carried out in IV first semester during lab classes. Implementation or construction of mini project will be treated as laboratory. However, the mini project and its report shall be evaluated in IV year I Semester. The mini project shall be submitted in report form and should be presented before the committee, which shall be evaluated for 50 marks. The committee consists of an external Examiner, Head of the Department, the supervisor of mini project and a senior faculty member of the Department. There shall be 25 Internal marks for mini project which will be awarded based on the performance and involvement of the student during mini project period.

Evaluation:

Mini Project	50	End Examination (External evaluation)	This End Examination in mini project will be for a maximum of 50 marks.
	25	Internal evaluation	Day-to-day performance in executing mini project.

G 3.1 BASICS OF IMAGE PROCESSING (A1229107)**Unit I:**

INTRODUCTION: Digital Image Processing, Fundamental Steps in Digital Image Processing, Components of an Image Processing System.

DIGITAL IMAGE FUNDAMENTALS: Elements of Visual Perception, Image Sensing and Acquisition, Image Sampling and Quantization, Some basic Relationships between Pixels, color image processing fundamentals.

Unit II:

IMAGE ENHANCEMENT: Some Basic Gray Level Transformation, Histogram Processing, Enhancement Using Arithmetic/Logic Operations, Basics of Spatial Filtering, Smoothing spatial Filters, Sharpening spatial Filters.

Unit III:

IMAGE RESTORATION: A Model of the Image Degradation/Restoration Process, Linear, Position-Invariant Degradations, Inverse Filtering, Minimum Mean Square Error (Wiener) Filtering, Constrained Least Squares Filtering.

Unit IV:

Lossless compression: Variable length coding – LZW coding – Bit plane coding- predictive coding-DPCM.

Lossy Compression: Transform coding – Wavelet coding – Basics of Image compression standards: JPEG, MPEG, Basics of Vector quantization.

Unit V:

Morphological Image Processing: Preliminaries, dilation, erosion, open and closing, hit or miss transformation, basic morphologic algorithms.

Unit VI:

IMAGE SEGMENTATION: Detection of Discontinuities, Edge Linking and Boundary Detection, Thresholding, Region-Based Segmentation.

Text Book:

1. Rafael C.Gonzalez, Richard E.Woods, 'Digital Image Processing' Addison Wesley Pubs (Second Edition).

References:

1. Milan Sonka, Vaclav Hlavac, Roger Boyle Image Processing. Analysis, and Machine Vision (Second Edition).
2. A.K.Jain, 'Image Processing Fundamentals' BPB publications.
3. Philips, 'Image Processing in C', BPP Publications.

G 3.2 PROGRAMMING MASSIVELY PARALLEL PROCESSORS (A1230107)**Unit I: GPU Computing****Introduction:**

GPUs as parallel computers Architecture of a Modern GPU why more speed or parallelism? Parallel programming languages and models overarching Goals Organization of the Book

History of GPU Computing:

Evolution of Graphics pipelines the Era of Fixed – function Graphics pipelines Evolution of Programmable Real – Time Graphics Unified Graphics and Computing Processors GPGPU

GPU Computing: Scalable GPUs Recent Developments Future Trends

Unit II: CUDA Programming

Introduction to CUDA: Data parallelism CUDA program structure A Matrix – Matrix Multiplication Example Device memories and data Transfer Kernel Functions and Threading Function declarations Kernel launch predefined variables Runtime API

CUDA Threads: CUDA thread Organization using blockIdx and threadIdx synchronization and Transparent Scalability Thread Assignment Thread Scheduling and Latency Tolerance

Unit III: CUDA Memories & Performance

CUDATM Memories: Importance of memory access efficiency, CUDA Device memory types, a strategy for reducing global memory traffic, memory as a limiting factor to parallelism.

Performance considerations: More on thread execution, global memory bandwidth, Dynamic Partitioning of SM resources, Data prefetching, instruction Mix, Thread granularity, measured performance.

Unit IV: Applications

Floating point considerations: Floating – Point format, Represent able numbers, Special bit patterns and precision, arithmetic accuracy and rounding, Algorithm Considerations

Case studies: advanced MRI Reconstruction; Molecular visualization and analysis

Unit V: Parallel programming and OpenCL

Goals of parallel programming, problem decomposition, algorithm selection, computational thinking

A brief introduction to openCL: Background, Data parallelism mode, Device architecture, kernel functions, device management and kernel launch, electrostatic potential map in OpenCL .

Unit VI: Future Outlook

Goals revisited; Memory Architecture evolution, Kernel execution control evolution, Core performance, Programming Environment.

Text Books:

1. Programming massively parallel processors- A hands-on Approach, David B. Kirk and Wen–mei W.Hwu, Elsevier, [Morgan Kaufmann], 2010.

References:

1. Parallel Computing Tool box , <http://www.mathworks.in/products/parallel-computing/builtin-parallel-support.html>.

G3.3 NATURAL LANGUAGE PROCESSING (A1231107)**Unit I**

Introduction - Issues and difficulties in NLP – Study of language – Evaluating Language understanding Systems – the different levels of language – representations – Organization of NLP systems – Linguistic issues – Types of NLP Systems.

Unit II

Grammars and Parsing Language Hierarchies and Complexity -Grammars and sentence structures – A top down parser – a bottom up chart parser – top down chart parsing – Finite state models and morphological analysis and the Lexicon

Unit III

Grammars and Logic programming –Augmented grammars – A simple grammar with features – Parsing with features –Augmented Transition Networks (ATN) – Definite clause grammars – Efficient parsers –Shift reduce parsers – A deterministic parsers - Lexicalised and Probabilistic Parsing.

Unit IV

Three System types of Semantics and logical forms – Defining semantic structure: Model theory –Semantic interpretation and composability –A simple grammar and lexicon with semantic interpretation – Prepositional phrases and verb phrases – Lexicalised semantic interpretation and semantic roles – Semantic networks – Frames and scripts- Truth, Meaning and Ontology –Word Net.

Unit V

Language Communication:Adding Language - Modeling reference – Defining Local Discourse context and Discourse entities – The need for discourse structure – Discourse interpretation – Pragmatics.

Unit VI

Typical Systems:Generation – Strategies for generation – Planning English referencing expression Architecture of Natural Language Generation System – Typical systems – ELIZA Baseball

Text Books:

1. James Allen “Natural Language Understanding”, Benjamin / Cummings Publishing Co.,1995.
2. Ronald Hausser “Foundations of Computational Linguistics”, Springer-Verleg, 1999.

References:

1. Gerald Gazer and Chris Mellish, “Natural Language Processing for PROLOG programmers” – PHI – 1995.
2. Ashkar Bharathi, Vineet chaitanya and Rajeev Sangal, “Natural Language Processing – a Paining Perspective” –PHI-1995.
3. Ralph Grishman, “Computational Linguistics – an introduction”, Cambridge university press – 1986.

G3.4 CLOUD COMPUTING (A1232107)**Unit 1: Examining the Value Proposition**

Defining Cloud Computing [CC for short]: Definition; Cloud types; characteristics of CC; Role of open standards. Assessing the Value Proposition: Measuring the cloud value, Avoiding capital expenditure, Total cost of ownership, Specifying SLAs.

Unit 2: Architecture and types

Cloud Architecture: CC stack; Connecting to the cloud.

Services and Applications by type: IaaS, PaaS, SaaS, IDaaS, CaaS.

Unit 3: Platforms

Abstractions and Virtualization: Using virtualization technologies; Load balancing and virtualization, Hypervisor, Machine image, porting applications.

Capacity planning: defining baseline and metrics; Network capacity.

Platform as a Service: Defining service, PaaS application frameworks;

Unit 4: Cloud computing with Titans

Google and Amazon web services, Microsoft cloud services.

Unit 5 : Exploring Cloud Infrastructures

Managing the cloud: Administrating the cloud; Cloud management products; Emerging cloud management standards.

Cloud Security: Securing the cloud; securing data; Establishing identity and presence.

Unit 6: services & Applications

Service Oriented Architecture: Introduction; Defining SOA communications; Managing and monitoring SOA; Relating SOA and CC. Moving applications to cloud. Cloud based storage. Webmail services.

Text Books:

1. Cloud Computing – Bible, Barrie Sosinsky, Wiley-India edn.,2012. [Chapters 1-7, 11-15, 17.]
2. Cloud Computing – A Practical Approach, Anthony T. Velte, Toby J. Velte and Robert Elsenpeter, Tata McGraw-Hill edn. 2011. [Chapter3]

G 3.5 SOFTWARE PROJECT MANAGEMENT (A0526107)**UNIT I: Conventional Software Management**

The waterfall model, conventional software Management performance.

Evolution of Software Economics: Software Economics, pragmatic software cost estimation.

UNIT II: Improving Software Economics

Reducing Software product size, improving software processes, improving team effectiveness, improving automation, achieving required quality, peer inspections.

The old way and the new: The principles of conventional software Engineering, principles of modern software management, transitioning to an iterative process.

UNIT III: Life cycle phases

Engineering and production stages, inception, Elaboration, construction, transition phases. Artifacts of the process: The artifact sets, Management artifacts, Engineering artifacts, programmatic artifacts.

UNIT IV: Model based software architectures

A Management perspective and technical perspective.

Work Flows of the process: Software process workflows, Iteration workflows.

UNIT V: Checkpoints of the process

Major mile stones, Minor Milestones, Periodic status assessments.

Iterative Process Planning: Work breakdown structures, planning guidelines, cost and schedule estimating, Iteration planning process, Pragmatic planning.

UNIT VI: Project Organizations and Responsibilities

Line-of-Business Organizations, Project Organizations, evolution of Organizations.

Process Automation: Automation Building blocks, The Project Environment.

Text Book:

1. Software Project Management, Walker Royce: Pearson Education, 2005.

References:

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.

(A1233107) FREE/OPEN SOURCE SOFTWARE (Audit Course)**AIM:**

- To understand the FOSS Philosophy and use a Linux distribution to learn installation, administration and programming in this environment.

OBJECTIVES:

- To impart a first-hand knowledge on the FOSS philosophy and methodology.
- To enable the students to install and use Linux distribution.
- To train the students in Linux desktop usage and some commonly used programs.
- To encourage students to apply OSS philosophy and migrate to FOSS in their own domains.
- To develop application programs using FOSS.

UNIT I HISTORY AND OVERVIEW OF GNU/LINUX AND FOSS

Definition of FOSS & GNU, History of GNU/Linux and the Free Software Movement, Advantages of Free Software and GNU/Linux, FOSS usage, trends and potential-global and Indian.

UNIT II SYSTEM ADMINISTRATION

GNU/Linux OS installation--detect hardware, configure disk partitions & file systems and install a GNU/Linux distribution ; Basic shell commands -logging in, listing files, editing files, copying/moving files, viewing file contents, changing file modes and permissions, process management ; User and group management, file ownerships and permissions, PAM authentication ; Introduction to common system configuration files & log files ; Configuring networking, basics of TCP/IP networking and routing, connecting to the Internet (through dialup, DSL, Ethernet, leased line) ; Configuring additional hardware -sound cards, displays & display cards, network cards, modems, USB drives, CD writers ; Understanding the OS boot up process ; Performing every day tasks using gnu/Linux --accessing the Internet, playing music, editing documents and spreadsheets, sending and receiving email, copy files from disks and over the network, playing games, writing CDs ; X Window system configuration and utilities--configure X windows, detect display devices ; Installing software from source code as well as using binary packages.

UNIT III SERVER SETUP AND CONFIGURATION

Setting up email servers--using postfix (SMTP services), courier (IMAP & POP3 services), squirrel mail (web mail services) ; Setting up web servers --using apache (HTTP services), php (server-side scripting), perl (CGI support) ; Setting up file services --using samba (file and authentication services for windows networks), using NFS (file services for gnu/Linux / Unix networks) ; Setting up proxy services --using squid (http / ftp / https proxy services) ; Setting up printer services -using CUPS (print spooler), foomatic (printer database) ; Setting up a firewall -Using netfilter and iptables.

UNIT IV PROGRAMMING TOOLS

Using the GNU Compiler Collection --GNU compiler tools ; the C preprocessor (cpp), the C compiler (gcc) and the C++ compiler (g++), assembler (gas) ; Understanding build systems --constructing make files and using make, using autoconf and autogen to automatically generate make files tailored for different development environments ; Using source code versioning and management tools --using cvs to manage source code revisions, patch & diff ; Understanding the GNU Libc libraries and linker --linking against object archives (a libraries) and dynamic shared object libraries (.so libraries), generating statically linked binaries and libraries, generating dynamically linked libraries ; Using the GNU debugging tools --gdb to debug programs, graphical debuggers like ddd, memory debugging / profiling libraries mpatrol and valgrind ; Review of common programming practices and guidelines for GNU/Linux and FOSS; Introduction to Bash, sed & awk scripting.

UNIT V APPLICATION PROGRAMMING

Basics of the X Windows server architecture ; Qt Programming ; Gtk+ Programming; Python Programming; Programming GUI applications with localisation support.

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UNIT VI CASE STUDIES

Operating Systems, Web Apps, Mobile Apps.

REFERENCES:

1. N. B. Venkateshwarlu (Ed); Introduction to Linux: Installation and Programming, B S Publishers; 2005.
2. Matt Welsh, Matthias Kalle Dalheimer, Terry Dawson, and Lar Kaufman, Running
3. Linux, Fourth Edition, O'Reilly Publishers, 2002.
4. Carla Schroder, Linux Cookbook, First Edition, O'Reilly Cookbooks Series, 2004.

ON-LINE MATERIAL:

1. Open Sources: Voices from the Open Source Revolution, First Edition, January 1999, ISBN: 1-56592-582-3.
URL: <http://www.oreilly.com/catalog/opensources/book/toc.html>.
2. The Linux Cookbook: Tips and Techniques for Everyday Use, First Edition, Michael Stutz, 2001.
URL: http://dsl.org/cookbook/cookbook_toc.html.
3. The Linux System Administrators' Guide, Lars Wirzenius, Joanna Oja, Stephen Stafford, and Alex Weeks, December 2003.
URL: <http://www.tldp.org/guides.html>.
4. Using GCC, Richard Stallman et al.
URL: <http://www.gnu.org/doc/using.html>.
5. An Introduction to GCC, Brian Gough.
URL: <http://www.networktheory.co.uk/docs/gccintro/>
6. GNU Autoconf, Automake and Libtool, Gary V. Vaughan, Ben Elliston, Tom Tromey and Ian Lance Taylor.
URL: <http://sources.redhat.com/autobook/>
7. Open Source Development with CVS, Third Edition, Karl Fogel and Moshe Bar.
URL: <http://cvsbook.red-bean.com/>
8. Advanced Bash Scripting Guide, Mendel Cooper, June 2005.
URL: <http://www.tldp.org/guides.html>.
9. GTK+/GNOME Application Development, Havoc Pennington.
URL: <http://developer.gnome.org/doc/GGAD>.
10. Python Tutorial, Guido van Rossum, Fred L. Drake, Jr., Editor.
URL: <http://www.python.org/doc/current/tut/tut.html>.

MANAGEMENT SCIENCE (A0012105)**Unit I: The meaning and role of Management Information System.**

what is a management information system, what is the systems approach, the systems view of business, MIS organization within the company.

Management, Organizational theory and the systems approach: Development of the organizational theory, management and organizational behaviour, management, information, and the systems approach.

Unit II: Information systems for decision making

Evaluation of an information system, basic information system, decision making, and MIS, MIS as a technique for making programmed decisions.

Strategic and Project Planning for MIS: general business planning appropriate MIS response, MIS planning: General, MIS planning: Details.

Unit III: Conceptual systems design

Define the problems, set system objectives, establish system constraints, determine information needs, determine information sources, develop alternative conceptual designs and select one, document the system concepts, prepare the conceptual design report.

Unit IV: Detailed system design

Inform and involve in the organization, aim of detailed design, project management of MIS detailed design, identify dominant and trade off criteria, define the subsystems, sketch the detailed operating systems and information flows, determine the degree of automation of each operation, inform and involve the organization again, inputs, outputs, and processing, early system testing, software, hardware, and tools, propose an organization to operating the system, document the detailed design, Revisit the manager-user.

Unit V: Implementation, Evaluation, and maintenance of the MIS

Plan the implementation, acquire floor space and plan space layouts, organize for the implementation, develop procedures for implementation, train the operating personal, computer related acquisitions, develop forms for data collection and information dissemination, develop the files, test the system, cutover, document the system, evaluate the MIS, control and maintain the system.

Pitfalls in MIS development: fundamental weaknesses, soft spots in planning, design problems, Implementation: The Tar Pit.

Unit VI: Systems concepts & control

Systems classifications, some system concepts, control: The key system concept, the business organization as a system, control and system design.

Management Science and Systems modelling for MIS:

what is management science, what are models, kinds of models, use of models, for analysis of systems characteristics, simulation, construction of models.

Text Books:

1. Information systems for modern management-Robert G. Murdick, Joel E.Ross, James R. Claggett.

References:

1. Management Information systems -the managers view-Robert schultheis, mary sumner,TataMcGraw-Hill Edition.
2. Management Information systems-Gerald V. Post, David L.Anderson.

G4.1 DESIGN PATTERNS: CONCEPTS AND APPLICATIONS (A1233108)**UNIT I**

Introduction to design pattern: how do I use design pattern, How about an interface, setting behaviours dynamically, HAS-A can be better than IS-A, Strategy pattern, The power of shared vocabulary, Keeping your objects Know: The power of loose coupling .meet the Observer pattern, the observer pattern defined, designing and implementing the weather station.

UNIT II

Decorating Objects: The open closed principle, the decorator pattern defined, meets the decorator pattern, constructing a drink orders with decorators , Baking with OO Goodness: Encapsulating object creation, simple factory defined, declaring the factory method, meets the factory method pattern, a frame work for the pizza store

UNIT III

One of a kind of Objects: The little singleton, dissecting the classic singleton pattern, confessions of a singleton pattern, the chocolate factory

UNIT IV

Template method pattern: Abstracting prepare recipe, meet the template method, what did the template method get us, template method pattern defined, template method in the wild, storing with template method, applets, swinging with frames, Template method and strategy

UNIT V

The iterator and composite pattern: can we encapsulate the iteration, meet the Iterator pattern, Adding an Iterator to Diner menu, Iterator pattern defined, single responsibility ,Iterator and collections, The composite pattern: The composite pattern defined, Designing menu with composite, implementing the composite menu, The Null Iterator, The magic of Iterator & composite together.

UNIT VI

The State pattern: How do implement state, State Machines, A first attempt to state machine, defining the state interfaces and classes, implementing our state classes, The state pattern defined. Patterns of patterns: Compound patterns, Adding an adapter, Adding an Iterator, adding a factory, Adding a composite and Iterator, Adding an observer, Model view controller, Adapting the model, MVC and the web

Text Books:

1. HeadFirst Design Patterns- Eric Freeman, and Eli Sabeth Freeman, Reilly, 2004

References:

1. Design Patterns- Elements of reusable object-oriented software, Addison Wesley, 1995
2. Refactoring to patterns , Joshua Kerievsky, Addison Wesley, 2005
3. www.cs.umbc.edu
4. www.rescach.umbc.edu

G4.2 INFORMATION RETRIEVAL SYSTEMS (A1234108)**UNIT-I: Introduction & Information Retrieval System Capabilities**

Definition, Objectives, Functional Overview, Relationship to DBMS, Digital libraries and Data Warehouses. Search, Browse, Miscellaneous

UNIT-II: Cataloging and Indexing

Objectives, Indexing Process, Automatic Indexing, Information Extraction.

Data Structures: Introduction, Stemming Algorithms, Inverted file structures, N-gram data structure, PAT data structure, Signature file structure, Hypertext data structure.

UNIT-III: Automatic Indexing

Classes of automatic indexing, Statistical indexing, Natural language, Concept indexing, Hypertext linkages

UNIT-IV: Document and Term Clustering

Introduction, Thesaurus generation, Item clustering, Hierarchy of clusters.

UNIT-V: User Search Techniques

Search statements and binding, Similarity measures and ranking, Relevance feedback, Selective dissemination of information search, Weighted searches of Boolean systems, Searching the Internet and hypertext. Information Visualization: Introduction, Cognition and perception, Information visualization technologies.

UNIT VI: Text Search Algorithms Introduction, Software text search algorithms, Hardware text search systems. Measures used in system evaluation, Measurement example – TREC results.

Text Book:

1. Kowalski, Gerald, Mark T Maybury: Information Retrieval Systems: Theory and Implementation, Kluwer Academic Press, 1997.

References:

1. Frakes, W.B., Ricardo Baeza-Yates: Information Retrieval Data Structures and algorithms, Prentice Hall, 1992.
2. Modern Information Retrieval By Yates Pearson Education.
3. Information Storage & Retrieval By Robert Korfhage – John Wiley & Sons.

G4.3 PATTERN RECOGNITION (A1235108)**UNIT I: Introduction**

Machine perception, pattern recognition example, pattern recognition systems, the design cycle, learning and adaptation (Text book-1, p.nos: 1-17).

UNIT II: Bayesian Decision Theory

Introduction, continuous features – two categories classifications, minimum error-rate classification- zero-one loss function, classifiers, discriminant functions, and decision surfaces (Text book-1, p.nos: 20-27, 29-31).

UNIT III: Normal density

Univariate and multivariate density, discriminant functions for the normal density different cases, Bayes decision theory – discrete features, compound Bayesian decision theory and context (Text book-1, p.nos: 31-45, 51-54, 62-63).

UNIT IV: Maximum likelihood and Bayesian parameter estimation

Introduction, maximum likelihood estimation, Bayesian estimation, Bayesian parameter estimation–Gaussian case (Text book-1, p.nos: 84-97).

UNIT V: Un-supervised learning and clustering

Introduction, mixture densities and identifiability, maximum likelihood estimates, application to normal mixtures, K-means clustering. Data description and clustering – similarity measures, criteria function for clustering (Text book-1, p.nos: 517 – 526, 537 – 546).

UNIT VI: Component analyses

Principal component analysis, non-linear component analysis; Low dimensional representations and multi-dimensional scaling (Text book-1, p.nos: 568-570, 573 – 576, 580-581).

Text Books:

1. Pattern classifications, Richard O. Duda, Peter E. Hart, David G. Stroke. Wiley student edition, Second Edition.
2. Fundamentals of speech Recognition, Lawrence Rabiner, Biing – Hwang Juang Pearson education.

References:

1. Pattern Recognition and Image Analysis – Earl Gose, Richard John baugh, Steve Jost PHI 2004 Reference.

G4.4 PRINCIPLES OF COMPILER DESIGN (A1236108)**UNIT I: Introduction to compilers**

Compilers – Analysis of the source program – Phases of a compiler – Cousins of the Compiler – Grouping of Phases – Compiler construction tools – Lexical Analysis – Role of Lexical Analyzer – Input Buffering – Specification of Tokens.

UNIT II: Syntax Analysis

Role of the parser – Writing Grammars – Context-Free Grammars – Top Down parsing – Recursive Descent Parsing – Predictive Parsing – Bottom-up parsing – Shift Reduce Parsing – Operator Precedent Parsing – LR Parsers – SLR Parser – Canonical LR Parser – LALR Parser.

UNIT III: Intermediate Code Generation

Intermediate languages – Declarations – Assignment Statements – Boolean Expressions – Case Statements – Back patching – Procedure calls.

UNIT IV: Type Checking and Runtime Environments

Syntax directed definitions – Construction of syntax trees – Type systems – Specification of a simple type checker – Equivalence of type expressions – Type conversions – Attribute grammar for a simple type checking system – Runtime Environments: Source language issues – Storage organization – Storage allocation strategies – Parameter passing.

UNIT V: Code generation

Issues in the design of a code generator – The target machine – Runtime storage management – Basic blocks and flow graphs – Next-use information – A simple code generator – Register allocation and assignment – The DAG representation of basic blocks – Generating code from DAG – Dynamic programming code generation algorithm – Code-generator generators.

UNIT VI: Code optimization

Principal sources of optimization – Peephole optimization – Optimization of basic blocks – Loops in flow graphs – Introduction to global data flow analysis – Iterative solution of data flow equations – Code improving transformations – Dealing with aliases.

Text Books

1. Alfred V. Aho, Ravi Sethi, Jeffrey D. Ullman. “Compilers Principles, Techniques and Tools”. Pearson Education

References:

1. Steven S. Muchnick, “Advanced Compiler Design Implementation”, Morgan Koffman, 1997.
2. Charles N. Fischer, Richard J. Leblanc, “Crafting a Compiler with C”, Benjamin Cummings, 1991.
3. Allen Holub, “Compiler Design in C”, Prentice Hall of India, 1990.

G4.5 SOFT COMPUTING (A1237108)**Unit I : Introduction to Intelligent Systems and Soft Computing.**

Introduction, Intelligent systems, Knowledge-based systems, Knowledge representation and processing, Soft computing

Unit II : Fundamentals of Fuzzy Logic Systems & Fuzzy Logic Control

Fuzzy sets, Fuzzy logic operations, Generalized fuzzy logic operations, Implication (if-then), Some definitions, Fuzziness and fuzzy solutions, Fuzzy relations, Composition and inference, Considerations of fuzzy decision-making. Basics of fuzzy control, Fuzzy control architectures.

Unit III : Fundamentals of artificial neural networks

Learning and acquisition of knowledge, Features of artificial neural networks, fundamentals of connectionist modeling.

Unit IV : Neuro-fuzzy Systems

Architecture of neuro-fuzzy systems, Construction of neuro-fuzzy systems

Unit V : Evolution Computing

Overview of evolution computing, Genetic algorithms and Optimization, The schema theorem: the fundamental theorem of genetic algorithms, Genetic algorithm operators, Integration of genetic algorithms with neural networks, Integration of genetic algorithms with fuzzy logic, Known issues of GAs.

Unit VI : Applications from PR, IP, IRS, Share Market Analysis, Soft Computing For Color Recipe Prediction case studies.

Text Book:

1. Soft computing and intelligent systems design, by Fakhreddine O. Karray and Clarence De Silva, Pearson Education, 2009

Reference Book:

1. Neuro-Fuzzy and Soft Computing, J.S.R Jan, C.-T. Sun and E. Mizutani, PHI, 2005

(A1226106) PROFESSIONAL ETHICS IN ENGINEERING**AIM:**

To sensitize the engineering students on blending both technical and ethical

UNIT I ENGINEERING ETHICS

Senses of 'Engineering Ethics' – Variety of moral issues – Types of inquiry – Moral dilemmas – Moral Autonomy – Kohlberg's theory – Gilligan's 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

UNIT III ENGINEER'S RESPONSIBILITY FOR SAFETY

Safety and Risk – Assessment of Safety and Risk – Riysis – Reducing Risk – The Government Regulator's Approach to Risk - Chernobyl Case Studies and Bhopal

UNIT IV RESPONSIBILITIES AND RIGHTS

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

UNIT VI CASE STUDIES

Ethics in Public Sector Units, Ethics in Private Sector Units

TEXT BOOKS:

1. Mike Martin and Roland Schinzinger, "Ethics in Engineering", McGraw Hill, New York (2005).
2. Charles E Harris, Michael S Pritchard and Michael J Rabins, "Engineering Ethics – Concepts and Cases", Thompson Learning, (2000).

REFERENCES:

1. Charles D Fleddermann, "Engineering Ethics", Prentice Hall, New Mexico, (1999).
2. John R Boatright, "Ethics and the Conduct of Business", Pearson Education, (2003)
3. Edmund G Seebauer and Robert L Barry, "Fundamentals of Ethics for Scientists and Engineers", Oxford University Press, (2001)
4. Prof. (Col) P S Bajaj and Dr. Raj Agrawal, "Business Ethics – An Indian Perspective", Biztantra, New Delhi, (2004).
5. David Ermann and Michele S Shauf, "Computers, Ethics and Society", Oxford University Press, (2003)